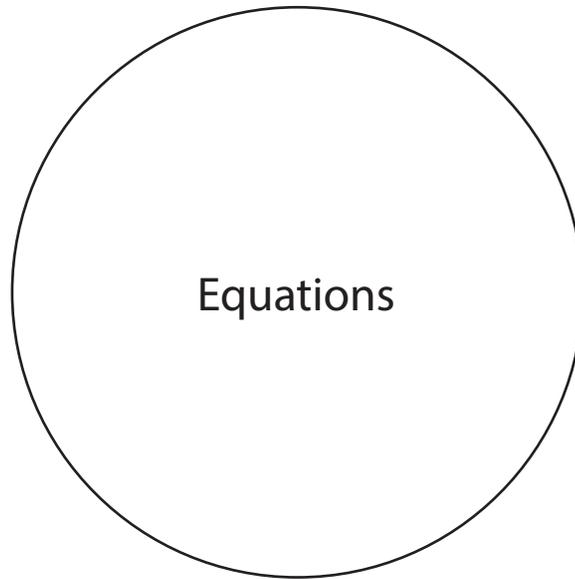


Expressions and Equations 1

Teacher Masters

Warming Up:

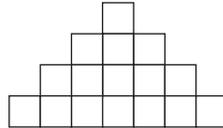


Learning to Solve:

Complete the staircase problem. Use your own words to describe the pattern.

Staircase problem:

1. This is a double staircase with 4 steps.



A. Using your square tiles, make a model of a double staircase with 5 steps.

B. How many square tiles are needed to build a double staircase with 5 steps? _____
Draw it.

C. Draw a model of a double staircase with 8 steps.

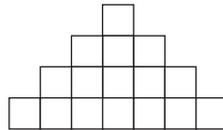
D. How many square tiles are needed to build a double staircase of 8 steps? _____

Learning to Solve:

Complete the staircase problem. Use your own words to describe the pattern.

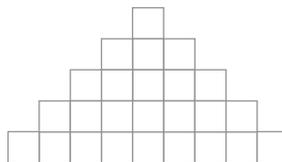
Staircase problem:

1. This is a double staircase with 4 steps.

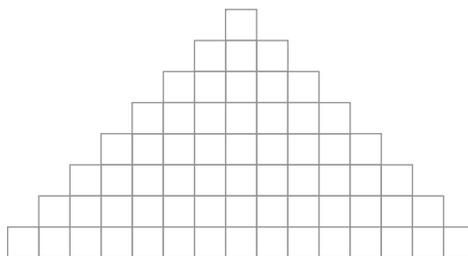


A. Using your square tiles, make a model of a double staircase with 5 steps.

B. How many square tiles are needed to build a double staircase with 5 steps? 25
Draw it.



C. Draw a model of a double staircase with 8 steps.



D. How many square tiles are needed to build a double staircase of 8 steps? 64

2. Fill out the table, indicating how many square tiles would be needed for the given amount of steps.

Number of Steps	Number of Square Tiles
1	
2	
3	
4	
5	
8	
10	
15	
20	
50	

3. Look at the table. Do you notice any patterns?

2. Fill out the table, indicating how many square tiles would be needed for the given amount of steps.

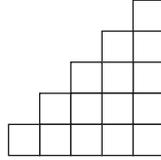
Number of Steps	Number of Square Tiles
1	1
2	4
3	9
4	16
5	25
8	64
10	100
15	225
20	400
50	2,500

3. Look at the table. Do you notice any patterns?

There are different ways to describe the pattern. Students may notice that the total number of square tiles is the number of steps squared or the result of adding the next odd number to the previous amount of square tiles, and others may notice that as the number of steps increases by 1, the number of square tiles increases by an odd number.

Practicing Together

A diagram of a single staircase with 5 steps uses 15 square tiles.

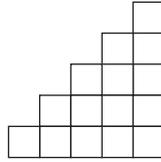


With your partner, answer the questions.

1. If the pattern continues in the same way, how many square tiles are needed to build a staircase with 6 steps?
2. How many square tiles are needed to build a staircase with 10 steps?
3. How many square tiles are needed to build a staircase with 20 steps?
4. How would you describe the pattern?

Practicing Together

A diagram of a single staircase with 5 steps uses 15 square tiles.



With your partner, answer the questions.

1. If the pattern continues in the same way, how many square tiles are needed to build a staircase with 6 steps?

21 square tiles

2. How many square tiles are needed to build a staircase with 10 steps?

55 square tiles

3. How many square tiles are needed to build a staircase with 20 steps?

210 square tiles

4. How would you describe the pattern?

Answers will vary. For example, the total number of tiles needed is the sum of the numbers from 1 to the number of steps.

112, 339, 566, 793, _____

5. Identify the pattern. Find the next number using the same pattern.

- a. 1,000
- b. 1,020
- c. 920
- d. 987

112, 339, 566, 793, _____

5. Identify the pattern. Find the next number using the same pattern.

a. 1,000

b. 1,020

c. 920

d. 987

Trying It on Your Own

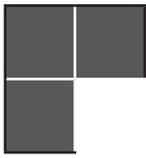


Figure 1

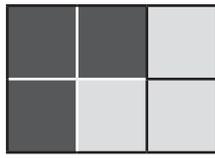


Figure 2

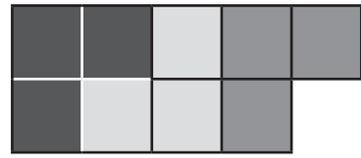


Figure 3

Use the figures above to answer questions 1–3.

1. Which table shows this relationship?

a.

Figure Number	Number of Squares
1	3
2	6
3	9
4	12
5	15

b.

Figure Number	Number of Squares
1	1
2	2
3	3
4	4
5	5

c.

Figure Number	Number of Squares
1	3
2	5
3	8
4	11
5	14

d.

Figure Number	Number of Squares
1	1
2	2×1
3	3×2
4	4×3
5	5×4

Trying It on Your Own

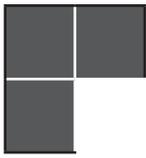


Figure 1

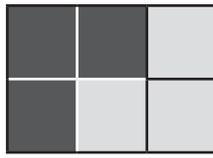


Figure 2

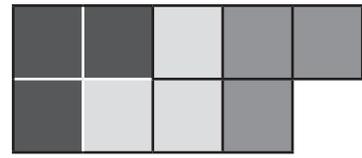


Figure 3

Use the figures above to answer questions 1–3.

1. Which table shows this relationship?

a.

Figure Number	Number of Squares
1	3
2	6
3	9
4	12
5	15

b.

Figure Number	Number of Squares
1	1
2	2
3	3
4	4
5	5

c.

Figure Number	Number of Squares
1	3
2	5
3	8
4	11
5	14

d.

Figure Number	Number of Squares
1	1
2	2×1
3	3×2
4	4×3
5	5×4

- 2.** Without drawing a diagram, use the pattern you notice to find the number of squares needed for the seventh figure.
- a.** Seventh diagram has 71 squares
 - b.** Seventh diagram has 280 squares
 - c.** Seventh diagram has 19 squares
 - d.** Seventh diagram has 70 squares

162, 54, 18, _____

- 3.** Identify the pattern and select the number that goes in the blank.
- a.** Subtract each number by 108. The missing number is -90 .
 - b.** Divide each number by 3. The missing number is 6.
 - c.** Subtract each number by 36. The missing number is -18 .
 - d.** Divide each number by 2. The missing number is 9.

2. Without drawing a diagram, use the pattern you notice to find the number of squares needed for the seventh figure.

- a. Seventh diagram has 71 squares
- b. Seventh diagram has 280 squares
- c. Seventh diagram has 19 squares
- d. Seventh diagram has 70 squares

162, 54, 18, _____

3. Identify the pattern and select the number that goes in the blank.

- a. Subtract each number by 108. The missing number is -90 .
- b. Divide each number by 3. The missing number is 6.
- c. Subtract each number by 36. The missing number is -18 .
- d. Divide each number by 2. The missing number is 9.

14, 33, _____, 71

4. What is the missing number in the pattern?

- a. 19
- b. 52
- c. 71
- d. 99

14, 33, _____, 71

4. What is the missing number in the pattern?

a. 19

b. 52

c. 71

d. 99

Wrapping It Up

Laura wrote a number pattern:

3, 8, 13, 18, 23, 28, . . .

How would you describe the pattern Laura used? Write it in your own words.

Wrapping It Up

Laura wrote a number pattern:

3, 8, 13, 18, 23, 28, . . .

How would you describe the pattern Laura used? Write it in your own words.

Answers will vary. For example, she added 5 to the previous term.

Warming Up:

Marco has 16 game tokens in 1 pocket. He has 5 more tokens in his other pocket than in his first pocket. How many tokens does he have in all?

Warming Up:

Marco has 16 game tokens in 1 pocket. He has 5 more tokens in his other pocket than in his first pocket. How many tokens does he have in all?

16 tokens in 1 pocket

$16 + 5 = 21$ tokens in his other pocket

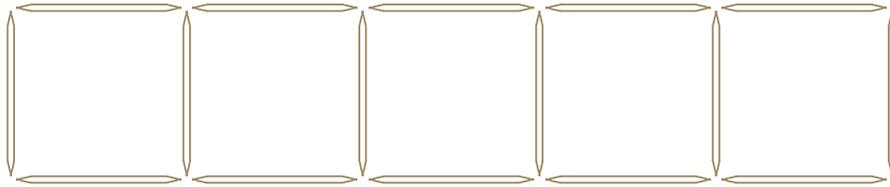
$16 + 21 = 37$ tokens in all

Learning to Solve:

Use your own words to write generalizations about the pattern.

Toothpick problem:

1. Without counting the individual toothpicks, find a way to determine how many toothpicks are needed to make this arrangement of 5 squares:



Number of toothpicks needed to make this arrangement of 5 squares: _____

2. Write a description of the pattern that shows how you determined your answer. The description should make sense and allow you to share your answer.

3. What is another way to determine the number of toothpicks needed? Describe your technique and illustrate it with a diagram.

A. How are the 2 methods similar?

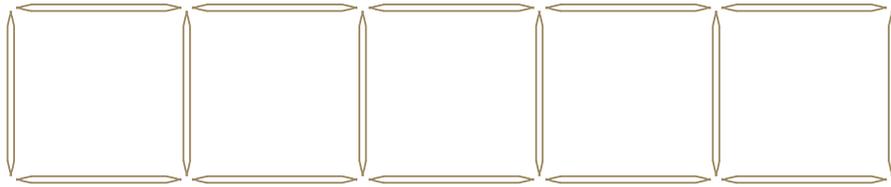
B. How are the 2 methods different?

Learning to Solve:

Use your own words to write generalizations about the pattern.

Toothpick problem:

1. Without counting the individual toothpicks, find a way to determine how many toothpicks are needed to make this arrangement of 5 squares:



Number of toothpicks needed to make this arrangement of 5 squares: 16

2. Write a description of the pattern that shows how you determined your answer. The description should make sense and allow you to share your answer.

Answers will vary. Some students will notice that the number of toothpicks on the top and bottom rows are the same, and the toothpicks in the middle are 1 more than the top or bottom. Other students may notice that there is 1 square of 4 toothpicks and then 4 partial squares of 3 toothpicks. Other patterns are possible.

3. What is another way to determine the number of toothpicks needed? Describe your technique and illustrate it with a diagram.

Answers will vary as students may use a rule as described in number 2.

A. How are the 2 methods similar?

Answers will vary, such as both patterns used 3 toothpicks for each square.

B. How are the 2 methods different?

Answers will vary, such as one pattern added a toothpick at the end and the other pattern subtracted a toothpick.

4. Without actually building it, find a way to determine how many toothpicks you would need to build a row of 16 squares. Describe the method or generalization you and your partner used.

Number of toothpicks needed to build a row of 10 squares: _____

Description of method or generalization:

5. Allison has built a row of squares on her desk. She knows how many total squares, but does not know how many toothpicks she used. Write directions for figuring out how many toothpicks she used.

4. Without actually building it, find a way to determine how many toothpicks you would need to build a row of 16 squares. Describe the method or generalization you and your partner used.

Answers will vary, such as multiply the number of squares times 3, then add 1.

Number of toothpicks needed to build a row of 10 squares: 31

Description of method or generalization:

Methods may vary but could include creating a table or using the pattern of multiplying the number of squares by 3 and then adding 1.

5. Allison has built a row of squares on her desk. She knows how many total squares, but does not know how many toothpicks she used. Write directions for figuring out how many toothpicks she used.

Answers may vary. Students will potentially use the equation $3 \times \text{number of squares} + 1 = \text{number of toothpicks}$. Other equivalent equations are possible such as, if $x = \text{number of squares}$, $2x + (x + 1) = \text{number of toothpicks}$.

Practicing Together

First, complete question 1. Then, solve the problem. Be sure your answer is correct and you can explain it. Finally, write your problem on a whiteboard and exchange it with another student pair for them to solve.

1. Make up a new problem by filling in the blanks.

_____ has _____ toothpicks. What is the largest number of squares in a row that could be built with this number?

2. Solve your problem.

3. Explain how you found your answer.

Practicing Together

First, complete question 1. Then, solve the problem. Be sure your answer is correct and you can explain it. Finally, write your problem on a whiteboard and exchange it with another student pair for them to solve.

1. Make up a new problem by filling in the blanks.

Answers will vary, such as Mary has 24 toothpicks.

_____ has _____ toothpicks. What is the largest number of squares in a row that could be built with this number?

2. Solve your problem.

Answers will vary. Example: Mary has 24 toothpicks. 3 times the number of squares plus 1 = 24, so it can't be 8 squares because 3×8 is 24 and you would need 1 more toothpick. Mary could make 7 squares and have 2 toothpicks remaining.

3. Explain how you found your answer.

Answers will vary, such as I multiplied 3 times 6 first and added 1, but that left too many toothpicks; so I continued with 7 and 8 until I came up with an answer (7) that made sense.

Wrapping It Up

Using your own words, describe any patterns or generalizations you notice in the table.

Ethan's Walking Rate	
Time (seconds)	Distance (meters)
0	0
2	3
4	6
6	9
8	12
10	15

Wrapping It Up

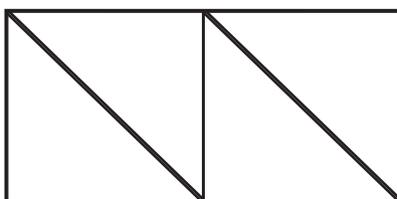
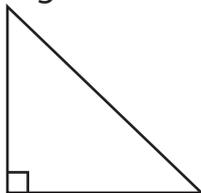
Using your own words, describe any patterns or generalizations you notice in the table.

Ethan's Walking Rate	
Time (seconds)	Distance (meters)
0	0
2	3
4	6
6	9
8	12
10	15

Answers will vary. Some students may notice that for every 2 seconds that Ethan walks, his distance increases by 3 meters.

Warming Up:

1. Using the length of a side of the triangle as a unit, find the perimeter of the rectangle.



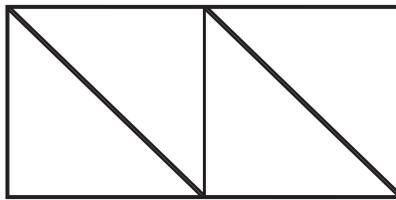
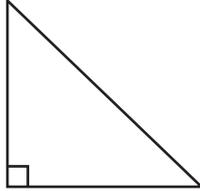
Perimeter: _____

2. Find the area of the rectangle, using the area of the triangle as 1 area unit.

Area: _____

Warming Up:

1. Using the length of a side of the triangle as a unit, find the perimeter of the rectangle.



Perimeter: 6 length units

2. Find the area of the rectangle, using the area of the triangle as 1 area unit.

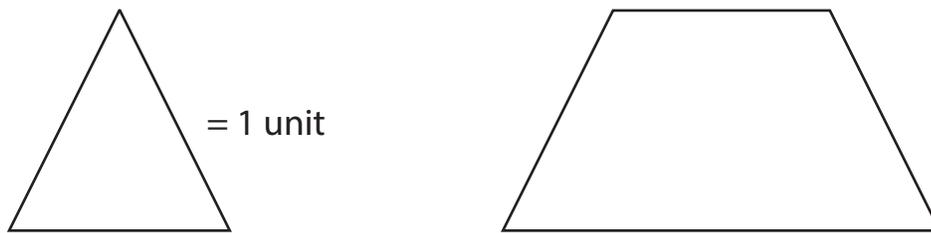
Area: 4 triangular area units

Learning to Solve:

Trapezoid train problem:

1. Using the length of 1 side of the triangle as 1 length unit, measure the perimeter of the trapezoid.

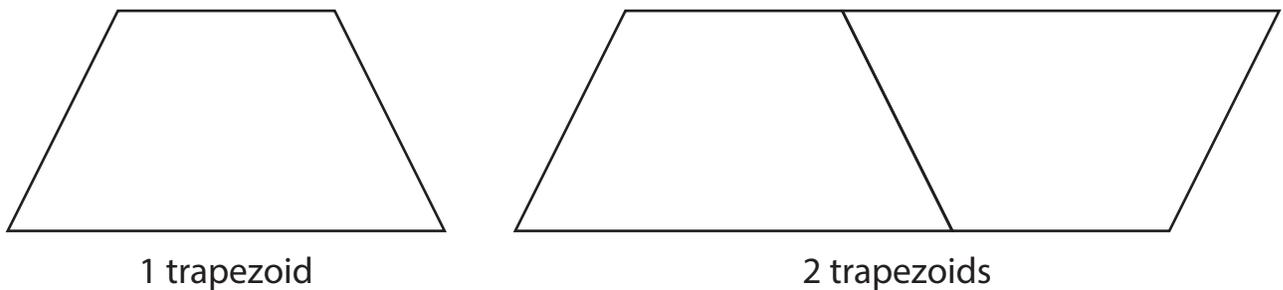
Perimeter of the trapezoid is _____ length units.



2. Measure the area of the trapezoid, using the triangle as 1 triangular area unit. Record the area of the trapezoid.

Area of the trapezoid is _____ triangular area units.

3. Make a trapezoid train by placing the trapezoids side by side. Record the information in the table.



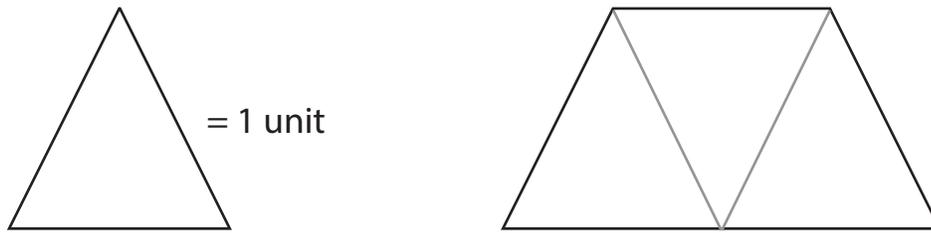
Number of trapezoids	1	2	3	4	5	6	10	n
Perimeter of train								
Area of train								

Learning to Solve:

Trapezoid train problem:

1. Using the length of 1 side of the triangle as 1 length unit, measure the perimeter of the trapezoid.

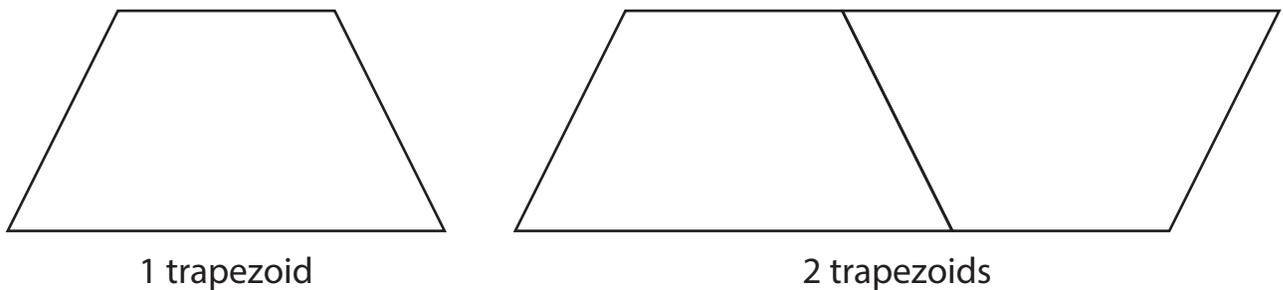
Perimeter of the trapezoid is 5 length units.



2. Measure the area of the trapezoid, using the triangle as 1 triangular area unit. Record the area of the trapezoid.

Area of the trapezoid is 3 triangular area units.

3. Make a trapezoid train by placing the trapezoids side by side. Record the information in the table.



Number of trapezoids	1	2	3	4	5	6	10	n
Perimeter of train	5	8	11	14	17	20	32	$3n + 2$
Area of train	3	6	9	12	15	18	30	$3n$

4. Using the expression containing the variable for finding the perimeter and area of a trapezoid train, find the perimeter and area of a trapezoid train that is composed of 45 trapezoids.

Perimeter of a 45-trapezoid train: _____ triangular length units

Area of a 45-trapezoid train: _____ triangular area units

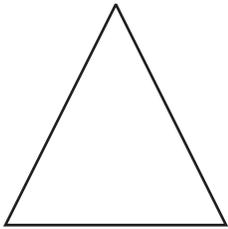
4. Using the expression containing the variable for finding the perimeter and area of a trapezoid train, find the perimeter and area of a trapezoid train that is composed of 45 trapezoids.

Perimeter of a 45-trapezoid train: $\underline{3(45) + 2 = 137}$ triangular length units

Area of a 45-trapezoid train: $\underline{3(45) = 135}$ triangular area units

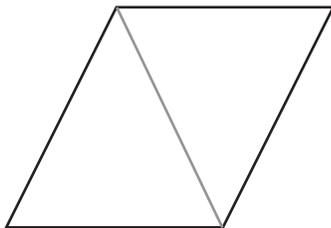
Trying It on Your Own

Use the diagram to answer the question.

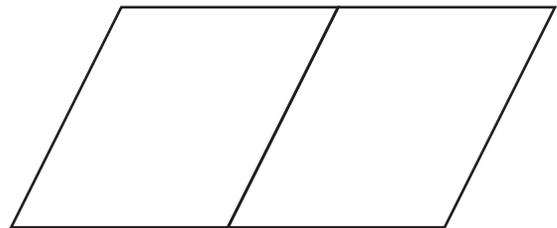


Use the triangle to find the area of the rhombuses in the rhombus train.

Area of the rhombus is 2 triangular area units.



1 rhombus



2 rhombuses

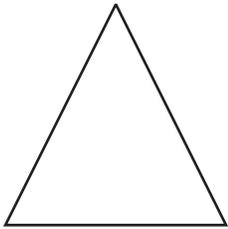
Number of rhombuses	1	2	3	4	n
Area of train (A)	2	4	6		

1. Which of the following describes the pattern of the area in words?

- a. The number of rhombuses plus 1.
- b. The number of rhombuses plus 2.
- c. The number of rhombuses times 2.
- d. The number of rhombuses times 4.

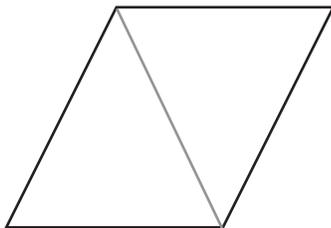
Trying It on Your Own

Use the diagram to answer the question.

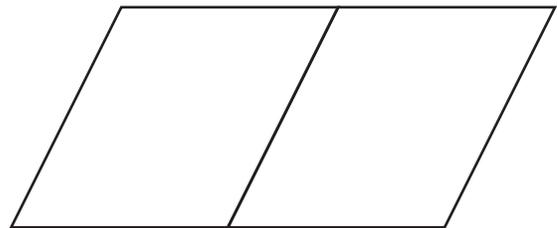


Use the triangle to find the area of the rhombuses in the rhombus train.

Area of the rhombus is 2 triangular area units.



1 rhombus



2 rhombuses

Number of rhombuses	1	2	3	4	n
Area of train (A)	2	4	6		

1. Which of the following describes the pattern of the area in words?

- a. The number of rhombuses plus 1.
- b. The number of rhombuses plus 2.
- c. The number of rhombuses times 2.
- d. The number of rhombuses times 4.

2. Using triangular units, what is the area (A) of a rhombus train when 4 rhombuses are used?

- a. $A = 10$ units
- b. $A = 4$ units
- c. $A = 8$ units
- d. $A = 8$ units

3. What expression can be used to find the area of a rhombus train?

- a. $n + 2$
- b. $n + 1$
- c. $2n$
- d. $2n + 2$

2. Using triangular units, what is the area (A) of a rhombus train when 4 rhombuses are used?

a. $A = 10$ units

b. $A = 4$ units

c. $A = 8$ units

d. $A = 8$ units

3. What expression can be used to find the area of a rhombus train?

a. $n + 2$

b. $n + 1$

c. $2n$

d. $2n + 2$

4. Using the expression selected in number 3 for finding area, what is the area of a 20-rhombus train?
- a. 42 triangular area units
 - b. 40 triangular area units
 - c. 22 triangular area units
 - d. 20 triangular area units

4. Using the expression selected in number 3 for finding area, what is the area of a 20-rhombus train?
- a. 42 triangular area units
 - b. 40 triangular area units
 - c. 22 triangular area units
 - d. 20 triangular area units

Wrapping It Up

Gwen wrote " $w + 10$ " on the board. What do you think she meant by this expression.

Wrapping It Up

Gwen wrote “ $w + 10$ ” on the board. What do you think she meant by this expression.

10 more than w , increase w by 10, add 10 to w , the sum of 10 and w

Warming Up:

Joni multiplied a number by 5, then divided by 2. The answer she got was 15. What number did she start with?

Warming Up:

Joni multiplied a number by 5, then divided by 2. The answer she got was 15. What number did she start with?

6

Learning to Solve:**Order of Operations**

1. Simplify expressions within grouping symbols.
2. Compute all exponents or powers.
3. Compute multiplication and division.
4. Compute addition and subtraction.

Evaluate each expression.

1. $3^2 + 4 \times 5$

The value of the expression is _____.

2. $17 - 16 \div 2 \times 2$

The value of the expression is _____.

3. $5 \times 2^3 + 6 - 10$

The value of the expression is _____.

Learning to Solve:**Order of Operations**

1. Simplify expressions within grouping symbols.
2. Compute all exponents or powers.
3. Compute multiplication and division.
4. Compute addition and subtraction.

Evaluate each expression.

1. $3^2 + 4 \times 5$

The value of the expression is 29.

2. $17 - 16 \div 2 \times 2$

The value of the expression is 1.

3. $5 \times 2^3 + 6 - 10$

The value of the expression is 36.

Practicing Together

Each operational sign in the following expressions has a cloud over it. Number the clouds in the order that the operation should occur. The first problem has been done for you.



1. $36 \div 6^2 + 4 \times 2 + 8$



2. $8 + 3 \times 4 + 10 \div 2 - 2$



3. $20 \div (4 + 6) + 3^2 \times 4$

Simplify each expression using the order of operations. Show how you used the order of operations.

4. $(8 - 5) \times 2 + 7 \times 3$

5. $20 - 12 \div 4 + 10$

Practicing Together

Each operational sign in the following expressions has a cloud over it. Number the clouds in the order that the operation should occur. The first problem has been done for you.

$$2 \quad 1 \quad 4 \quad 3 \quad 5$$

1. $36 \div 6^2 + 4 \times 2 + 8$

$$3 \quad 1 \quad 4 \quad 2 \quad 5$$

2. $8 + 3 \times 4 + 10 \div 2 - 2$

$$3 \quad 1 \quad 5 \quad 2 \quad 4$$

3. $20 \div (4 + 6) + 3^2 \times 4$

Teacher Note:

Order of operations can be flexible. Student answers may vary if they choose to multiply/divide or add/subtract in different order. Computations within a particular operation can be done in any order, not only from left to right. For example, $8 + 5 + 2$ could be solved first by making 10 and then adding 5.

Simplify each expression using the order of operations. Show how you used the order of operations.

4. $(8 - 5) \times 2 + 7 \times 3$

$$3 \times 2 + 7 \times 3$$

$$6 + 21$$

$$27$$

5. $20 - 12 \div 4 + 10$

$$20 - 3 + 10$$

$$17 + 10$$

$$27$$

6. Choose the answer that has correctly used the order of operations.

$$8 - 2(6 - 3)$$

- a. 18
- b. 1
- c. 0
- d. 2

6. Choose the answer that has correctly used the order of operations.

$$8 - 2(6 - 3)$$

a. 18

b. 1

c. 0

d. 2

Trying It on Your Own

Choose the answer that has correctly used the order of operations.

1. $4 + 10 - (5 + 7)$

a. 16

b. 2

c. 15

d. 26

2. $8 \times (8 - 8) \div 9$

a. 6.22

b. 0.59

c. 9

d. 0

Trying It on Your Own

Choose the answer that has correctly used the order of operations.

1. $4 + 10 - (5 + 7)$

a. 16

b. 2

c. 15

d. 26

2. $8 \times (8 - 8) \div 9$

a. 6.22

b. 0.59

c. 9

d. 0

3. $2^3 + 4 \times 5$

- a.** 28
- b.** 26
- c.** 70
- d.** 50

4. Amy had to simplify the expression $1 + 4 \div (9 - 5)$. She started the problem, but then got stuck explaining to her teacher that she did not know how to find $5 \div 4$. What did she do wrong?

- a.** Amy should divided 9 by 4 because you always divide the larger number by the smaller number.
- b.** Amy did not; she just needs to complete division with a decimal.
- c.** Amy should divide 4 by 4 first before she adds.
- d.** Amy added correctly— $1 + 4$ is 5—but then she should divide 4 by 9 and then subtract 5.

3. $2^3 + 4 \times 5$

- a. 28
- b. 26
- c. 70
- d. 50

4. Amy had to simplify the expression $1 + 4 \div (9 - 5)$. She started the problem, but then got stuck explaining to her teacher that she did not know how to find $5 \div 4$. What did she do wrong?

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- b. Amy did not; she just needs to complete division with a decimal.
- c. Amy should divide 4 by 4 first before she adds.
- d. Amy added correctly— $1 + 4$ is 5—but then she should divide 4 by 9 and then subtract 5.

Wrapping It Up

Look at the problem Norah did. Do you agree or disagree with her work? Justify your answer.

$$4 + 8 \div 2 - 1$$

$$12 \div 1$$

Wrapping It Up

Look at the problem Norah did. Do you agree or disagree with her work? Justify your answer.

$$4 + 8 \div 2 - 1$$

$$12 \div 1$$

Disagree, because $8 \div 2 = 4$ and $4 + 4 - 1 = 7$.

Warming Up:**Order of Operations**

1. _____ : Simplify expressions within grouping symbols.
2. _____ : Compute all exponents or powers.
3. _____ : Compute all multiplication and division.
4. _____ : Compute all addition and subtraction.

Practicing Together

Place grouping symbols in each equation to make the statement true.

1. $2 + 3 \times 4 = 20$

2. $3 \times 8 - 3 = 15$

3. $4 \div 4 + 3 \times 7 = 22$

4. Using order of operations, write 2 different equations that result in an answer when evaluated.

5. Which expression is evaluated correctly?

a. $3(4 + 3) - 1 = 14$

b. $3(4 - 3) - 1 = 2$

c. $5^2 + 3 - 5 = 8$

d. $5^2 - 5 - 1 = 4$

Practicing Together

Place grouping symbols in each equation to make the statement true.

1. $2 + 3 \times 4 = 20$

$$(2 + 3) \times 4 = 20$$

2. $3 \times 8 - 3 = 15$

$$3 \times (8 - 3) = 15$$

3. $4 \div 4 + 3 \times 7 = 22$

$$(4 \div 4) + (3 \times 7) = 22$$

4. Using order of operations, write 2 different equations that result in an answer when evaluated.

Answers will vary, such as $(3 \times 4) + 4$; $26 - (5 \times 2)$

5. Which expression is evaluated correctly?

a. $3(4 + 3) - 1 = 14$

b. $3(4 - 3) - 1 = 2$

c. $5^2 + 3 - 5 = 8$

d. $5^2 - 5 - 1 = 4$

Trying It on Your Own

Choose the answer that shows the expressions evaluated correctly.

1. $9^2 + (6 + 6)$

a. 30

b. 54

c. 93

d. 117

2. $10 - 3 + 4 \div 2$

a. 5.5

b. 9

c. 4.5

d. 6

Trying It on Your Own

Choose the answer that shows the expressions evaluated correctly.

1. $9^2 + (6 + 6)$

a. 30

b. 54

c. 93

d. 117

2. $10 - 3 + 4 \div 2$

a. 5.5

b. 9

c. 4.5

d. 6

Choose the expression with the correctly placed grouping symbols to make the statement true.

3. $2 \times 3 \div 2 + 4 = 1$

a. $(2 \times 3) \div 2 + 4$

b. $2 \times (3 \div 2) + 4$

c. $2 \times 3 \div 2 + 4$

d. $2 \times 3 \div (2 + 4)$

4. Brian was told to simplify the expression $8 - 3 \times 2$. He said the answer was 10. Is he correct? Why or why not?

a. He is correct. He subtracted $8 - 3$ and then multiplied 5×2 . The answer is 10.

b. He is incorrect. The answer is 2. He should have multiplied 3×2 first and then subtracted $8 - 6$.

c. He is correct. The answer is 10 because he multiplied 8×2 and then subtracted 3×2 .

d. He is incorrect. You cannot solve this problem because there are no parentheses to tell you what to do first.

Choose the expression with the correctly placed grouping symbols to make the statement true.

3. $2 \times 3 \div 2 + 4 = 1$

a. $(2 \times 3) \div 2 + 4$

b. $2 \times (3 \div 2) + 4$

c. $2 \times 3 \div 2 + 4$

d. $2 \times 3 \div (2 + 4)$

4. Brian was told to simplify the expression $8 - 3 \times 2$. He said the answer was 10. Is he correct? Why or why not?

a. He is correct. He subtracted $8 - 3$ and then multiplied 5×2 . The answer is 10.

b. He is incorrect. The answer is 2. He should have multiplied 3×2 first and then subtracted $8 - 6$.

c. He is correct. The answer is 10 because he multiplied 8×2 and then subtracted 3×2 .

d. He is incorrect. You cannot solve this problem because there are no parentheses to tell you what to do first.

Wrapping It Up

Use at least 3 numbers and at least 2 computations to write an expression that results in an answer of 24.

Wrapping It Up

Use at least 3 numbers and at least 2 computations to write an expression that results in an answer of 24.

Answers will vary. Examples: $6 \times 3 + 6$, $24 \div 12 \times 12$

Warming Up

Cross It Out!

Goal: Use 3 numbers to make the numbers from 1–10.

Record the numbers rolled on the dice. You must use all 3 numbers from the roll of the dice. You may not use any other numbers. You can use any operation, such as addition, subtraction, multiplication, and division.

Record the equations that resulted in a number from 1–10. When you find a number from 1–10, cross it off the board. Try to cross out as many numbers as you can.

When you think you cannot find any more numbers, record the sum of the numbers that are remaining on the board and not crossed off. For example, if you did not cross off 1, 3, and 4, your score would $1 + 3 + 4$, or 8.

You will play as many rounds as there is time. The pair with the lowest score after the game ends is the winner.

Learning to Solve:

$$\square \times \bigcirc = 20 \text{ is the same as}$$

$$a \times b = 20$$

or

$$m(n) = 20$$

or

$$x \cdot y = 20$$

Pick an equation and find the values of the factors that will make the statement true.

Substitute the value 4 for the variable in each problem and then evaluate each expression.

1. $s + 10$

2. $8(c)$

3. $\frac{16}{m}$

4. $9z \div 2 - 15$

5. $6(h + 2) - 2 + 10$

6. $(b + b) \div b$

Learning to Solve:

$$\square \times \bigcirc = 20 \text{ is the same as}$$

$$a \times b = 20$$

or

$$m(n) = 20$$

or

$$x \cdot y = 20$$

Pick an equation and find the values of the factors that will make the statement true.

Answers will vary, such as 1 and 20, 2 and 10, 4 and 5, 40 and 0.5, 50 and 0.4, and so on.

Substitute the value 4 for the variable in each problem and then evaluate each expression.

1. $s + 10 = 14$

2. $8(c) = 32$

3. $\frac{16}{m} = 4$

4. $9z \div 2 - 15 = 3$

5. $6(h + 2) - 2 + 10 = 44$

6. $(b + b) \div b = 2$

Practicing Together

- Both you and your partner will choose a unique number between 5 and 10 to represent the variable x .
- Write your number and your partner's number at the top of the appropriate column.
- Evaluate each expression, using the number you chose and the number your partner chose to represent the variable x , and then fill in the table.

	The number you chose: $x =$	The number your partner chose: $x =$
$x + 2$		
$x - 2$		
$x \div 2$		
$(x + 2)(x - 2)$		
$3x$		
$3x - 1$		

- Emma evaluated an expression and got a result of 37. If the value of the variable is 7, which of the expressions could Emma have evaluated?
 - $5x + 2$
 - $3x$
 - $3x + 7$
 - $3 + 7x$

Practicing Together

- Both you and your partner will choose a unique number between 5 and 10 to represent the variable x .
- Write your number and your partner's number at the top of the appropriate column.
- Evaluate each expression, using the number you chose and the number your partner chose to represent the variable x , and then fill in the table.

Answers will vary. Given the chosen values of $x = 5$ and $x = 6$, the results of evaluating each expression are shown in the table.

	The number you chose: $x = 5$	The number your partner chose: $x = 6$
$x + 2$	7	8
$x - 2$	3	4
$x \div 2$	2.5	3
$(x + 2)(x - 2)$	21	32
$3x$	15	18
$3x - 1$	14	17

4. Emma evaluated an expression and got a result of 37. If the value of the variable is 7, which of the expressions could Emma have evaluated?

- a. $5x + 2$
- b. $3x$
- c. $3x + 7$
- d. $3 + 7x$

Trying It on Your Own

1. Grant told the teacher that he substituted 12 for the value of u . The result was 82.

Which expression did Grant evaluate?

a. $u + 6 + 10$

b. $6 + 10u$

c. $6u + 10$

d. $10u - 6$

2. Kira evaluated the expression $2(n - 5) + 2$ and said that the answer was 10. Which value of n did she use?

a. 8

b. 10

c. 5

d. 9

Trying It on Your Own

1. Grant told the teacher that he substituted 12 for the value of u . The result was 82. Which expression did Grant evaluate?

a. $u + 6 + 10$

b. $6 + 10u$

c. $6u + 10$

d. $10u - 6$

2. Kira evaluated the expression $2(n - 5) + 2$ and said that the answer was 10. Which value of n did she use?

a. 8

b. 10

c. 5

d. 9

Choose the correct answer when each expression is evaluated by substituting the value 10 for each variable.

3. $x + 3(x + 20)$

- a.** 60
- b.** 90
- c.** 100
- d.** 310

4. $7m + 15 - 5m$

- a.** 170
- b.** 17
- c.** 35
- d.** 15

Choose the correct answer when each expression is evaluated by substituting the value 10 for each variable.

3. $x + 3(x + 20)$

a. 60

b. 90

c. 100

d. 310

4. $7m + 15 - 5m$

a. 170

b. 17

c. 35

d. 15

Wrapping It Up

Greg evaluated the expression below and said the value of the expression was 19. What value did he use for the variable?

$$5f + 2 - 8$$

What is the value of f ? _____

Wrapping It Up

Greg evaluated the expression below and said the value of the expression was 19. What value did he use for the variable?

$$5f + 2 - 8$$

What is the value of f ? 5

Warming Up

Cross It Out!

Directions:

We are going to play a game called Cross It Out! The goal is to use 3 numbers to make the numbers from 1–10.

To play, roll 3 dice to get 3 numbers. Record the numbers rolled on the dice. You must use all 3 numbers from the roll of the dice. You may not use any other numbers. You can use any operation, such as addition, subtraction, multiplication, and division, that you want.

Let's try a practice round. Say I rolled 2, 3, and 6. I can make 1 by adding $2 + 3$, then subtracting from 6. I will record my equation to show what I did by writing $6 - (2 + 3) = 1$. On my game board, I would cross 1 out. I can make 5 by subtracting $6 - 3$, then adding 2. I would record $6 - 3 + 2 = 5$. You will keep trying to cross out all the numbers from 1 to 10.

When you think you cannot find any more numbers, record the sum of the numbers that are remaining on the board and not crossed off. For example, if you did not cross off 1, 3, and 4, your score would be $1 + 3 + 4$, or 8.

You will play as many rounds as there is time. The pair with the lowest score after the game ends is the winner.

Practicing Together

Evaluate each expression and write an = or a \neq sign in the blank.

1. $24(3)$ $9 + 1 \cdot 67$

2. $8 + 7 - 6$ 3×3

3. $15 \div 5 \cdot 4$ $8 \cdot 3 \cdot 2$

4. Write 2 different numerical expressions that are equal.

Practicing Together

Evaluate each expression and write an = or a \neq sign in the blank.

1. $24(3)$ $9 + 1 \cdot 67$

2. $8 + 7 - 6$ 3×3

3. $15 \div 5 \cdot 4$ $8 \cdot 3 \cdot 2$

4. Write 2 different numerical expressions that are equal.

Answers will vary, such as $3 + 2 = 10 \div 2$; $10 - 6 = 2 \times 2$

Trying It on Your Own

Choose an expression that represents the same value as the given expression.

1. $4 \div (8 - 6) \div 2 =$

a. $8 \div 4 - 6 \div 2$

b. $7 \div (10 + 4) - 6$

c. $1 \times 1 + 3$

d. $7 \div (10 + 3 - 6)$

2. $5 + 4 - 3 + 9 =$

a. $1 \times 2(4 - 2)$

b. $9 \div 9(8 + 7)$

c. $10 \div 5 \times 3 \times 3$

d. $(10 - (10 - 8)) \times 2$

Trying It on Your Own

Choose an expression that represents the same value as the given expression.

1. $4 \div (8 - 6) \div 2 =$

a. $8 \div 4 - 6 \div 2$

b. $7 \div (10 + 4) - 6$

c. $1 \times 1 + 3$

d. $7 \div (10 + 3 - 6)$

2. $5 + 4 - 3 + 9 =$

a. $1 \times 2(4 - 2)$

b. $9 \div 9(8 + 7)$

c. $10 \div 5 \times 3 \times 3$

d. $(10 - (10 - 8)) \times 2$

3. $81 \div 9 - (8 - 4) =$

a. $(4 \div 4 + 1) + 3$

b. $8 \div 1 + 1$

c. $(3 + 9) \div 4 + 2$

d. $(10 \times 2) - 6 + 5$

4. $9 + (3 - 2) \times 4 =$

a. 4

b. 13

c. 37

d. 40

3. $81 \div 9 - (8 - 4) =$

a. $(4 \div 4 + 1) + 3$

b. $8 \div 1 + 1$

c. $(3 + 9) \div 4 + 2$

d. $(10 \times 2) - 6 + 5$

4. $9 + (3 - 2) \times 4 =$

a. 4

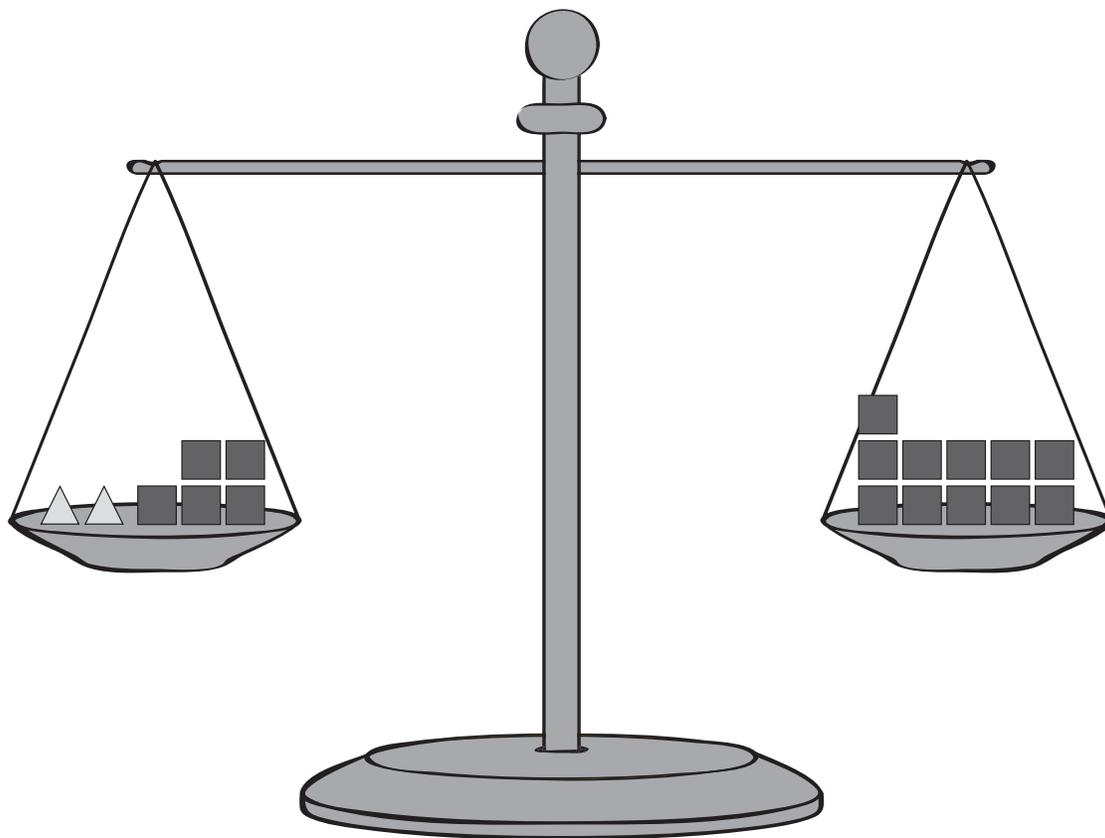
b. 13

c. 37

d. 40

Warming Up:



Warming Up:

$$2x + 5 = 11$$

$$x + x + 5 = 11$$

or any equivalent equation

Practicing Together

1. With your partner, sort the cards into fact families. Each fact family should represent related equations.

2. Which of the following is a fact family?

a. $3 + x = 8$, $x + 3 = 8$, $8 \cdot 3 = x$, $3 \cdot 8 = x$

b. $5 + k = 12$, $7 + k = 12$, $12 - 7 = k$, $12 - 5 = k$

c. $12a = 24$, $24 = 12a$, $12 \div 24 = a$, $12 \div a = 24$

d. $36 \div 9 = x$, $36 \div x = 9$, $9x = 36$, $x(9) = 36$

Practicing Together

1. With your partner, sort the cards into fact families. Each fact family should represent related equations.

2. Which of the following is a fact family?

a. $3 + x = 8$, $x + 3 = 8$, $8 \cdot 3 = x$, $3 \cdot 8 = x$

b. $5 + k = 12$, $7 + k = 12$, $12 - 7 = k$, $12 - 5 = k$

c. $12a = 24$, $24 = 12a$, $12 \div 24 = a$, $12 \div a = 24$

d. $36 \div 9 = x$, $36 \div x = 9$, $9x = 36$, $x(9) = 36$

Trying It on Your Own

Find the related equation and the correct solution for x .

1. $89 = 9 + x$

a. $89 - 9 = x$

$x = 80$

b. $89 + 9 = x$

$x = 98$

c. $\frac{89}{9} = x$

$x = 80$

d. $89(9) = x$

$x = 801$

2. $54 \div x = 3$

a. $54 - 3 = x$

$x = 51$

b. $54(3) = x$

$x = 162$

c. $54 \div 3 = x$

$x = 18$

d. $54 + 3 = x$

$x = 18$

Trying It on Your Own

Find the related equation and the correct solution for x .

1. $89 = 9 + x$

a. $89 - 9 = x$
 $x = 80$

b. $89 + 9 = x$
 $x = 98$

c. $\frac{89}{9} = x$
 $x = 80$

d. $89(9) = x$
 $x = 801$

2. $54 \div x = 3$

a. $54 - 3 = x$
 $x = 51$

b. $54(3) = x$
 $x = 162$

c. $54 \div 3 = x$
 $x = 18$

d. $54 + 3 = x$
 $x = 18$

3. $x(32) = 128$

a. $128 - 32 = x$

$x = 96$

b. $128 \div 32 = x$

$x = 4$

c. $128(32) = x$

$x = 4,096$

d. $128 + 32 = x$

$x = 160$

4. $x - 287 = 532$

a. $532 - 287 = x$

$x = 819$

b. $\frac{532}{287} = x$

$x = 1.85$

c. $532 + 287 = x$

$x = 819$

d. $532(287) = x$

$x = 152,684$

3. $x(32) = 128$

a. $128 - 32 = x$

$x = 96$

b. $128 \div 32 = x$

$x = 4$

c. $128(32) = x$

$x = 4,096$

d. $128 + 32 = x$

$x = 160$

4. $x - 287 = 532$

a. $532 - 287 = x$

$x = 819$

b. $\frac{532}{287} = x$

$x = 1.85$

c. $532 + 287 = x$

$x = 819$

d. $532(287) = x$

$x = 152,684$

Learning to Solve:

Write the algebraic expression for each statement.

1. The product of 6 and n decreased by 4

2. t cubed increased by 3

Write the algebraic expression for each word problem.

3. Jeffery picked some apples. Brian picked 32 fewer apples than Jeffery. Write the algebraic expression that represents this problem.

4. Allen collected 73 shells along the coast. Hazel also collected shells on the coast. Allen and Hazel put their shells together and had a total of 219 shells from their vacation. Write the algebraic expression that represents this problem.

Learning to Solve:

Write the algebraic expression for each statement.

1. The product of 6 and n decreased by 4

$$6n - 4$$

2. t cubed increased by 3

$$t^3 + 3$$

Write the algebraic expression for each word problem.

3. Jeffery picked some apples. Brian picked 32 fewer apples than Jeffery. Write the algebraic expression that represents this problem.

x = the number of apples Jeffery picked

$$x - 32$$

4. Allen collected 73 shells along the coast. Hazel also collected shells on the coast. Allen and Hazel put their shells together and had a total of 219 shells from their vacation. Write the algebraic expression that represents this problem.

z = number of shells Hazel collected

$$73 + z = 219 \text{ or any equivalent form such as } 219 - 73 = z$$

Practicing Together

Match each statement card with the appropriate equation card. In each statement, n represents some number.

$$36 = n \div 12$$

$$36 = n - 12$$

$$36 = 12 - n$$

$$14 = 7n$$

$$12 = n - 9$$

$$2(n + 7) = 14$$

36 is the quotient of a number and 12

12 is 9 less than a number

36 is 12 less than a number

twice the sum of a number and 7 is 14

14 is the product of 7 and a number

36 is some number less than 12

Trying It on Your Own

1. Kerry said, "What expression represents n decreased by the product of 7 and 4?" Which expression answers Kerry's question?

- a. 7×4
- b. $7n - 4$
- c. $4 - 7n$
- d. $n - 7 \times 4$

2. Which expression represents the quotient of b and 7?

- a. $b \div 7$
- b. $7b$
- c. $7 - b$
- d. $b + 7$

Trying It on Your Own

1. Kerry said, "What expression represents n decreased by the product of 7 and 4?" Which expression answers Kerry's question?

- a. 7×4
- b. $7n - 4$
- c. $4 - 7n$
- d. $n - 7 \times 4$

2. Which expression represents the quotient of b and 7?

- a. $b \div 7$
- b. $7b$
- c. $7 - b$
- d. $b + 7$

3. Marcus has some baseball cards. Pete has 5 more cards than Marcus. The number of cards Marcus has is represented by h . Which expression represents the number of cards Pete has?

- a.** $h - 5$
- b.** $h + 5$
- c.** $5h$
- d.** $5 \div h$

4. Marika found some pencils in her backpack. She already had t pencils. Now she has twice as many. Which expression represents the number of pencils Marika has now?

- a.** $t + 2$
- b.** $t - 2$
- c.** $2t$
- d.** $2 \div t$

3. Marcus has some baseball cards. Pete has 5 more cards than Marcus. The number of cards Marcus has is represented by h . Which expression represents the number of cards Pete has?

a. $h - 5$

b. $h + 5$

c. $5h$

d. $5 \div h$

4. Marika found some pencils in her backpack. She already had t pencils. Now she has twice as many. Which expression represents the number of pencils Marika has now?

a. $t + 2$

b. $t - 2$

c. $2t$

d. $2 \div t$

Wrapping It Up

Write an algebraic expression to represent the difference of 8 and w .

Wrapping It Up

Write an algebraic expression to represent the difference of 8 and w .

$$8 - w$$

Warming Up

Yesterday, I brought 4 granola bars to school for a snack. A teacher gave me some more granola bars. What expression could I write to show this relationship?

Warming Up

Yesterday, I brought 4 granola bars to school for a snack. A teacher gave me some more granola bars. What expression could I write to show this relationship?

j = number of granola bars given to me.

$$4 + j$$

Learning to Solve:

Write an equation for word problem 1 and solve word problem 2.

1. Evelyn runs 4 miles every day. How many days until she has run 48 miles?

Equation: _____

2. Brandon bought 6 boxes of cookies. He now has 72 cookies in all. Select an equation that when solved will tell how many cookies were in each box. Let c = the number of cookies in each box.

- a. $c + 6 = 72$
- b. $6c = 72$
- c. $6 + 72 = c$
- d. $c = 72 - 6$

Why did you choose that equation?

Learning to Solve:

Write an equation for word problem 1 and solve word problem 2.

1. Evelyn runs 4 miles every day. How many days until she has run 48 miles?

y = the number of days Evelyn ran

Equation: $4y = 48$

 $y = 12$ days

2. Brandon bought 6 boxes of cookies. He now has 72 cookies in all. Select an equation that when solved will tell how many cookies were in each box. Let c = the number of cookies in each box.

a. $c + 6 = 72$

b. $6c = 72$

c. $6 + 72 = c$

d. $c = 72 - 6$

Why did you choose that equation?

Answers will vary. Students may indicate that (b) is the only option that shows multiplication. This problem represents equal-sized groups so it must be multiplication.

Practicing Together

Write an equation to represent the problem. Solve the problem.

1. Sara shared some pretzels with 2 friends. Each person got 12 pretzels. How many pretzels did Sara have to share?

What is your variable? _____

What does the variable represent? _____

Write your equation and solve it. _____

2. Miguel had some chips. He gave Rhyllie 15 chips. He had 19 chips left. How many chips did Miguel have to start with?

What is your variable? _____

What does the variable represent? _____

Write your equation and solve it. _____

Practicing Together

Write an equation to represent the problem. Solve the problem.

1. Sara shared some pretzels with 2 friends. Each person got 12 pretzels. How many pretzels did Sara have to share?

What is your variable? _____ Accept any variable.

What does the variable represent? _____ the number of pretzels Sara had to share

Accept any equivalent equation.

Write your equation and solve it. _____ $K \div 3 = 12$ or $3(12) = K$

$$K = 36$$

2. Miguel had some chips. He gave Rhyllie 15 chips. He had 19 chips left. How many chips did Miguel have to start with?

What is your variable? _____ Accept any variable.

What does the variable represent? _____ number of chips Miguel had to start with

Accept any equivalent equation.

Write your equation and solve it. _____ $15 + 19 = m$ or $m - 15 = 19$

$$m = 34$$

3. Montez had 27 tiny erasers. His friend gave him some more erasers. He now has 48. How many erasers did his friend give him?

What is your variable? _____

What does the variable represent? _____

Write your equation and solve it. _____

4. Makana had 225 songs in his playlist. He used a gift certificate to buy more songs. He now has 257. Decide which equation and solution process would tell how many songs he bought with his gift certificate.

k = number of songs he bought.

- a.** $225 - k = 257$. To solve, add $225 + 257$.
- b.** $k - 257 = 225$. To solve, add 225 and 257.
- c.** $257 - 225 = k$. To solve, subtract the 2 amounts.
- d.** $225 + k = 257$. To solve, add $225 + 257$.

3. Montez had 27 tiny erasers. His friend gave him some more erasers. He now has 48. How many erasers did his friend give him?

What is your variable? _____ Accept any variable.

What does the variable represent? _____ number of erasers his friend gave him

Accept any equivalent equation.

Write your equation and solve it. _____ $27 + y = 48$

$$y = 21$$

4. Makana had 225 songs in his playlist. He used a gift certificate to buy more songs. He now has 257. Decide which equation and solution process would tell how many songs he bought with his gift certificate.

k = number of songs he bought.

- a. $225 - k = 257$. To solve, add $225 + 257$.
- b. $k - 257 = 225$. To solve, add 225 and 257.
- c. $257 - 225 = k$. To solve, subtract the 2 amounts.
- d. $225 + k = 257$. To solve, add $225 + 257$.

Trying It on Your Own

Answer each question.

1. Kennedy had 218 songs downloaded. She erased some older songs. She now has 187 songs left. Choose the equation and the solution that tells the number of songs she erased.

- a.** $218 - s = 187$. Not enough information to solve for s .
- b.** $218 - s = 187$. Add 218 and 187 to find that $s = 407$.
- c.** $218 + 187 = s$. $s = 407$.
- d.** $218 - s = 187$. Use fact family to subtract 187 from 218 to find that $s = 31$.

2. Grant had to write a word problem to match the algebraic equation $s = (19 + t)3$. Which word problem could he have written?

- a.** Bubba wanted to buy 3 books. The cost of a book is \$19 plus sales tax. What is the cost of 3 books?
- b.** Bubba wanted to buy 3 books. Each book cost \$3 plus \$19 for sales tax. What is the cost of 3 books?
- c.** Bubba wanted to buy 19 books. Each book was \$3. What is the cost of 19 books?
- d.** Bubba wanted to buy 21 books. Each book cost t . What is the cost of the books?

Trying It on Your Own

Answer each question.

1. Kennedy had 218 songs downloaded. She erased some older songs. She now has 187 songs left. Choose the equation and the solution that tells the number of songs she erased.

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- b. $218 - s = 187$. Add 218 and 187 to find that $s = 407$.
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- c. Bubba wanted to buy 19 books. Each book was \$3. What is the cost of 19 books?
- d. Bubba wanted to buy 21 books. Each book cost t . What is the cost of the books?

3. The length of a rope (l) in feet is 4 more than a number, f . Write an expression to find the length of the rope in inches (hint: 1 foot = 12 inches). Reagan wrote " $l = (f + 4)12$." Did she write the correct algebraic equation?

- a.** Yes, because she used the correct numbers.
- b.** No, because the word problem did not have the number 12 in it.
- c.** Yes, because you have to first find out how long the rope is in feet and then multiply by 12 to find total inches.
- d.** No, because she should have multiplied 4 by f because it is 4 more feet than that number.

4. The perimeter of a square is 32 inches. How long is each side? Choose the equation that was correctly used to find the length of each side.

- a.** $p = s + s + s + s$. To solve, add $32 + 32 + 32 + 32$, $p = 128$ inches.
- b.** $32 = s + s + s + s$. To solve, divide 32 by 4, so each side is 8 inches.
- c.** $p = s(s)$. To solve, multiply 32 by 32, so $p = 1,024$ inches.
- d.** $32 = p$

3. The length of a rope (l) in feet is 4 more than a number, f . Write an expression to find the length of the rope in inches (hint: 1 foot = 12 inches). Reagan wrote " $l = (f + 4)12$." Did she write the correct algebraic equation?

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- c.** $p = s(s)$. To solve, multiply 32 by 32, so $p = 1,024$ inches.
- d.** $32 = p$

Wrapping It Up

Work in pairs to play Make It a Rectangle. In this game, you will match the edges of the cards so that an algebraic expression and a word description match up. When you finish, you should have a rectangle that measures 3 cards by 4 cards.

Warming Up

Using n as the variable, write an algebraic expression for each word phrase. Find the path from the start to the end and draw a line through the word phrases that involve multiplication.

START

1 less than a number

6 times n plus 3

5 times a number

4 less than y

w more than 32

2 times n minus 4 plus 14

9 divided by a number

10 times a number plus 40

3 less than 30 multiplied by 5

END

Warming Up

Using n as the variable, write an algebraic expression for each word phrase. Find the path from the start to the end and draw a line through the word phrases that involve multiplication.

The maze contains the following word phrases and algebraic expressions:

- START** (marked with a yellow star)
- $n - 1$ (1 less than a number)
- $6n + 3$ (6 times n plus 3)
- $5n$ (5 times a number)
- $y - 4$ (4 less than y)
- $32 + w$ (w more than 32)
- $2n - 4 + 14$ (2 times n minus 4 plus 14)
- $9 \div n$ (9 divided by a number)
- $10n + 40$ (10 times a number plus 40)
- $30(5) - 3$ (3 less than 30 multiplied by 5)
- END** (marked with a flag)

The path from START to END is highlighted in the image and consists of the following word phrases: "6 times n plus 3", "5 times a number", "2 times n minus 4 plus 14", "10 times a number plus 40", and "3 less than 30 multiplied by 5".

Learning to Solve:

1. $k + 8$

What number added to 8 is equal to 17?

$k = \underline{\hspace{2cm}}$

2. $t - 4 = 7$

$t = \underline{\hspace{2cm}}$

3. $z \div 5 = 3$

$z = \underline{\hspace{2cm}}$

4. $6r = 42$

$r = \underline{\hspace{2cm}}$

5. $2 + 4g = 22$

$2 + \boxed{\hspace{1cm}} = 22$

$g = \underline{\hspace{2cm}}$

Learning to Solve:

1. $k + 8$

What number added to 8 is equal to 17?

$k = \underline{9}$

2. $t - 4 = 7$

$t = \underline{11}$

3. $z \div 5 = 3$

$z = \underline{15}$

4. $6r = 42$

$r = \underline{7}$

5. $2 + 4g = 22$

$2 + \boxed{20} = 22$

$g = \underline{5} \quad 2 + 4(5) = 22$

Practicing Together

Solve the equations. Describe in words how you found the value of the variable.

1. $3y = 42$

$y =$ _____

Describe how you found the value of y .

2. $3y + 3 = 45$

$y =$ _____

Describe how you found the value of y .

3. $14 + 2y = 30$

$y =$ _____

Describe how you found the value of y .

Practicing Together

Solve the equations. Describe in words how you found the value of the variable.

1. $3y = 42$

$$y = \underline{14}$$

Describe how you found the value of y .

Answers will vary, such as divided 42 by 3.

2. $3y + 3 = 45$

$$y = \underline{14}$$

Describe how you found the value of y .

Answers will vary, such as subtracted 3 from 45 (42), then divided 42 by 3.

3. $14 + 2y = 30$

$$y = \underline{8}$$

Describe how you found the value of y .

Answers will vary, such as subtracted 14 from 30 (16), then divided 16 by 2.

4. Solve by inspection or cover up method. $2(k + 3) = 18$

a. $k = 9$

b. $k = 15$

c. $k = 6$

d. $k = 16$

4. Solve by inspection or cover up method. $2(k + 3) = 18$

a. $k = 9$

b. $k = 15$

c. $k = 6$

d. $k = 16$

Trying It on Your Own

Solve each equation by inspection alone or by cover and inspection.

1. $2j + 7 = 11$

a. $j = 4$

b. $j = 2$

c. $j = 9$

d. $j = 22$

2. $5d - 6 = 24$

a. $d = 6$

b. $d = 30$

c. $d = 18$

d. $d = 11$

Trying It on Your Own

Solve each equation by inspection alone or by cover and inspection.

1. $2j + 7 = 11$

a. $j = 4$

b. $j = 2$

c. $j = 9$

d. $j = 22$

2. $5d - 6 = 24$

a. $d = 6$

b. $d = 30$

c. $d = 18$

d. $d = 11$

3. $8w = 56$

a. $w = 48$

b. $w = 448$

c. $w = 7$

d. $w = 6$

4. $2s - 4 = 12$

a. $s = 8$

b. $s = 16$

c. $s = 18$

d. $s = 2$

3. $8w = 56$

a. $w = 48$

b. $w = 448$

c. $w = 7$

d. $w = 6$

4. $2s - 4 = 12$

a. $s = 8$

b. $s = 16$

c. $s = 18$

d. $s = 2$

Warming Up:

Order of operations:

1. G: _____

2. E: _____

3. M: _____

4. S: _____

Evaluate each expression, using the order of operations.

7. $(15 + 38 - 3) \div 2$

8. $5 \cdot 11(8 - 3)$

9. $(8 + 4) + 25(3)$

Warming Up:

Order of operations:

1. G: Grouping symbols2. E: Exponents or powers3. M: Multiplication and division4. S: Subtraction and addition

Evaluate each expression, using the order of operations.

$$7. (15 + 38 - 3) \div 2$$
$$\underline{25}$$

$$8. 5 \cdot 11(8 - 3)$$
$$\underline{275}$$

$$9. (8 + 4) + 25(3)$$
$$\underline{87}$$

Learning to Solve

1. $2h - 8 = 84$

h	$2h - 8$	84
10	12	84
30	52	84
		84
		84
		84
		84
		84
		84
		84
		84

The solution to the equation is $h =$ _____.

2. $2x + 3 = 27$

x	$2x + 3$	27
		27
		27
		27
		27
		27
		27
		27
		27
		27
		27

The solution to the equation is $x =$ _____.

Learning to Solve

1. $2h - 8 = 84$

h	$2h - 8$	84
10	12	84
30	52	84
		84
		84
		84
		84
		84
		84
		84
		84

Answers will vary, depending on their guesses for h .

The solution to the equation is $h = \underline{\quad 46 \quad}$.

2. $2x + 3 = 27$

x	$2x + 3$	27
		27
		27
		27
		27
		27
		27
		27
		27
		27
		27

Answers will vary, depending on their guesses for x .

The solution to the equation is $x = \underline{\quad 12 \quad}$.

Practicing Together

Use the tables to solve the equations.

1. $3y + 1 = 34$

y	$3y + 1$	34
		34
		34
		34
		34
		34
		34
		34
		34
		34
		34

The solution to the equation is $y =$ _____.

2. $4w - 3 = 33$

w	$4w + 3$	33
		33
		33
		33
		33
		33
		33
		33
		33
		33
		33

The solution to the equation is $w =$ _____.

Practicing Together

Use the tables to solve the equations.

1. $3y + 1 = 34$

y	$3y + 1$	34
		34
		34
		34
		34
		34
		34
		34
		34
		34
		34
		34

Answers will vary, depending on their guesses for y .

The solution to the equation is $y = \underline{\quad 11 \quad}$.

2. $4w - 3 = 33$

w	$4w + 3$	33
		33
		33
		33
		33
		33
		33
		33
		33
		33
		33
		33

Answers will vary, depending on their guesses for w .

The solution to the equation is $w = \underline{\quad 9 \quad}$.

3. $60 = 100 - 5y$

y	$100 - 5y$	60
		60
		60
		60
		60
		60
		60
		60
		60
		60
		60

The solution to the equation is $y =$ _____.

4. $15 = 0.5y$

y	$0.5y$	15
		15
		15
		15
		15
		15
		15
		15
		15
		15
		15

The solution to the equation is $y =$ _____.

3. $60 = 100 - 5y$

y	$100 - 5y$	60
		60
		60
		60
		60
		60
		60
		60
		60
		60
		60

Answers will vary, depending on their guesses for y .

The solution to the equation is $y = \underline{\quad 8 \quad}$.

4. $15 = 0.5y$

y	$0.5y$	15
		15
		15
		15
		15
		15
		15
		15
		15
		15
		15

Answers will vary, depending on their guesses for y .

The solution to the equation is $y = \underline{\quad 30 \quad}$.

Trying It on Your Own

1. $28 = 0.4x$. Find the solution to the equation.

a. $x = 7$

b. $x = 27.6$

c. $x = -70$

d. $x = 70$

2. $35 = 7x$. Find the solution to the equation.

a. $x = 28$

b. $x = 5$

c. $x = -5$

d. $x = 42$

Trying It on Your Own

1. $28 = 0.4x$. Find the solution to the equation.

a. $x = 7$

b. $x = 27.6$

c. $x = -70$

d. $x = 70$

2. $35 = 7x$. Find the solution to the equation.

a. $x = 28$

b. $x = 5$

c. $x = -5$

d. $x = 42$

3. $8a(4) = 192$. Find the solution to the equation.

- a. $a = 160$
- b. $a = 384$
- c. $a = 6,144$
- d. $a = 6$

4. The teacher gave this problem to the class to solve: $66 = 30 + 9y$. James said that the answer was $y = 36$. Lei disagreed, saying that $y = 4$. Who is right?

- a. James is right because the $30 + 36 = 66$, so y has to equal 36.
- b. Lei is right because $9y = 36$, and $36 - 66 = 30$.
- c. Lei is right because $9y = 36$, and $36 + 30 = 66$.
- d. They are both wrong. The correct answer should be $y = -4$ because you first subtract 9 from both sides, and $(-9)(-4) = 36$, and $66 - 36 = 30$.

3. $8a(4) = 192$. Find the solution to the equation.

- a. $a = 160$
- b. $a = 384$
- c. $a = 6,144$
- d. $a = 6$

4. The teacher gave this problem to the class to solve: $66 = 30 + 9y$. James said that the answer was $y = 36$. Lei disagreed, saying that $y = 4$. Who is right?

- a. James is right because the $30 + 36 = 66$, so y has to equal 36.
- b. Lei is right because $9y = 36$, and $36 - 66 = 30$.
- c. Lei is right because $9y = 36$, and $36 + 30 = 66$.
- d. They are both wrong. The correct answer should be $y = -4$ because you first subtract 9 from both sides, and $(-9)(-4) = 36$, and $66 - 36 = 30$.

Warming Up:

1. $y + 14 = 125$

Fact Family:

$y = \underline{\hspace{2cm}}$

2. $136 \div b = 68$

Fact Family:

$b = \underline{\hspace{2cm}}$

3. $384 - m = 104$

Fact Family:

$m = \underline{\hspace{2cm}}$

4. $85h = 425$

Fact Family:

$h = \underline{\hspace{2cm}}$

Warming Up:

1. $y + 14 = 125$

Fact Family:

$14 + y = 125$

$125 - 14 = y$

$125 - y = 14$

$y = \underline{111}$

2. $136 \div b = 68$

Fact Family:

$136 \div 68 = b$

$b \cdot 68 = 136$

$68 \cdot b = 136$

$b = \underline{2}$

3. $384 - m = 104$

Fact Family:

$384 - 104 = m$

$104 + m = 384$

$m + 104 = 384$

$m = \underline{280}$

4. $85h = 425$

Fact Family:

$h(85) = 425$

$425 \div h = 85$

$425 \div 85 = h$

$h = \underline{5}$

Learning to Solve

Tori earns \$8 per hour pet sitting. If Tori works 12 hours pet sitting her neighbor's dogs, how much money would she make?

What are we trying to find? Solve the problem.

Juan bought 54 stamps at the post office on 34th Street. After he used some stamps, he had 36 stamps remaining. How many stamps did he use?

What are we trying to find? Solve the problem.

Learning to Solve

Tori earns \$8 per hour pet sitting. If Tori works 12 hours pet sitting her neighbor's dogs, how much money would she make?

What are we trying to find? Solve the problem.

How much money Tori would make

Let x = the amount of money she will make

$$8(12) = x$$

$$x = 96$$

Juan bought 54 stamps at the post office on 34th Street. After he used some stamps, he had 36 stamps remaining. How many stamps did he use?

What are we trying to find? Solve the problem.

How many stamps Juan will use

Let x = number of stamps

$$54 - x = 36$$

$$54 - 36 = x$$

$$x + 36 = 54$$

$$x = 18$$

Practicing Together

1. Sylvia rode the Ferris wheel 8 times, which was 4 times as many times as she rode the bumper cars at the state fair. How many times did Sylvia ride the bumper cars at the fair?

2. Maria bought \$50 worth of golf products last month, which was \$12 more than Jesse had spent. How much did Jesse spend on golf products?

Practicing Together

1. Sylvia rode the Ferris wheel 8 times, which was 4 times as many times as she rode the bumper cars at the state fair. How many times did Sylvia ride the bumper cars at the fair?

$$8 = 4x$$

$$x = 2$$

2. Maria bought \$50 worth of golf products last month, which was \$12 more than Jesse had spent. How much did Jesse spend on golf products?

$$\$50 - \$12$$

$$x = \$38$$

Trying It on Your Own

Choose the correct solution for each problem.

1. Marcus has 124 baseball rookie cards, which is twice as many cards as Stanley. How many cards does Stanley have?

- a.** 62 cards
- b.** 122 cards
- c.** 248 cards
- d.** 126 cards

2. Owen's baseball team raised \$3,240. This amount is \$20 less than 2 times as much as the money his sister's softball team raised. How much money did Owen's sister's team raise?

- a.** \$6,480
- b.** \$1,610
- c.** \$1,630
- d.** \$1,160

Trying It on Your Own

Choose the correct solution for each problem.

1. Marcus has 124 baseball rookie cards, which is twice as many cards as Stanley. How many cards does Stanley have?

- a. 62 cards
- b. 122 cards
- c. 248 cards
- d. 126 cards

2. Owen's baseball team raised \$3,240. This amount is \$20 less than 2 times as much as the money his sister's softball team raised. How much money did Owen's sister's team raise?

- a. \$6,480
- b. \$1,610
- c. \$1,630
- d. \$1,160

3. Sarah wrote 9 stories in the month of June, which is 6 less than three times the number of stories her friend, Janice, wrote. How many stories did Janice write? Choose the equation that can be used to solve for the number of stories Janice wrote.

a. $3x + 9 = 6$

b. $9x + 6 = 3$

c. $3x - 6 = 9$

d. $9x - 3 = 6$

4. Paul played his favorite video game 12 times on Sunday, which is 2 more than twice the number of times he played the game on Saturday. Choose the equation that can be used to solve for the number of times Paul played the game on Saturday.

a. $2x + 12 = 2$

b. $2x + 5 = 12$

c. $2x - 2 = 12$

d. $2x + 2 = 12$

3. Sarah wrote 9 stories in the month of June, which is 6 less than three times the number of stories her friend, Janice, wrote. How many stories did Janice write? Choose the equation that can be used to solve for the number of stories Janice wrote.

a. $3x + 9 = 6$

b. $9x + 6 = 3$

c. $3x - 6 = 9$

d. $9x - 3 = 6$

4. Paul played his favorite video game 12 times on Sunday, which is 2 more than twice the number of times he played the game on Saturday. Choose the equation that can be used to solve for the number of times Paul played the game on Saturday.

a. $2x + 12 = 2$

b. $2x + 5 = 12$

c. $2x - 2 = 12$

d. $2x + 2 = 12$

Wrapping It Up

Directions:

You will work in pairs to play Make It a Rectangle. In this game, you will match the edges of the cards so that an algebraic expression and a word description match up. When you finish, you should have a rectangle that measures 3 cards by 4 cards.

Warming Up:

Pair with a partner.

Each pair is given a set of cards. The cards labeled with an E are expression cards. The cards labeled with a W are the word cards. In your pair, you are to match the word statement that goes with the expression.

Learning to Solve

Translate each sentence into an expression with a variable.

1. James earns \$20 each time he mows a lawn. If he mows 6 lawns over a weekend, how much money would he make?

$$6(20) = x$$

$$x = \$120$$

2. Jenna scored 12 runs for her softball team in the first 6 games of the season. During the next 2 games, she did not score. In her next game, she scored 6 runs. How many runs did Jenna score per game?

$$12 + 0 + 6 = x$$

$$18 \div 9 = x$$

$$x = 2$$

Practicing Together

Solve each word problem. Write an equation that could be used to solve the problem.

Michelle had \$132 in her savings account. She withdrew some money and now has \$80 left in her account. How much money did she withdraw?

1. Write an equation that could be used to solve the problem. Be sure to show what your variable represents.

2. Show how you solved the equation.

3. How much money did she withdraw?

Peter exercises a certain number of minutes 3 days per week. In 2 weeks, he has exercised a total of 1,200 minutes. How many minutes does he exercise each day?

4. Write an equation that could be used to solve this problem. Be sure to show what your variable represents.

5. Show how you solved the equation.

6. How many minutes does he exercise each day?

Practicing Together

Solve each word problem. Write an equation that could be used to solve the problem.

Michelle had \$132 in her savings account. She withdrew some money and now has \$80 left in her account. How much money did she withdraw?

1. Write an equation that could be used to solve the problem. Be sure to show what your variable represents.

$$132 - x = 80, 132 - 80 = x, x + 80 = 132$$

2. Show how you solved the equation.

Answers will vary but should involve using a variable in an equation to represent the amount withdrawn.

3. How much money did she withdraw? \$52

Peter exercises a certain number of minutes 3 days per week. In 2 weeks, he has exercised a total of 1,200 minutes. How many minutes does he exercise each day?

4. Write an equation that could be used to solve this problem. Be sure to show what your variable represents.

$$\frac{1,200}{6} = x, 6x = 1,200$$

5. Show how you solved the equation.

Answers will vary but should involve using a variable in an equation to represent the number of minutes Peter exercises each day.

6. How many minutes does he exercise each day? 200 minutes

7. Natalie bought 3 pants that each cost the same amount. She also bought 2 pairs of shoes that each cost \$30. How much did she spend at the mall? Select an expression that represents the amount of money she spent.

a. $d + d + d + 30 + 30$

b. $60 + d$

c. $d(3) + 30$

d. $5 \cdot d$

8. Randy bought 19 new books to add to his collection. How many total books does he own now? Select the expression that shows how many total books he has.

a. $19 + 19$

b. $19 - k$

c. $19 + k$

d. $19 \cdot k$

7. Natalie bought 3 pants that each cost the same amount. She also bought 2 pairs of shoes that each cost \$30. How much did she spend at the mall? Select an expression that represents the amount of money she spent.

- a. $d + d + d + 30 + 30$
- b. $60 + d$
- c. $d(3) + 30$
- d. $5 \cdot d$

8. Randy bought 19 new books to add to his collection. How many total books does he own now? Select the expression that shows how many total books he has.

- a. $19 + 19$
- b. $19 - k$
- c. $19 + k$
- d. $19 \cdot k$

Trying It on Your Own

1. At the deli, Julie bought some roast beef for \$3.72 per pound. She is planning a party for 12 friends and needs to buy 6 pounds. How much will 6 pounds of roast beef cost?

- a. \$0.62
- b. \$22.32
- c. \$44.64
- d. \$34.32

2. Sean needs to divide his football card collection equally among 9 friends. If he has 234 cards, how many cards will he give each friend?

- a. 2,106 cards
- b. 225 cards
- c. 16 cards
- d. 26 cards

Trying It on Your Own

1. At the deli, Julie bought some roast beef for \$3.72 per pound. She is planning a party for 12 friends and needs to buy 6 pounds. How much will 6 pounds of roast beef cost?

- a. \$0.62
- b. \$22.32
- c. \$44.64
- d. \$34.32

2. Sean needs to divide his football card collection equally among 9 friends. If he has 234 cards, how many cards will he give each friend?

- a. 2,106 cards
- b. 225 cards
- c. 16 cards
- d. 26 cards

3. There is a special sale online to download a pop star's newest songs. Sally downloaded 4 songs and spent \$1.28. How much was each song? Choose the best equation to represent the problem.

- a.** $4x = \$1.28$
- b.** $\$1.28 \div 4 = x$
- c.** Both a and b could be used.
- d.** Neither a nor b is the correct equation.

4. Kara bought 3 pounds of apples. Each pound cost the same amount. She spent \$7.47. Which equation could be used to find the cost of 1 pound of apples?

- a.** $3(\$7.47) = x$
- b.** $\$7.47 - 3 = x$
- c.** $\$7.47 \div 3 = x$
- d.** $\$7.47 + 3 = x$

3. There is a special sale online to download a pop star's newest songs. Sally downloaded 4 songs and spent \$1.28. How much was each song? Choose the best equation to represent the problem.

a. $4x = \$1.28$

b. $\$1.28 \div 4 = x$

c. Both a and b could be used.

d. Neither a nor b is the correct equation.

4. Kara bought 3 pounds of apples. Each pound cost the same amount. She spent \$7.47. Which equation could be used to find the cost of 1 pound of apples?

a. $3(\$7.47) = x$

b. $\$7.47 - 3 = x$

c. $\$7.47 \div 3 = x$

d. $\$7.47 + 3 = x$

Warming Up

The 249 students who listed “sports” as their favorite thing to do outside of school were 12 less than 3 times the number of students who listed “watching TV” as their favorite pastime. Write an equation and solve for the variable. Be sure to identify what your variable represents.

Equation: _____

Warming Up

The 249 students who listed “sports” as their favorite thing to do outside of school were 12 less than 3 times the number of students who listed “watching TV” as their favorite pastime. Write an equation and solve for the variable. Be sure to identify what your variable represents.

Equations may vary, such as

Equation:
$$\frac{3x - 12 = 249}{x = 87}$$

Practicing Together

Work with a partner to solve.

- 1.** Jaci sold gift wrap as part of his school's fundraising for a band trip. He sold 4 rolls of print gift wrap at \$6 per roll. He sold 6 rolls of holiday gift wrap at \$5 per roll. How much total money did he collect from selling the gift wrap? Write an equation that shows your solution.

- 2.** Sara sold gift wrap, too. She sold 8 rolls of print gift wrap at \$6 per roll. She also sold k rolls of holiday gift wrap at \$5 per roll. She collected a total of \$118. How many rolls of holiday gift wrap did she sell? Use an equation to solve the problem.

- 3.** Juan sold 6 rolls of print gift wrap. He sold 4 less than twice as many rolls of holiday gift wrap. How many rolls of gift wrap did he sell altogether? Use an equation to solve the problem. Identify your variable.

- 4.** Erin sold holiday wrap and collected \$150. Casey collected \$10 more than half the amount Erin collected. How much did they collect altogether? Use an equation to solve the problem. Be sure to identify the variable.

Practicing Together

Work with a partner to solve.

1. Jaci sold gift wrap as part of his school's fundraising for a band trip. He sold 4 rolls of print gift wrap at \$6 per roll. He sold 6 rolls of holiday gift wrap at \$5 per roll. How much total money did he collect from selling the gift wrap? Write an equation that shows your solution.

Answers may vary.

$$\begin{aligned} \text{For example, } 4(6) + 6(5) &= 24 + 30 \\ &= 54 \end{aligned}$$

2. Sara sold gift wrap, too. She sold 8 rolls of print gift wrap at \$6 per roll. She also sold k rolls of holiday gift wrap at \$5 per roll. She collected a total of \$118. How many rolls of holiday gift wrap did she sell? Use an equation to solve the problem.

$$\begin{aligned} 48 + 5k &= 118 \\ k &= 14 \text{ rolls of holiday gift wrap} \end{aligned}$$

3. Juan sold 6 rolls of print gift wrap. He sold 4 less than twice as many rolls of holiday gift wrap. How many rolls of gift wrap did he sell altogether? Use an equation to solve the problem. Identify your variable.

$$\begin{aligned} k &= \text{total number of rolls of gift wrap sold} \\ 6 + (2)(6) - 4 &= k \\ k &= 14 \text{ rolls of gift wrap} \end{aligned}$$

4. Erin sold holiday wrap and collected \$150. Casey collected \$10 more than half the amount Erin collected. How much did they collect altogether? Use an equation to solve the problem. Be sure to identify the variable.

Answers may vary.

Let w = the amount they collected together

$$\begin{aligned} w &= 150 + \frac{1}{2}(150) + 10 \\ w &= \$235 \end{aligned}$$

Trying It on Your Own

Use the following information to answer each question.

The Math Camp likes to make a snack mix for each camper. The following ingredients go into 1 serving of the snack mix:

- 2 cups of chocolate candies
- 1 cup of almonds
- 1 cup of peanuts
- 3 cups of raisins

The cost of each serving of snack mix is \$3.25.

1. How many cups of chocolate candies are needed for 6 servings of snack mix?

- a.** 4 cups
- b.** 6 cups
- c.** 8 cups
- d.** 12 cups

2. How many cups of raisins are needed to make 10 servings of snack mix?

- a.** 10 cups
- b.** 20 cups
- c.** 30 cups
- d.** 13 cups

Trying It on Your Own

Use the following information to answer each question.

The Math Camp likes to make a snack mix for each camper. The following ingredients go into 1 serving of the snack mix:

- 2 cups of chocolate candies
- 1 cup of almonds
- 1 cup of peanuts
- 3 cups of raisins

The cost of each serving of snack mix is \$3.25.

1. How many cups of chocolate candies are needed for 6 servings of snack mix?

- a. 4 cups
- b. 6 cups
- c. 8 cups
- d. 12 cups

2. How many cups of raisins are needed to make 10 servings of snack mix?

- a. 10 cups
- b. 20 cups
- c. 30 cups
- d. 13 cups

3. Let h be the number of campers. What expression could be used to determine the number of peanuts and almonds needed to make the snack mix?

- a.** $h + 2$
- b.** $h(1) + h(1)$
- c.** $h + h + 1$
- d.** $h + 1 + h(1)$

4. The last day of the camp was busy. A total of 78 cups of raisins were used to make the snack mix. How many cups of chocolate candies, almonds, and peanuts were used? How could you solve?

- a.** Find out how many servings of raisins were in the snack mix by dividing 78 by 3, so $78 \div 3 = 26$. Then, multiply the other ingredients by the quotient, so $26(2) + 26(1) + 26(1)$.
- b.** Multiply 78 times the amount of each ingredient. Then, add all the products, so $78(2) + 78(1) + 78(1)$.
- c.** Divide 78 by each ingredient and then add. $78 \div 2 + 78 \div 1 + 78 \div 1 + 78 \div 3$.
- d.** First, add all of the amounts of each ingredient. Then, multiply the sum by 78.

3. Let h be the number of campers. What expression could be used to determine the number of peanuts and almonds needed to make the snack mix?

- a. $h + 2$
- b.** $h(1) + h(1)$
- c. $h + h + 1$
- d. $h + 1 + h(1)$

4. The last day of the camp was busy. A total of 78 cups of raisins were used to make the snack mix. How many cups of chocolate candies, almonds, and peanuts were used? How could you solve?

- a.** Find out how many servings of raisins were in the snack mix by dividing 78 by 3, so $78 \div 3 = 26$. Then, multiply the other ingredients by the quotient, so $26(2) + 26(1) + 26(1)$.
- b.** Multiply 78 times the amount of each ingredient. Then, add all the products, so $78(2) + 78(1) + 78(1)$.
- c.** Divide 78 by each ingredient and then add. $78 \div 2 + 78 \div 1 + 78 \div 1 + 78 \div 3$.
- d.** First, add all of the amounts of each ingredient. Then, multiply the sum by 78.

Appendices

EXPRESSIONS AND EQUATIONS 1

Warming Up:

Find the unknown or missing value that makes the equation true.

1. $11.1 + \bigcirc = 14.1$

2. $\frac{7}{2} - \frac{1}{2} = \underline{\hspace{2cm}}$

3. $\underline{\hspace{2cm}} \times 2 = 8.6$

4. $30 + \square = 34$

5. $n + 11.1 = 14.1$

$n = \underline{\hspace{2cm}}$

Warming Up:

Find the unknown or missing value that makes the equation true.

1. $11.1 + \textcircled{3} = 14.1$

2. $\frac{7}{2} - \frac{1}{2} = \underline{\frac{6}{2}}$ or 3

3. $\underline{4.3} \times 2 = 8.6$

4. $30 + \boxed{4} = 34$

5. $n + 11.1 = 14.1$

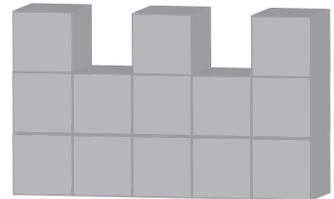
$n = \underline{3}$

Learning to Solve:

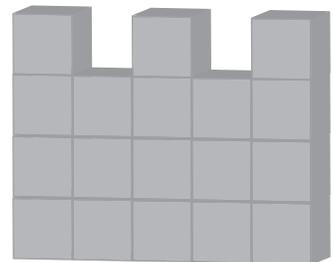
1. Write the different ways to represent 3 times 4.
2. Write the different ways to represent 15 divided by 5.

Cube problem:

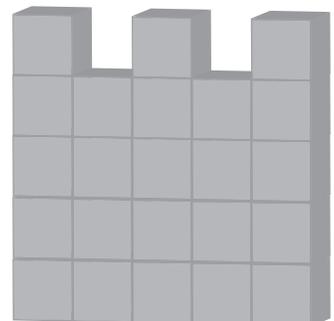
The walls of the entrance to a new amusement park look like towers. The walls with towers that are 3 stories tall take 13 concrete blocks to build.



The walls with towers that are 4 stories tall take 18 concrete blocks to build.



The walls with towers that are 5 stories tall take 23 concrete blocks to build.



Learning to Solve:

1. Write the different ways to represent 3 times 4.

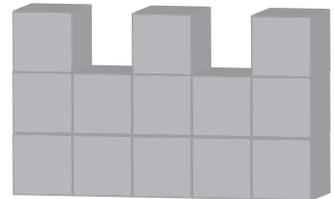
$$3 \times 4, 3 \cdot 4, 3 * 4, 3(4)$$

2. Write the different ways to represent 15 divided by 5.

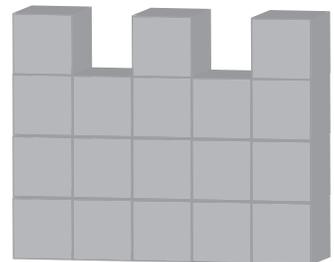
$$15 \div 5, \frac{15}{5}, 5 \overline{)15}$$

Cube problem:

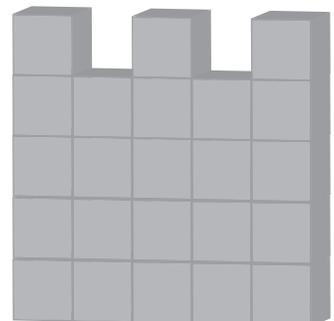
The walls of the entrance to a new amusement park look like towers. The walls with towers that are 3 stories tall take 13 concrete blocks to build.



The walls with towers that are 4 stories tall take 18 concrete blocks to build.



The walls with towers that are 5 stories tall take 23 concrete blocks to build.



Using the diagrams on the previous page, answer the following questions.

A. How many concrete blocks are needed to build a wall for the amusement park with towers that are 10 stories tall? _____

Describe or show the method you used to determine your answer.

B. How many concrete blocks are needed to build a wall for the amusement park with towers that are 15 stories tall? _____

C. How many concrete blocks are needed to build a wall for the amusement park with towers that are 100 stories tall? _____

D. Write a sentence that would tell someone outside of class how to find the number of concrete blocks needed to build a wall with towers of any number of stories.

h represents: _____

An expression to represent my sentence is: _____

Using the diagrams on the previous page, answer the following questions.

A. How many concrete blocks are needed to build a wall for the amusement park with towers that are 10 stories tall? 48 concrete blocks

Describe or show the method you used to determine your answer.

Answers will vary, such as 9 stories times 5 blocks = 45; add 3 more for 48

B. How many concrete blocks are needed to build a wall for the amusement park with towers that are 15 stories tall? 73 concrete blocks

C. How many concrete blocks are needed to build a wall for the amusement park with towers that are 100 stories tall? 498 concrete blocks

D. Write a sentence that would tell someone outside of class how to find the number of concrete blocks needed to build a wall with towers of any number of stories.

A possible sentence: To find the concrete blocks needed to make a wall, multiply the number of stories by 4 and then add 2 less than the number of stories

h represents: number of stories of the tower

An expression to represent my sentence is: $4h + (h - 2)$

Complete the table.

Number of Stories	Concrete Blocks Needed
3	
4	
5	
10	
15	
100	
110	

Complete the table.

Number of Stories	Concrete Blocks Needed
3	13
4	18
5	23
10	48
15	73
100	498
110	548

Practicing Together

The construction foreman has been given 148 concrete blocks to build the wall for the amusement park. How many stories tall will the wall be?

1. Solve the problem.
2. Using your own words, explain how you found your answer.

Translate each sentence into an expression, using a variable.

3. Laci received a \$250 donation and will also earn \$5 for each mile she walks in the walkathon. Write an expression that represents the total amount of money she will earn.
4. The ingredients for multiple batches of orange juice are shown in the table. What expression represents the amount of concentrate and water needed to make an unknown number of batches of orange juice, m ?

Orange Juice Mixture Amounts		
Batches of Juice	Concentrate	Water
1	2 cups	3 cups
2	4 cups	6 cups
3	6 cups	9 cups
4	8 cups	12 cups

Practicing Together

The construction foreman has been given 148 concrete blocks to build the wall for the amusement park. How many stories tall will the wall be?

1. Solve the problem. 30 stories
2. Using your own words, explain how you found your answer.

Answers will vary, such as, To find the number of rows needed to make a wall, I divided the number of blocks (148) by 5 (29) and then added 1 story.

Translate each sentence into an expression, using a variable.

3. Laci received a \$250 donation and will also earn \$5 for each mile she walks in the walkathon. Write an expression that represents the total amount of money she will earn.

$5r + 250$ where r is the number of miles Laci walks

4. The ingredients for multiple batches of orange juice are shown in the table. What expression represents the amount of concentrate and water needed to make an unknown number of batches of orange juice, m ?

$2m + 3m$ where m is the number of batches of orange juice.

Orange Juice Mixture Amounts		
Batches of Juice	Concentrate	Water
1	2 cups	3 cups
2	4 cups	6 cups
3	6 cups	9 cups
4	8 cups	12 cups

Trying It On Your Own

Janie owns a bakery and decorates cakes each day. The table shows the profit in dollars that Janie will receive when she makes a certain number of cakes.

Number of cakes	1	2	3	4	5	10	12
Profit	1	3	5		9		

1. What numbers should be placed in the table, assuming the same pattern continues? Select the correct completed table, using the rule for the relationship between number of cakes and profit.

a.

Number of cakes	1	2	3	4	5	10	12
Profit	1	3	5	6	9	10	11

b.

Number of cakes	1	2	3	4	5	10	12
Profit	1	3	5	6	9	12	14

c.

Number of cakes	1	2	3	4	5	10	12
Profit	1	3	5	7	9	19	23

d.

Number of cakes	1	2	3	4	5	10	12
Profit	1	3	5	16	9	20	24

Trying It On Your Own

Janie owns a bakery and decorates cakes each day. The table shows the profit in dollars that Janie will receive when she makes a certain number of cakes.

Number of cakes	1	2	3	4	5	10	12
Profit	1	3	5		9		

1. What numbers should be placed in the table, assuming the same pattern continues? Select the correct completed table, using the rule for the relationship between number of cakes and profit.

a.

Number of cakes	1	2	3	4	5	10	12
Profit	1	3	5	6	9	10	11

b.

Number of cakes	1	2	3	4	5	10	12
Profit	1	3	5	6	9	12	14

c.

Number of cakes	1	2	3	4	5	10	12
Profit	1	3	5	7	9	19	23

d.

Number of cakes	1	2	3	4	5	10	12
Profit	1	3	5	16	9	20	24

2. What pattern describes the profit when the number of cakes increases by 1?

- a.** The profit increases by 1.
- b.** The profit is double the number of cakes, less 1.
- c.** The profit is double the number of cakes.
- d.** The profit increases by 2.

3. What is Janie's profit if she decorates 30 cakes?

- a.** \$60
- b.** \$59
- c.** \$45
- d.** \$3

2. What pattern describes the profit when the number of cakes increases by 1?

- a. The profit increases by 1.
- b. The profit is double the number of cakes, less 1.
- c. The profit is double the number of cakes.
- d. The profit increases by 2.

3. What is Janie's profit if she decorates 30 cakes?

- a. \$60
- b. \$59
- c. \$45
- d. \$3

4. Which of the following is NOT an equation?

a. $3 - 5 = -2$

b. $4 \cdot 5 = 20$

c. $7 = 3 + 4$

d. $8 - 12$

4. Which of the following is NOT an equation?

a. $3 - 5 = -2$

b. $4 \cdot 5 = 20$

c. $7 = 3 + 4$

d. $8 - 12$

Warming Up:

$$6 + 8 = \underline{\quad\quad\quad} + 5$$

$$\underline{\quad\quad\quad} + 9 = 15 - 3$$

Write 2 equivalent numerical expressions.

Warming Up:

$$6 + 8 = \underline{9} + 5$$

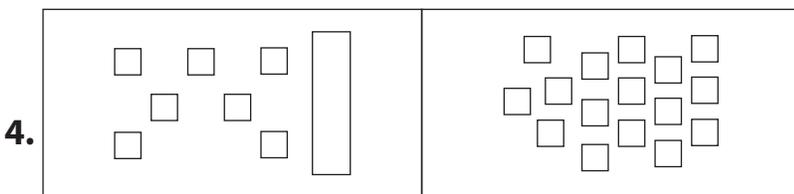
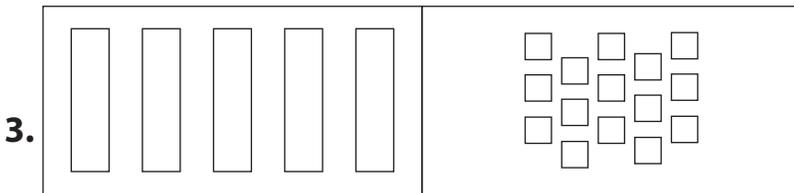
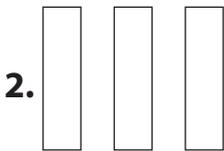
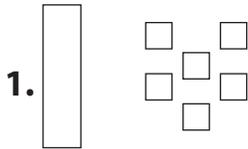
$$\underline{3} + 9 = 15 - 3$$

Write 2 equivalent numerical expressions.

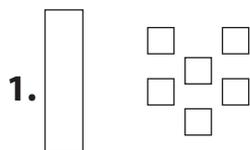
Answers will vary, such as

$4 + 7 = 5 + 6; 9 - 3 = 6 \times 1$

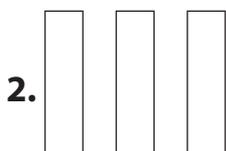
Learning to Solve



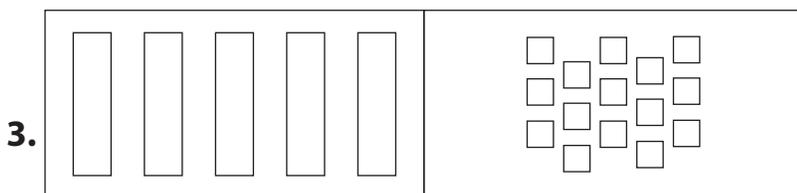
Learning to Solve



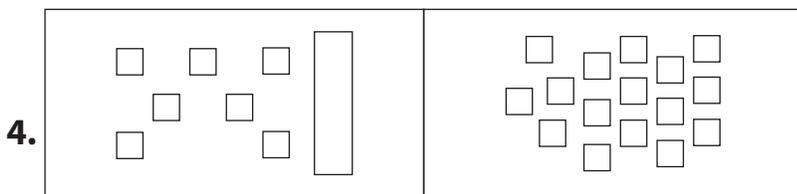
$$x + 6$$



$$3x \text{ or } x + x + x$$



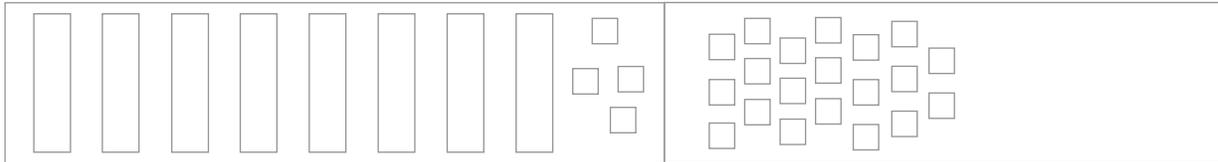
$$\begin{array}{l} 5x = 15 \\ x = 3 \end{array} \quad \text{or} \quad \begin{array}{l} x + x + x + x + x = 15 \\ x = 3 \end{array}$$



$$\begin{array}{l} 7 + x = 16 \\ x = 9 \end{array}$$

Practicing Together

1. Use your tiles to represent the equation $8x + 4 = 20$. Draw the tile arrangement you used.



2. What is the value of x in the equation $8x + 4 = 20$?

$$x = 2$$

3. Describe how you found the value of x .

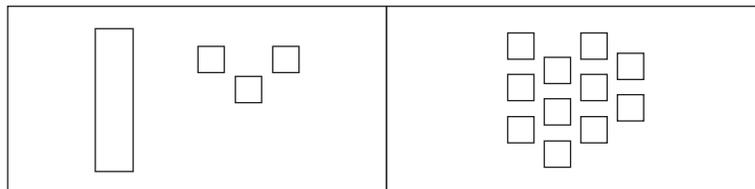
Answers will vary, such as in the tile arrangement, I removed 4 of the unit tiles from each side. Then, I matched each x tile with 2 unit tiles. Other students may solve by algebraic processes such as subtracting 4 from both sides of the equals sign, then dividing each side by 8.

4. What is the value of c in the equation $8 + c = 15$?

- a. 5
- b. 7
- c. 23
- d. 0

Trying It on Your Own

1. Choose the equation that represents the diagram.



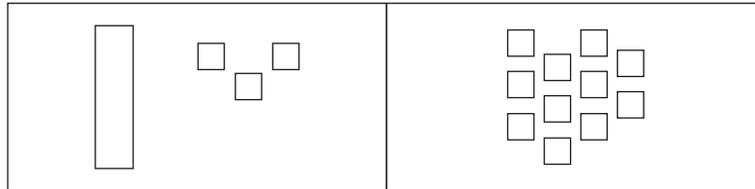
- a. $x + 3 = 11$
- b. $11 + x = 3$
- c. $3 + 3 + 3 = 11$
- d. $x + x + x + 3 = 11$

2. What is the value of x in the equation represented in number 1?

- a. $x = 14$
- b. $x = 11$
- c. $x = 8$
- d. $x = 3$

Trying It on Your Own

1. Choose the equation that represents the diagram.



- a. $x + 3 = 11$
- b. $11 + x = 3$
- c. $3 + 3 + 3 = 11$
- d. $x + x + x + 3 = 11$

2. What is the value of x in the equation represented in number 1?

- a. $x = 14$
- b. $x = 11$
- c. $x = 8$
- d. $x = 3$

3. What is the value of x in the equation $6x = 12$?

- a. $x = 3$
- b. $x = 1$
- c. $x = 6$
- d. $x = 2$

4. What is a way to find the value of x in the equation $14 + x = 28$?

- a. Count up from 14 to 28.
- b. Subtract 14 from 28.
- c. Draw a diagram.
- d. All of the above are ways to find the value of x .

3. What is the value of x in the equation $6x = 12$?

a. $x = 3$

b. $x = 1$

c. $x = 6$

d. $x = 2$

4. What is a way to find the value of x in the equation $14 + x = 28$?

a. Count up from 14 to 28.

b. Subtract 14 from 28.

c. Draw a diagram.

d. All of the above are ways to find the value of x .

Warming Up:

Work in pairs to play Make It a Rectangle. In this game, you will match the edges of the cards so that an algebraic expression and a word description match up. When you finish, you should have a rectangle that measures 3 cards by 4 cards.

Learning to Solve

Alicia's 85 on her social studies test was 37 points less than twice the grade on her math test. What was the grade on her math test?

What are we trying to find, what is the unknown?

Frank received 366 votes for student council president, which were 12 more than 3 times the amount of votes received by Quinn. How many votes did Quinn receive?

What are we trying to find, what is the unknown?

Learning to Solve

Alicia's 85 on her social studies test was 37 points less than twice the grade on her math test. What was the grade on her math test?

What are we trying to find, what is the unknown?

The grade on her math test.

$$85 = 2m - 37$$

$$m = 61 \text{ on her math test}$$

Frank received 366 votes for student council president, which were 12 more than 3 times the amount of votes received by Quinn. How many votes did Quinn receive?

What are we trying to find, what is the unknown?

Number of votes for Quinn

$$3x + 12 = 366$$

$$x = 118 \text{ votes}$$

Practicing Together

1. Stephen rode the tilt-a-whirl 10 times, which was 5 times as many times as he rode the tea cups at the carnival. How many times did he ride the tea cups at the carnival?

x = the number of times he rode the tea cups

$$10 = 5x$$

$$x = 2$$

2. Jennifer, who bought \$23 worth of beauty products last month, spent \$11 less than Gina had spent. How much did Gina spend on beauty products?

$$x - 11 = 23 \text{ or } 23 - 11 = x$$

$$x = \$12$$

3. At the school dance on Friday, the DJ played 14 slow dances, which is equal to the quotient of the number of fast dances and 2. How many fast dances did the DJ play?

$$14 = \frac{f}{2}$$

$$f = 28 \text{ fast songs}$$

Trying It On Your Own

Choose the correct solution for each problem.

1. Riley has 26 video games, which is half as many games as Peter. How many games does Peter have?

- a.** 24 games
- b.** 13 games
- c.** 52 games
- d.** 28 games

2. The dance team raised \$1785. This amount is 40 less than five times as much as the money raised by the band. How much money did the band raise?

- a.** \$8,725
- b.** \$357
- c.** \$1825
- d.** \$365

Trying It On Your Own

Choose the correct solution for each problem.

1. Riley has 26 video games, which is half as many games as Peter. How many games does Peter have?

- a. 24 games
- b. 13 games
- c. 52 games
- d. 28 games

2. The dance team raised \$1785. This amount is 40 less than five times as much as the money raised by the band. How much money did the band raise?

- a. \$8,725
- b. \$357
- c. \$1825
- d. \$365

3. Rico just downloaded 7 new songs from the Internet, which is 3 less than twice the amount Juan downloaded. How many songs did Juan download? Choose the equation to use to solve for the amount of songs Juan downloaded.

- a.** $2x + 3 = 7$
- b.** $7 + 3 = 2x$
- c.** $2x - 3 = 7$
- d.** $2x + 7 = 3$

4. Emmanuel had saved \$83 to purchase a new video game player. Jaqui, Emmanuel's sister, had saved \$3 more than half of what Emmanuel had saved. She told Emmanuel, "If I save \$40 more, I'll have more money than you have saved now." Emmanuel said he'd still have more money saved. Who is right?

- a.** Emmanuel, because he'll have \$83 and his sister will have \$80.
- b.** Jaqui, because when she has saved \$40 more, she'll have \$86, which is more than her brother has.
- c.** Emmanuel, because he will have saved more money in the time it takes for Jaqui to save her \$40.
- d.** Neither is right, because they'll have the same amount of money saved.

3. Rico just downloaded 7 new songs from the Internet, which is 3 less than twice the amount Juan downloaded. How many songs did Juan download? Choose the equation to use to solve for the amount of songs Juan downloaded.

a. $2x + 3 = 7$

b. $7 + 3 = 2x$

c. $2x - 3 = 7$

d. $2x + 7 = 3$

4. Emmanuel had saved \$83 to purchase a new video game player. Jaqui, Emmanuel's sister, had saved \$3 more than half of what Emmanuel had saved. She told Emmanuel, "If I save \$40 more, I'll have more money than you have saved now." Emmanuel said he'd still have more money saved. Who is right?

a. Emmanuel, because he'll have \$83 and his sister will have \$80.

b. Jaqui, because when she has saved \$40 more, she'll have \$86, which is more than her brother has.

c. Emmanuel, because he will have saved more money in the time it takes for Jaqui to save her \$40.

d. Neither is right, because they'll have the same amount of money saved.

Masters for Game and Activity Cards

EXPRESSIONS AND EQUATIONS 1

Cross It Out! Game Board for Lessons 6 and 7*Round 1*

1	2	3	4	5	6	7	8	9	10
----------	----------	----------	----------	----------	----------	----------	----------	----------	-----------

Numbers from dice roll: _____

The equation for:

1: _____

2: _____

3: _____

4: _____

5: _____

6: _____

7: _____

8: _____

9: _____

10: _____

Cross It Out! Game Board for Lessons 6 and 7

Round 2

1	2	3	4	5	6	7	8	9	10
----------	----------	----------	----------	----------	----------	----------	----------	----------	-----------

Numbers from dice roll: _____

The equation for:

1: _____

2: _____

3: _____

4: _____

5: _____

6: _____

7: _____

8: _____

9: _____

10: _____

Cross It Out! Game Board for Lessons 6 and 7*Round 3*

1	2	3	4	5	6	7	8	9	10
----------	----------	----------	----------	----------	----------	----------	----------	----------	-----------

Numbers from dice roll: _____

The equation for:

1: _____

2: _____

3: _____

4: _____

5: _____

6: _____

7: _____

8: _____

9: _____

10: _____

Cross It Out! Game Board for Lessons 6 and 7*Round 4*

1	2	3	4	5	6	7	8	9	10
----------	----------	----------	----------	----------	----------	----------	----------	----------	-----------

Numbers from dice roll: _____

The equation for:

1: _____

2: _____

3: _____

4: _____

5: _____

6: _____

7: _____

8: _____

9: _____

10: _____

Cross It Out! Game Board for Lessons 6 and 7*Round 5*

1	2	3	4	5	6	7	8	9	10
----------	----------	----------	----------	----------	----------	----------	----------	----------	-----------

Numbers from dice roll: _____

The equation for:

1: _____

2: _____

3: _____

4: _____

5: _____

6: _____

7: _____

8: _____

9: _____

10: _____

Fact Family Sort Activity Cards for Lesson 8

$$55 \div 55 = x$$

$$x \cdot 53 = 1060$$

$$x + 350 = 450$$

$$1060 \div 53 = x$$

$$55 \div x = 55$$

$$125 + x = 375$$

$$375 - x = 125$$

$$1060 \div 530 = x$$

$$530 \cdot x = 1060$$

$$350 + x = 450$$

$$450 - x = 350$$

$$1060 \div x = 530$$

$$55 \cdot x = 55$$

$$x + 125 = 375$$

$$450 - 350 = x$$

$$1060 \div x = 53$$

$$x \cdot 55 = 55$$

$$375 - 125 = x$$

$$x \cdot 530 = 1060$$

$$53 \cdot x = 1060$$

Fact Family Sort Activity Answer Sheet for Lesson 8

$$450 - x = 350$$

$$x + 350 = 450$$

$$450 - 350 = x$$

$$350 + x = 450$$

$$375 - x = 125$$

$$x + 125 = 375$$

$$375 - 125 = x$$

$$125 + x = 375$$

$$53 \cdot x = 1060$$

$$1060 \div 53 = x$$

$$x \cdot 53 = 1060$$

$$1060 \div x = 53$$

$$530 \cdot x = 1060$$

$$1060 \div x = 530$$

$$x \cdot 530 = 1060$$

$$1060 \div 530 = x$$

$$55 \cdot x = 55$$

$$55 \div x = 55$$

$$x \cdot 55 = 55$$

$$55 \div 55 = x$$

Matching Cards for Lesson 9

$$14 = 7n$$

$$36 = n \div 12$$

$$2(n + 7) = 14$$

$$36 = 12 - n$$

$$12 = n - 9$$

$$36 = n - 12$$

36 is some number less than 12

12 is 9 less than a number

36 is 12 less than a number

twice the sum of a number and 7 is 14

14 is the product of 7 and a number

36 is the quotient of a number and 12

Matching Cards Answer Sheet for Lesson 9

$$36 = n \div 12$$

$$36 = n - 12$$

$$36 = 12 - n$$

$$14 = 7n$$

$$12 = n - 9$$

$$2(n + 7) = 14$$

36 is the quotient of a number and 12

36 is 12 less than a number

36 is some number less than 12

14 is the product of 7 and a number

12 is 9 less than a number

twice the sum of a number and 7 is 14

Make it a Rectangle Activity Cards for Lessons 10 and 10A

$10 - 12x$ $7 + 3x$ Twice the sum of x and 3 $2(x + 3)$ 5 decreased by 3 times some number	The square of x $x - 3$ The product of 8 and x increased by 1 $8x + 1$	$1 + 3x$ $x + 8$ The sum of x and 8 $8 - x$	$3 - x$ $2x + 1$ $5(2 + x)$
$5 - 3x$ $x + 2$ Some number increased by 8 $8 + x$ $4 + x$	Some number decreased by 3 $x \div 8$ Some number divided by 8 $5 - x$	8 decreased by some number $\frac{1}{2}x + 2$ Some number cubed x^3	The product of 5 and the sum of 2 and x $\frac{1}{3}x + 1$ $\frac{1}{2}(x + 2)$
Some number increased by 4 $12 - 3x$ One fewer than a number $x - 1$ $3x + 5$	5 decreased by some number $x - 15$ 15 fewer than x $2(5 + x)$	The sum of 2 and the product of x and $\frac{1}{4}$ $x(5 + 2)$ The sum of 2 and the product of b and the fraction $3x$	Half of the sum of x and 2 $x + \frac{1}{3}$ $3(x + 2)$

Make it a Rectangle Activity Cards for Lesson 13

$6 - 3x$ $9 + 3y$ Twice the sum of some number and 4 $2(a + 4)$ 9 decreased by 5 times some number	The cube of y $4y + 1$ The product of 4 and y increased by 1 $b - 7$	$4 + 2x$ $y + 3$ The sum of y and 3 $9 - y$	$7 - a$ $3y + 3$ $7(4 - c)$
$9 - 5x$ $y + 3$ Some number increased by 6 $6 + b$ $3 + y$	b decreased by 7 $\frac{y}{4}$ Some number divided by 4 $3 - a$	9 decreased by some number 4^2 The square of 4 $\frac{1}{3}b + 9$	The product of 7 and the difference of 4 and c $\frac{1}{8}x + 1$ $\frac{1}{2}(y + 2)$
Some number increased by 3 $14 - 5a$ $5x + 3$	3 decreased by some number $x - 3$ 3 fewer than a number $y - 12$ $8(4 + x)$	The sum of 9 and the product of b and the fraction 12 fewer than y $4b$ The product of b and 4 $9(6 + 3)$	Half of the sum of 2 and some number $z + \frac{1}{2}$ $4(y + 8)$

Words to Symbols Expression Cards for Lesson 14

E1

$$\frac{(n + 6)}{2}$$

E2

$$n^2 + 6$$

E3

$$2n + 12$$

E4

$$2n + 6$$

E5

$$2(n + 3)$$

E6

$$\frac{n}{2} + 6$$

E7

$$(3n)^2$$

E8

$$(n + 6)^2$$

Words to Symbols Word Cards for Lesson 14

W1

**Multiply n by two then
add six.**

W2

**Multiply n by three then
square the answer.**

W3

**Square n then
add six.**

W4

**Add six to n then
divide by two.**

W5

**Add three to n then
multiply by two.**

W6

**Add six to n then
square the answer.**

W7

**Multiply n by two then
add twelve.**

W8

**Divide n by two then
add six.**

Expressions and Words Cards Answer Sheet for Lesson 14

$$\begin{array}{r} \text{E1} \\ (n + 6) \\ \hline 2 \end{array}$$

W4

Add six to n then divide by two.

$$\begin{array}{r} \text{E3} \\ 2n + 12 \end{array}$$

W7

Multiply n by two then add twelve.

$$\begin{array}{r} \text{E5} \\ 2(n + 3) \end{array}$$

W5

Add three to n then multiply by two.

$$\begin{array}{r} \text{E7} \\ (3n)^2 \end{array}$$

W2

Multiply n by three then square the answer.

$$\begin{array}{r} \text{E2} \\ n^2 + 6 \end{array}$$

W3

Square n then add six.

$$\begin{array}{r} \text{E4} \\ 2n + 6 \end{array}$$

W1

Multiply n by two then add six.

$$\begin{array}{r} \text{E6} \\ \frac{n}{2} + 6 \end{array}$$

W8

Divide n by two then add six.

$$\begin{array}{r} \text{E8} \\ (n + 6)^2 \end{array}$$

W6

Add six to n then square the answer.

Notes

EQUATIONS

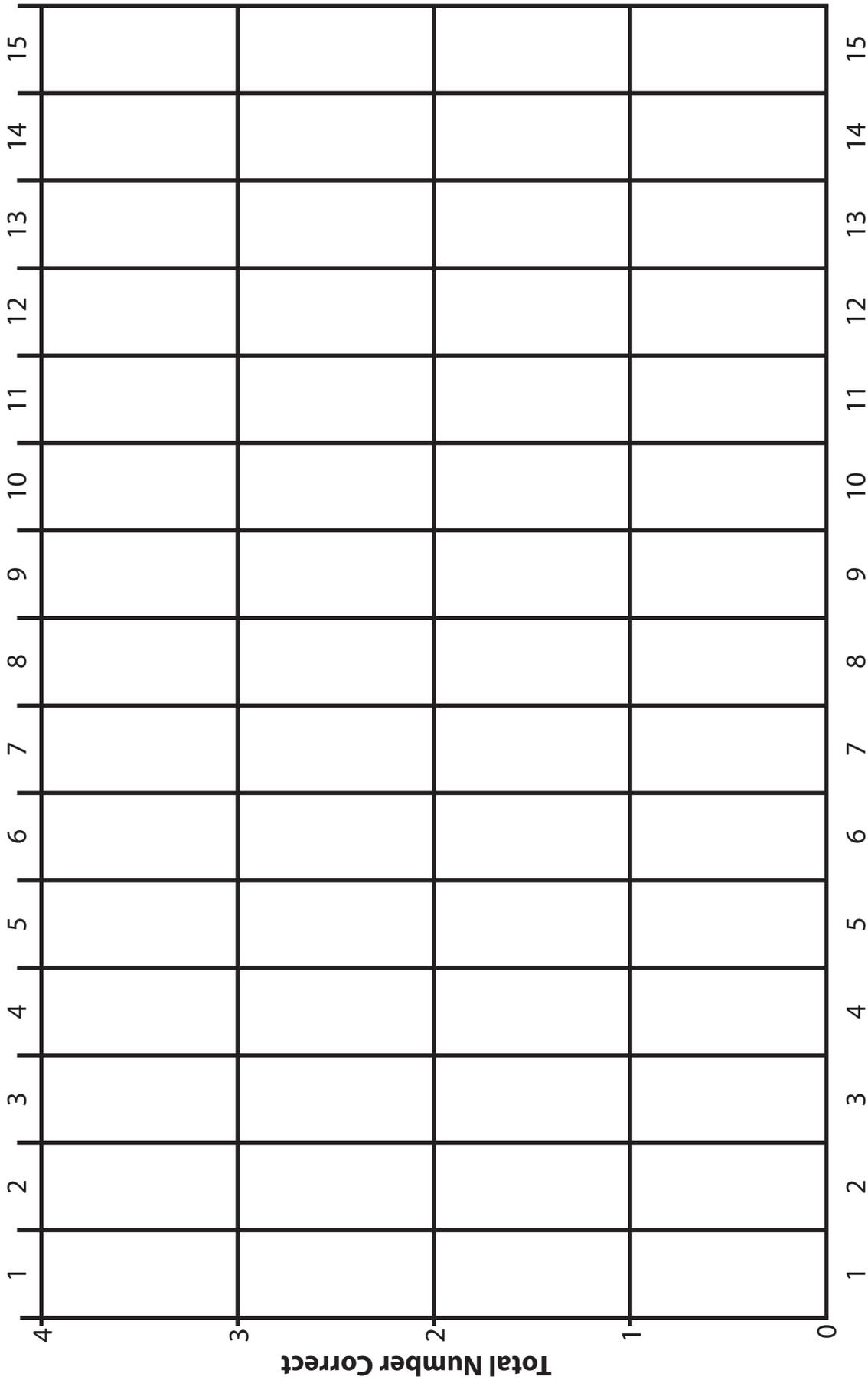
AND

EXPRESSIONS 1

Example											
Picture											
Generalizations											

Name _____

Graph Your Progress



Number Correct _____

Lesson Number _____

Expressions and Equations 1

Extra Practice

Additional Practice



Figure 1

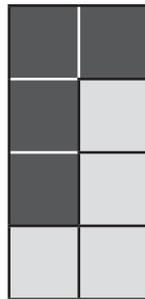


Figure 2

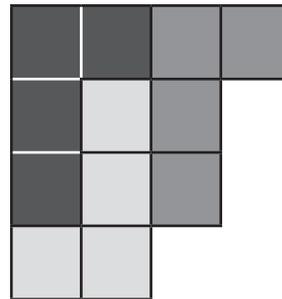


Figure 3

1. Which table shows the relationship in figures 1–3?

a.

Figure Number	Number of Squares
1	4
2	5
3	6
4	7
5	8

b.

Figure Number	Number of Squares
1	3
2	6
3	9
4	12
5	16

c.

Figure Number	Number of Squares
1	4
2	8
3	12
4	16
5	20

d.

Figure Number	Number of Squares
1	4
2	7
3	13
4	19
5	28

Additional Practice



Figure 1

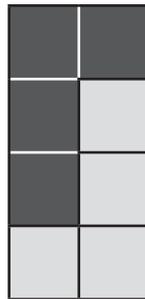


Figure 2

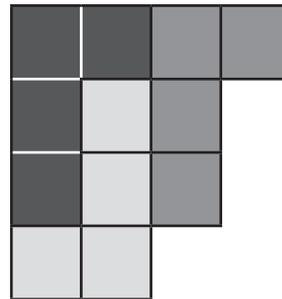


Figure 3

1. Which table shows the relationship in figures 1–3?

a.

Figure Number	Number of Squares
1	4
2	5
3	6
4	7
5	8

b.

Figure Number	Number of Squares
1	3
2	6
3	9
4	12
5	16

c.

Figure Number	Number of Squares
1	4
2	8
3	12
4	16
5	20

d.

Figure Number	Number of Squares
1	4
2	7
3	13
4	19
5	28

2. Identify the pattern and select the number that goes in the blank.

_____, 12, 48, 192

- a. Add each number by 36. The missing number is – 24.
- b. Add each number by 24. The missing number is – 12.
- c. Multiply each number by 4. The missing number is 3.
- d. Multiply each number by 3. The missing number is 4.

3. What is the missing number in the sequence?

23, 41, _____, 77

- a. 59
- b. 18
- c. 57
- d. 66

2. Identify the pattern and select the number that goes in the blank.

_____, 12, 48, 192

- a. Add each number by 36. The missing number is – 24.
- b. Add each number by 24. The missing number is – 12.
- c. Multiply each number by 4. The missing number is 3.
- d. Multiply each number by 3. The missing number is 4.

3. What is the missing number in the sequence?.

23, 41, _____, 77

- a. 59
- b. 18
- c. 57
- d. 66

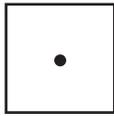


Figure 1

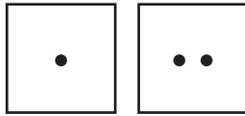


Figure 2

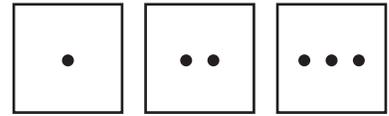


Figure 3

4. Without drawing figures, find the total number of dots needed to make the eighth and ninth figures.

- a.** eighth figure = 35 dots and ninth figure = 46 dots
- b.** eighth figure = 17 dots and ninth figure = 18 dots
- c.** eighth figure = 8 dots and ninth figure = 9 dots
- d.** eighth figure = 36 dots and ninth figure = 45 dots

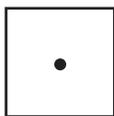


Figure 1

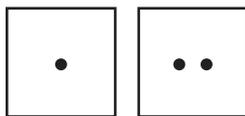


Figure 2

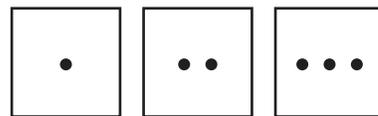


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Additional Practice

Use the figures below to answer questions 1 and 2.

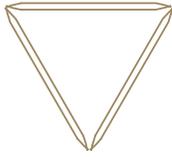


Figure 1

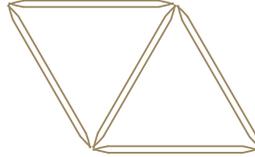


Figure 2



Figure 3

1. If the pattern continues, how many sticks are needed to make the 7th figure in this pattern?

- a. 21 sticks
- b. 15 sticks
- c. 7 sticks
- d. 14 sticks

2. Martinez has built a row of triangles on his desk using the pattern from problem 1. He knows how many total triangles, but does not know how many sticks he used. Which expression would help him determine the number of sticks he used? (n = the figure number)

- a. $3 \times n$
- b. $1 \times n$
- c. $1 + (3 \times n)$
- d. $1 + (2 \times n)$

Additional Practice

Use the figures below to answer questions 1 and 2.

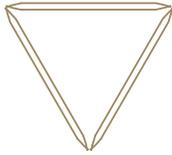


Figure 1

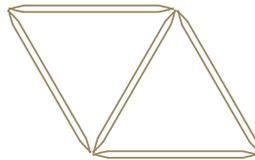


Figure 2

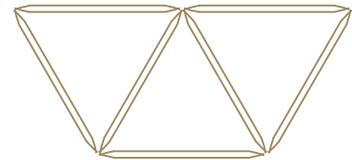


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- c. $1 + (3 \times n)$
- d. $1 + (2 \times n)$

Use the figures below to answer questions 3 and 4.



Figure 1

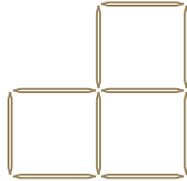


Figure 2

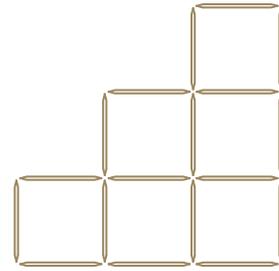


Figure 3

3. How many sticks are needed to make the 4th figure in this pattern?

- a. 16
- b. 12
- c. 20
- d. 24

4. Mia continued to build the figures. She knows the number of figures, but does not know how many sticks she used. Which expression would help her determine the number of sticks she used? (n = the figure number)

- a. $3n$
- b. $4n$
- c. $1 + 3n$
- d. $1 + 4n$

Use the figures below to answer questions 3 and 4.



Figure 1

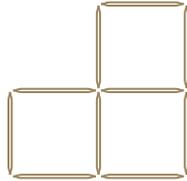


Figure 2

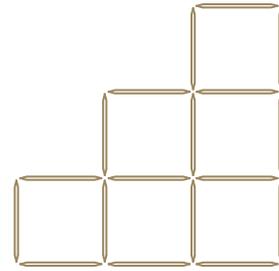


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- a. $3n$
- b. $4n$
- c. $1 + 3n$
- d. $1 + 4n$

Additional Practice



Figure 1



Figure 2

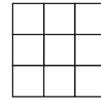


Figure 3

$\square = 1$ unit of area

Length of 1 side of the square = 1 unit of length

Complete the table.

Figure Number	1	2	3	4	5	8	n
Perimeter	4	8					
Area	1	4					

1. Which of the following describe the pattern of the perimeter in words?
- The number of the figure plus 3.
 - The number of the figure plus 6.
 - The number of the figure times 4.
 - The number of the figure times 2.

Additional Practice



Figure 1



Figure 2

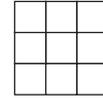


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Complete the table.

Figure Number	1	2	3	4	5	8	n
Perimeter	4	8					
Area	1	4					

1. Which of the following describe the pattern of the perimeter in words?

- a. The number of the figure plus 3.
- b. The number of the figure plus 6.
- c. The number of the figure times 4.
- d. The number of the figure times 2.

2. Which of the following describes the pattern for the area? (n = the figure number)

- a. $2n$
- b. $n + 2$
- c. n
- d. $n \times n$ or n^2

3. What is the perimeter for figure 9?

- a. 36 units
- b. 45 units
- c. 18 units
- d. 15 units

2. Which of the following describes the pattern for the area? (n = the figure number)

a. $2n$

b. $n + 2$

c. n

d. $n \times n$ or n^2

3. What is the perimeter for figure 9?

a. 36 units

b. 45 units

c. 18 units

d. 15 units

4. What is the area for figure 11?
- a. 111 square units
 - b. 121 square units
 - c. 13 square units
 - d. 22 square units

4. What is the area for figure 11?

a. 111 square units

b. 121 square units

c. 13 square units

d. 22 square units

Additional Practice

Choose the answer that correctly used the order of operations.

1. $3(8 - 5) + 6 \cdot 7$

a. 49

b. 51

c. 342

d. 81

2. $25 - 3 \cdot 7 + 2 - 2 \cdot 2$

a. 308

b. 3

c. 2

d. 1

Additional Practice

Choose the answer that correctly used the order of operations.

1. $3(8 - 5) + 6 \cdot 7$

a. 49

b. 51

c. 342

d. 81

2. $25 - 3 \cdot 7 + 2 - 2 \cdot 2$

a. 308

b. 3

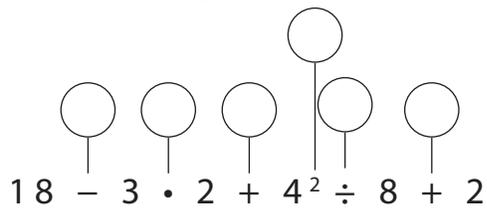
c. 2

d. 1

3. $(4 - 2)^2 \times 7 - 3 + 22 \div 11$

- a. 13
- b. 3
- c. 10
- d. 27

4. Each operation in the following expression has a tag above it. In what order should the operations be performed? Number the tags in that order.



- a. 3, 1, 4, 2, 5, 6
- b. 1, 2, 3, 4, 5, 6
- c. 4, 2, 5, 1, 3, 6
- d. 1, 4, 5, 2, 3, 6

3. $(4 - 2)^2 \times 7 - 3 + 22 \div 11$

a. 13

b. 3

c. 10

d. 27

4. Each operation in the following expression has a tag above it. In what order should the operations be performed? Number the tags in that order.

$$18 - 3 \cdot 2 + 4^2 \div 8 + 2$$

a. 3, 1, 4, 2, 5, 6

b. 1, 2, 3, 4, 5, 6

c. 4, 2, 5, 1, 3, 6

d. 1, 4, 5, 2, 3, 6

Additional Practice

Choose the answer that shows the expression is evaluated correctly.

1. $(4 + 6) + 5^2$

- a. 35
- b. 15
- c. 52
- d. 250

2. $2 + 16 \div 2 - 7$

- a. 2
- b. 9
- c. 27
- d. 3

Additional Practice

Choose the answer that shows the expression is evaluated correctly.

1. $(4 + 6) + 5^2$

- a. 35
- b. 15
- c. 52
- d. 250

2. $2 + 16 \div 2 - 7$

- a. 2
- b. 9
- c. 27
- d. 3

Choose the expression with the correctly placed grouping symbols to make the statement true.

3. $9 + 5 \div 2 \times 3 = 21$

a. $9 + (5 \div 2) \times 3$

b. $(9 + 5) \div 2 \times 3$

c. $9 + 5 \div 2 \times 3$

d. $9 + 5 \div (2 \times 3)$

4. Trey was told to simplify the expression $16 - 2 \times 8 + 1$. He said the answer was 1. Is he correct? Why or why not?

a. He is incorrect. The answer is 113. He should have subtracted $16 - 2$, multiplied 14×8 , and then added $112 + 1$.

b. He is correct. He added $8 + 1$ first, multiplied 2×9 , and then subtracted $16 - 15$. The answer is 1.

c. He is correct. The answer is 1 because he multiplied 2×8 and then subtracted $16 - 16$ and added $0 + 1$.

d. He is incorrect. You cannot solve this problem because there are no parentheses to tell you what to do first.

Choose the expression with the correctly placed grouping symbols to make the statement true.

3. $9 + 5 \div 2 \times 3 = 21$

a. $9 + (5 \div 2) \times 3$

b. $(9 + 5) \div 2 \times 3$

c. $9 + 5 \div 2 \times 3$

d. $9 + 5 \div (2 \times 3)$

4. Trey was told to simplify the expression $16 - 2 \times 8 + 1$. He said the answer was 1. Is he correct? Why or why not?

a. He is incorrect. The answer is 113. He should have subtracted $16 - 2$, multiplied 14×8 , and then added $112 + 1$.

b. He is correct. He added $8 + 1$ first, multiplied 2×9 , and then subtracted $16 - 15$. The answer is 1.

c. He is correct. The answer is 1 because he multiplied 2×8 and then subtracted $16 - 16$ and added $0 + 1$.

d. He is incorrect. You cannot solve this problem because there are no parentheses to tell you what to do first.

Additional Practice

1. Cassie substituted 9 for the value of k . The result was 75. Which expression did Cassie evaluate?

- a. $8k - 3$
- b. $3 + 8k$
- c. $25 + 50k$
- d. $50 + 25k$

2. Ben evaluated the expression $3(n - 2) + 5$. He said the answer was 35. What value of n did Ben use?

- a. 10
- b. 30
- c. 12
- d. 35

Additional Practice

1. Cassie substituted 9 for the value of k . The result was 75. Which expression did Cassie evaluate?

- a. $8k - 3$
- b. $3 + 8k$
- c. $25 + 50k$
- d. $50 + 25k$

2. Ben evaluated the expression $3(n - 2) + 5$. He said the answer was 35. What value of n did Ben use?

- a. 10
- b. 30
- c. 12
- d. 35

3. Find the value of the expression $x + 2x + 2(x - 1)$ when $x = 10$.

- a. 48
- b. 31
- c. 49
- d. 52

4. Find the value of the expression $8w + 10 - 5w$ when $w = 5$.

- a. 40
- b. 25
- c. 5
- d. 35

3. Find the value of the expression $x + 2x + 2(x - 1)$ when $x = 10$.

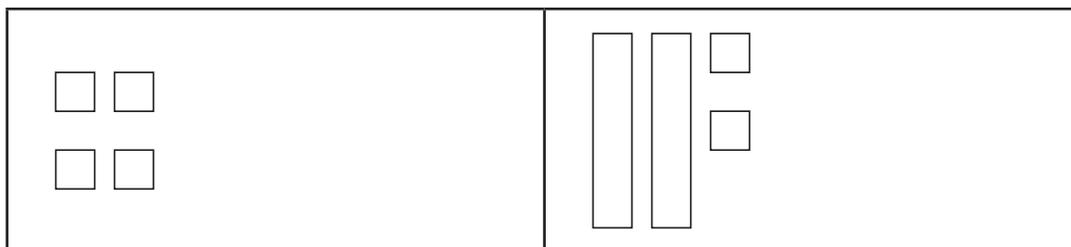
- a. 48
- b. 31
- c. 49
- d. 52

4. Find the value of the expression $8w + 10 - 5w$ when $w = 5$.

- a. 40
- b. 25
- c. 5
- d. 35

Additional Practice

1. Choose the equation that represents the diagram



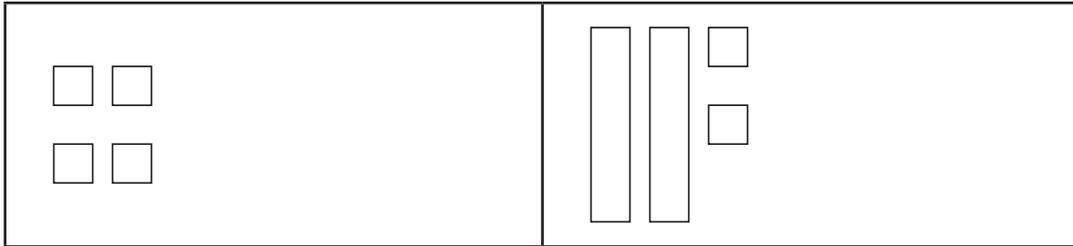
- a. $4 + 2x + 2 = 6$
- b. $4x + 2 = 2$
- c. $4 = 2x + 2$
- d. $2x = 6$

2. What is the value of x in the equation in number 1?

- a. $x = 0$
- b. $x = 0.5$
- c. $x = 3$
- d. $x = 1$

Additional Practice

1. Choose the equation that represents the diagram



- a. $4 + 2x + 2 = 6$
- b. $4x + 2 = 2$
- c. $4 = 2x + 2$
- d. $2x = 6$

2. What is the value of x in the equation in number 1?

- a. $x = 0$
- b. $x = 0.5$
- c. $x = 3$
- d. $x = 1$

3. What is the value of x in the equation $42 = 7x$?

- a. $x = 6$
- b. $x = 35$
- c. $x = 49$
- d. $x = 294$

4. What is a method to find the value of w in the equation $w + 15 = 28$?

- a. Count up from 15 to 28.
- b. Subtract 15 from 28.
- c. Draw a diagram.
- d. All of the above are ways to find the value of w .

3. What is the value of x in the equation $42 = 7x$?

- a. $x = 6$
- b. $x = 35$
- c. $x = 49$
- d. $x = 294$

4. What is a method to find the value of w in the equation $w + 15 = 28$?

- a. Count up from 15 to 28.
- b. Subtract 15 from 28.
- c. Draw a diagram.
- d. All of the above are ways to find the value of w .

Additional Practice

Find the related equation and the correct value for x .

1. $78 = x - 10$

a. $78 - 10 = x$

$x = 68$

b. $78 \div 10 = x$

$x = 68$

c. $78 + 10 = x$

$x = 88$

d. $78(10) = x$

$x = 780$

2. $48 \div x = 3$

a. $48 - 3 = x$

$x = 45$

b. $48(3) = x$

$x = 144$

c. $48 + 3 = x$

$x = 51$

d. $48 \div 3 = x$

$x = 16$

Additional Practice

Find the related equation and the correct value for x .

1. $78 = x - 10$

a. $78 - 10 = x$

$x = 68$

b. $78 \div 10 = x$

$x = 68$

c. $78 + 10 = x$

$x = 88$

d. $78(10) = x$

$x = 780$

2. $48 \div x = 3$

a. $48 - 3 = x$

$x = 45$

b. $48(3) = x$

$x = 144$

c. $48 + 3 = x$

$x = 51$

d. $48 \div 3 = x$

$x = 16$

3. $x(15) = 60$

a. $60 + 15 = x$

$x = 75$

b. $60 - 15 = x$

$x = 45$

c. $60(15) = x$

$x = 900$

d. $60 \div 15 = x$

$x = 4$

4. $x - 150 = 560$

a. $560 + 150 = x$

$x = 710$

b. $560 - 150 = x$

$x = 410$

c. $560(150) = x$

$x = 84,000$

d. $560 \div 150 = x$

$x = 3.733$

3. $x(15) = 60$

a. $60 + 15 = x$
 $x = 75$

b. $60 - 15 = x$
 $x = 45$

c. $60(15) = x$
 $x = 900$

d. $60 \div 15 = x$
 $x = 4$

4. $x - 150 = 560$

a. $560 + 150 = x$
 $x = 710$

b. $560 - 150 = x$
 $x = 410$

c. $560(150) = x$
 $x = 84,000$

d. $560 \div 150 = x$
 $x = 3.733$

Additional Practice

1. What expression represents the product of 5 and n decreased by 6?

- a. $5 - 6n$
- b. $6n - 5$
- c. $5n - 6$
- d. $6 - 5n$

2. Which expression represents 3 increased by the product of 8 and k ?

- a. $k + 3(8)$
- b. $(3 + 8)k$
- c. $3 + 8k$
- d. $8k + 3$

Additional Practice

1. What expression represents the product of 5 and n decreased by 6?

a. $5 - 6n$

b. $6n - 5$

c. $5n - 6$

d. $6 - 5n$

2. Which expression represents 3 increased by the product of 8 and k ?

a. $k + 3(8)$

b. $(3 + 8)k$

c. $3 + 8k$

d. $8k + 3$

3. Tori had 6 more colored pencils than Reagan had. Reagan had w colored pencils. Which expression represents the number of colored pencils Tori has?

- a.** $6(w)$
- b.** $6 + w$
- c.** $w - 6$
- d.** $6 \div w$

4. Kolby gave each of his 4 friends an equal share of his energy bars (y). Which expression represents the number of energy bars each friend received?

- a.** $y \div 4$
- b.** $y - 4$
- c.** $y + 4$
- d.** $4(y)$

3. Tori had 6 more colored pencils than Reagan had. Reagan had w colored pencils. Which expression represents the number of colored pencils Tori has?

a. $6(w)$

b. $6 + w$

c. $w - 6$

d. $6 \div w$

4. Kolby gave each of his 4 friends an equal share of his energy bars (y). Which expression represents the number of energy bars each friend received?

a. $y \div 4$

b. $y - 4$

c. $y + 4$

d. $4(y)$

Additional Practice

1. Laola made 156 cookies. She divided them equally into 12 bags. How many cookies were in each bag? Choose the equation and the solution that tells the number of cookies in each bag.

- a. $156 \div x = 12$. You cannot solve this equation because you cannot divide by x .
- b. $156 \div x = 12$. Use a related equation ($156 \div 12 = x$) to find that $x = 13$.
- c. $156 - x = 12$. Add 156 and 12 to find that $x = 168$.
- d. $156 + 12 = x$. Add 156 and 12 to find that $x = 168$.

2. Which word problem is represented by the algebra equation $w = (k + 14)2$?

- a. Rosco bought 2 books. Each book cost k dollars plus a \$14 shipping charge. What is the total cost (w) of the books?
- b. Rosco bought 14 books. Each book cost \$14 plus \$2 for shipping. What is the total cost (w) of the books?
- c. Rosco bought 2 books. One book cost \$14 and the other book cost k dollars. What is the total cost (w) of the books?
- d. Rosco bought 16 books. The books cost k dollars each. What is the total cost (w) of the books?

Additional Practice

1. Laola made 156 cookies. She divided them equally into 12 bags. How many cookies were in each bag? Choose the equation and the solution that tells the number of cookies in each bag.

- a. $156 \div x = 12$. You cannot solve this equation because you cannot divide by x .
- b.** $156 \div x = 12$. Use a related equation ($156 \div 12 = x$) to find that $x = 13$.
- c. $156 - x = 12$. Add 156 and 12 to find that $x = 168$.
- d. $156 + 12 = x$. Add 156 and 12 to find that $x = 168$.

2. Which word problem is represented by the algebra equation $w = (k + 14)2$?

- a.** Rosco bought 2 books. Each book cost k dollars plus a \$14 shipping charge. What is the total cost (w) of the books?
- b. Rosco bought 14 books. Each book cost \$14 plus \$2 for shipping. What is the total cost (w) of the books?
- c. Rosco bought 2 books. One book cost \$14 and the other book cost k dollars. What is the total cost (w) of the books?
- d. Rosco bought 16 books. The books cost k dollars each. What is the total cost (w) of the books?

3. Jessica was packaging cupcakes she made into boxes that hold a dozen each. She had $4\frac{1}{2}$ boxes. How many cupcakes (h) did she have?

a. $h = 4\frac{1}{2} + 12$

b. $4\frac{1}{2}(h) = 12$

c. $h = 4\frac{1}{2}(12)$

d. $4\frac{1}{2} + h = 12$

4. The perimeter of an equilateral triangle (p) is 42 cm. How long (x) is each side? Choose the equation that could be correctly used to find the length of each side.

a. $p = x + x + x$. To solve, add $42 + 42 + 42$, $x = 126$ cm.

b. $p = 3(x)$. To solve, add $3 + 42$, $x = 45$ cm.

c. $p = x + x + x$. To solve, $42 - 3 = 39$, $x = 39$ cm.

d. $p = 3x$. To solve, $42 \div 3 = x$, $x = 14$ cm.

3. Jessica was packaging cupcakes she made into boxes that hold a dozen each. She had $4\frac{1}{2}$ boxes. How many cupcakes (h) did she have?

a. $h = 4\frac{1}{2} + 12$

b. $4\frac{1}{2}(h) = 12$

c. $h = 4\frac{1}{2}(12)$

d. $4\frac{1}{2} + h = 12$

4. The perimeter of an equilateral triangle (p) is 42 cm. How long (x) is each side? Choose the equation that could be correctly used to find the length of each side.

a. $p = x + x + x$. To solve, add $42 + 42 + 42$, $x = 126$ cm.

b. $p = 3(x)$. To solve, add $3 + 42$, $x = 45$ cm.

c. $p = x + x + x$. To solve, $42 - 3 = 39$, $x = 39$ cm.

d. $p = 3x$. To solve, $42 \div 3 = x$, $x = 14$ cm.

Additional Practice

Solve equation by using only inspection or cover and inspection.

1. $2y - 3 = 21$

a. $y = 8$

b. $y = 12$

c. $y = 14$

d. $y = 24$

2. $7j + 8 = 71$

a. $j = 79$

b. $j = 10$

c. $j = 9$

d. $j = 57$

Additional Practice

Solve equation by using only inspection or cover and inspection.

1. $2y - 3 = 21$

a. $y = 8$

b. $y = 12$

c. $y = 14$

d. $y = 24$

2. $7j + 8 = 71$

a. $j = 79$

b. $j = 10$

c. $j = 9$

d. $j = 57$

3. $11w = 132$

a. $w = 121$

b. $w = 143$

c. $w = 12$

d. $w = 11$

4. $3c - 8 = 43$

a. $c = 51$

b. $c = 35$

c. $c = 11.667$

d. $c = 17$

3. $11w = 132$

a. $w = 121$

b. $w = 143$

c. $w = 12$

d. $w = 11$

4. $3c - 8 = 43$

a. $c = 51$

b. $c = 35$

c. $c = 11.667$

d. $c = 17$

Additional Practice

1. Jason made this table to solve the equation $3y + 1 = 22$.

y	$3y + 1$	22
0	1	22
1	4	22
5	16	22
7	29	22
10	31	22

What is the solution to the equation?

- a. $y = 29$
- b. $y = 10$
- c. $y = 7$
- d. $y = 3$

2. Seaton made this table to solve the equation $x - 16 = 32$.

x	$x - 16$	32
20	4	32
25	9	32
40	24	32
44	28	32
48	32	32

What is the solution to the equation?

- a. $x = 32$
- b. $x = 28$
- c. $x = 30$
- d. $x = 48$

Additional Practice

1. Jason made this table to solve the equation $3y + 1 = 22$.

y	$3y + 1$	22
0	1	22
1	4	22
5	16	22
7	29	22
10	31	22

What is the solution to the equation?

- a. $y = 29$
- b. $y = 10$
- c. $y = 7$
- d. $y = 3$

2. Seaton made this table to solve the equation $x - 16 = 32$.

x	$x - 16$	32
20	4	32
25	9	32
40	24	32
44	28	32
48	32	32

What is the solution to the equation?

- a. $x = 32$
- b. $x = 28$
- c. $x = 30$
- d. $x = 48$

3. Skylar made this table to solve the equation $2x + 6 = 38$.

x	$2x + 6$	38
0	6	38
5	16	38
10	26	38
15	36	38
16	38	38
20	46	38
22	50	38

What is the solution to the equation?

- a. $x = 50$
- b. $x = 16$
- c. $x = 6$
- d. $x = 38$

4. Nina made this table to solve the equation $5y + 2 = 47$.

y	$5y + 2$	47
0	2	47
5	27	47
8	42	47
9	47	47
10	52	47
11	57	47

What is the solution to the equation?

- a. $y = 5$
- b. $y = 9$
- c. $y = 10$
- d. $y = 47$

3. Skylar made this table to solve the equation $2x + 6 = 38$.

x	$2x + 6$	38
0	6	38
5	16	38
10	26	38
15	36	38
16	38	38
20	46	38
22	50	38

What is the solution to the equation?

- a. $x = 50$
- b. $x = 16$
- c. $x = 6$
- d. $x = 38$

4. Nina made this table to solve the equation $5y + 2 = 47$.

y	$5y + 2$	47
0	2	47
5	27	47
8	42	47
9	47	47
10	52	47
11	57	47

What is the solution to the equation?

- a. $y = 5$
- b. $y = 9$
- c. $y = 10$
- d. $y = 47$

Additional Practice

1. Marissa has 3 times as many mystery books as she has nonfiction books. She has 18 nonfiction books. How many books does she have altogether?
- a. 72 books
 - b. 21 books
 - c. 54 books
 - d. 15 books

2. Makana bought a juice for \$3 and 3 granola bars. He spent \$18. How much did each granola bar cost?
- a. \$3.00
 - b. \$6.00
 - c. \$15.00
 - d. \$5.00

Additional Practice

1. Marissa has 3 times as many mystery books as she has nonfiction books. She has 18 nonfiction books. How many books does she have altogether?

- a. 72 books
- b. 21 books
- c. 54 books
- d. 15 books

2. Makana bought a juice for \$3 and 3 granola bars. He spent \$18. How much did each granola bar cost?

- a. \$3.00
- b. \$6.00
- c. \$15.00
- d. \$5.00

3. Karys added 6 pages to her history paper. Her dog ate 4 pages! She now only has 10 pages left. How many pages did she start with? Which equation models the problem?

a. $6 + x = 10$

b. $6 + x - 4 = 10$

c. $6 + 4x = 10$

d. $10 - 6x = 4$

4. The bike rental shop charges \$15 per hour to rent a bike. They also charge \$12 to clean it when it is returned. Dom spent \$87 to rent a bike. How many hours did he rent it? Which equation models the problem?

a. $15x + 12x = 87$

b. $15 + 12x = 87$

c. $15x + 12 = 87$

d. $87x - 15 = 12$

3. Karys added 6 pages to her history paper. Her dog ate 4 pages! She now only has 10 pages left. How many pages did she start with? Which equation models the problem?

a. $6 + x = 10$

b. $6 + x - 4 = 10$

c. $6 + 4x = 10$

d. $10 - 6x = 4$

4. The bike rental shop charges \$15 per hour to rent a bike. They also charge \$12 to clean it when it is returned. Dom spent \$87 to rent a bike. How many hours did he rent it? Which equation models the problem?

a. $15x + 12x = 87$

b. $15 + 12x = 87$

c. $15x + 12 = 87$

d. $87x - 15 = 12$

Additional Practice

1. Monica was given \$100 to spend on new albums. Each album cost the same amount. After buying 5 albums, she had \$25 left. How much did each album cost?

- a.** \$25
- b.** \$75
- c.** \$15
- d.** \$5

2. Morris gave away half of his cookies. He then baked 12 more cookies. He now has 30 cookies. How many cookies did he start with?

- a.** 36 cookies
- b.** 18 cookies
- c.** 30 cookies
- d.** 42 cookies

Additional Practice

1. Monica was given \$100 to spend on new albums. Each album cost the same amount. After buying 5 albums, she had \$25 left. How much did each album cost?

- a. \$25
- b. \$75
- c. \$15
- d. \$5

2. Morris gave away half of his cookies. He then baked 12 more cookies. He now has 30 cookies. How many cookies did he start with?

- a. 36 cookies
- b. 18 cookies
- c. 30 cookies
- d. 42 cookies

3. Bryce's class went on a field trip. There were 143 students on the trip. All 6 buses were filled. 17 students had to ride in vans. How many students were in each bus?

- a.** 126 students
- b.** 21 students
- c.** 26 students
- d.** 31 students

4. Sarah has an online subscription for new books. She pays a \$7 fee each month plus \$14 for every book she buys. She spent \$91 one month. How many books did she buy that month?

- a.** 14 books
- b.** 10 books
- c.** 6 books
- d.** 7 books

3. Bryce's class went on a field trip. There were 143 students on the trip. All 6 buses were filled. 17 students had to ride in vans. How many students were in each bus?

- a. 126 students
- b. 21 students
- c. 26 students
- d. 31 students

4. Sarah has an online subscription for new books. She pays a \$7 fee each month plus \$14 for every book she buys. She spent \$91 one month. How many books did she buy that month?

- a. 14 books
- b. 10 books
- c. 6 books
- d. 7 books

Additional Practice

Use the following problem to solve problems 1–4.

The Math Camp likes to make a snack mix for each camper. The following ingredients go into 1 serving of the snack mix:

- 3 cups of chocolate candies
- 1 cup of almonds
- 1 cup of peanuts
- 2 cups of raisins

The cost of each serving of snack mix is \$3.75.

1. How many cups of chocolate candies are needed for 7 servings of the snack mix?

- a. 21 cups
- b. 3 cups
- c. 7 cups
- d. 49 cups

2. How many cups of raisins are needed for 10 servings of snack mix?

- a. 20 cups
- b. 10 cups
- c. 30 cups
- d. 17 cups

Additional Practice

Use the following problem to solve problems 1–4.

The Math Camp likes to make a snack mix for each camper. The following ingredients go into 1 serving of the snack mix:

- 3 cups of chocolate candies
- 1 cup of almonds
- 1 cup of peanuts
- 2 cups of raisins

The cost of each serving of snack mix is \$3.75.

1. How many cups of chocolate candies are needed for 7 servings of the snack mix?

- a. 21 cups
- b. 3 cups
- c. 7 cups
- d. 49 cups

2. How many cups of raisins are needed for 10 servings of snack mix?

- a. 20 cups
- b. 10 cups
- c. 30 cups
- d. 17 cups

- 3.** If there are h campers, which expression could be used to determine the number of cups of peanuts needed if every camper gets 2 cups of the snack mix?
- a.** $h + 2$
 - b.** $2h$
 - c.** $h + 2h(1)$
 - d.** $2(h + 1)$
- 4.** On the last day of camp, 42 cups of snack mix were served. How many cups of each ingredient was used? Choose a method that could be used to solve the problem.
- a.** There are 4 ingredients. Multiply each ingredient by 4. There are 12 cups of chocolate candies, 4 cups of almonds, 4 cups of peanuts, and 8 cups of raisins.
 - b.** One serving is 7 cups. That means that there were 7 cups of each ingredient.
 - c.** One serving is 7 cups. Divide 42 by $7 = 6$. There are 6 cups of each ingredient.
 - d.** One serving is 7 cups. Divide 42 by $7 = 6$. Multiple each ingredient's amount by 6. 18 cups of chocolate candies, 6 cups of almonds, 6 cups of peanuts, and 12 cups of raisins.

- 3.** If there are h campers, which expression could be used to determine the number of cups of peanuts needed if every camper gets 2 cups of the snack mix?
- a. $h + 2$
 - b. $2h$**
 - c. $h + 2h(1)$
 - d. $2(h + 1)$
- 4.** On the last day of camp, 42 cups of snack mix were served. How many cups of each ingredient was used? Choose a method that could be used to solve the problem.
- a. There are 4 ingredients. Multiply each ingredient by 4. There are 12 cups of chocolate candies, 4 cups of almonds, 4 cups of peanuts, and 8 cups of raisins.
 - b. One serving is 7 cups. That means that there were 7 cups of each ingredient.
 - c. One serving is 7 cups. Divide 42 by $7 = 6$. There are 6 cups of each ingredient.
 - d.** One serving is 7 cups. Divide 42 by $7 = 6$. Multiple each ingredient's amount by 6. 18 cups of chocolate candies, 6 cups of almonds, 6 cups of peanuts, and 12 cups of raisins.

Multiplication and Division

Timed Practice

Multiplication and Division Facts: *Information*

Timed Fact Practice

Timed Fact Practice is a component of each module for students to practice developing automaticity with the facts. Research recommends that students spend about 10 minutes a day practicing facts to build automaticity. Three sets of facts are provided: Multiplication, Division, and Mixed Facts.

Content

This module contains 10 multiplication fact practice sheets, 10 division fact practice sheets, and 10 mixed fact practice sheets; answers are also included. The same set of facts must be used for the duration of the module to provide accurate data on students' progress.

Graphing

Have students practice the multiplication facts for 5 days (sheets 1 – 5; there are extra sheets if more practice is needed). Give students 1 minute to complete one sheet of 20 problems. Then, display the answers for the sheet and have students correct their work and put the number correct at the top of the sheet. Have students use the Facts Practice Graph to plot their number correct on each practice sheet. Repeat this procedure for division facts and then for mixed facts. Students can plot their number correct for each operation across 15 days: 5 days for multiplication, 5 days for division, and 5 days for mixed facts.

Motivation and Self-Regulation

By the middle grades, students with chronically low mathematics performance benefit from motivational strategies to keep them interested in learning or relearning mathematical ideas. Self-regulation, such as monitoring one's own performance, can be a powerful strategy for improving motivation for learning. Having students chart their own performance is a motivational strategy that can help to improve their mathematics performance.

Multiplication and Division Facts: *Common Misconceptions and How to Prevent Them*

Misconceptions	Examples for Preventing or Correcting
Some students believe repeated addition is the only definition of multiplication.	Teach students that repeated addition is only 1 way to represent multiplication. Explain to students that if A and B are nonnegative numbers, then $A \times B$ is the total of A groups of B. ¹
Some students universally believe multiplication can be used when adding groups.	Teach students that repeated addition of the same number of objects is 1 way of thinking of multiplication. Teach students that multiplication cannot be used when the number of objects in each group is not the same. Present examples and nonexamples (e.g., $5 + 5 + 5$, $4 + 5 + 3$). Demonstrate and have students differentiate between equal and unequal groups as well as identify when multiplication can and cannot be used. ³
Some students believe that 4×3 and 3×4 have different answers.	Illustrate the commutative property of multiplication, using array models to prove the total (product) is the same. ²
Some students may believe that $30 = 5 \times 6$ is written incorrectly because the product (30) must follow the equal sign.	Teach students the meaning of the equal sign and explain that the equal sign means “equals” or “is equal to” and that the expressions on each side of the equal sign have the same value. ²
Some students do not connect the rows with the columns in a multiplication table.	Draw attention to the row as each column is completed. Provide additional instruction on the commutative property of multiplication and the multiplication table’s design as needed.
Some students believe that performing a strategy, such as doubling, changes the total number in the array.	Teach students that the doubling strategy changes how the arrays look but not the total number. Use visualizations and manipulatives as needed.
Students may assume that the commutative property also holds for division—for example, assuming that $15 \div 3 = 5$, so $3 \div 15 = 5$.	Demonstrate an example, such as the following. Have 15 sheets of paper to share among 3 people. Ask students, “How many sheets of paper does each person get?” (5) Have 3 sheets of paper to share among 15 people. Ask students, “How many sheets of paper does each person get?” ($\frac{1}{5}$) For each demonstration, write the equation on the board. Draw attention to the quotients, which are different.

Some students may confuse fact families with the set of a number and all its factors (12: 1, 2, 3, 4, 6, 12).	Teach students that a family of facts consists of 3 numbers, 2 of which are the factors that when multiplied equal the product.
Some students may believe a family of facts consists of any 2 factors of a product and the product.	Emphasize that the equation constructed with these numbers must be true. For example, if students offer 5, 10, and 20, ask what the equation is ($5 \times 10 = 20$) and whether it is true.
Some students may need a more concrete model showing how multiplying by powers of 10 works.	If so, use base-ten blocks to show 10, 100, and 1,000, as well as 20, 200, and 2,000. Show students how, in each place, the number in the second group is 2 times larger than the number in the first group: 2 is 2 times larger than 1, 20 is 2 times larger than 10, etc. The factor is always 2, and the number of 0s represents the other factor: 10, 100, or 1,000.

1. Beckman, S. (2011). *Mathematics for elementary teachers with activity manual* (3rd ed.). Boston, MA: Addison-Wesley.
2. National Council of Teachers of Mathematics. (2009). *Focus in grade 3: Teaching with curriculum focal points*. Reston, VA: Author.
3. Scott Foresman & Addison Wesley. (2009). *enVision math Texas: Grade 5*. Glenview: IL: Pearson Education.

Name: _____

Multiplication Timed Practice Sheet 1

Number Correct: _____

1 8
 × 2

2 1
 × 7

3 5
 × 8

4 6
 × 3

5 7
 × 4

6 6
 × 6

7 2
 × 12

8 4
 × 5

9 7
 × 6

10 3
 × 9

11 11
 × 5

12 3
 × 3

13 8
 × 9

14 2
 × 4

15 6
 × 9

16 4
 × 12

17 9
 × 6

18 10
 × 8

19 2
 × 9

20 8
 × 3

Multiplication Timed Practice Sheet 1

$$\begin{array}{r} \mathbf{1} \quad 8 \\ \times 2 \\ \hline 16 \end{array}$$

$$\begin{array}{r} \mathbf{2} \quad 1 \\ \times 7 \\ \hline 7 \end{array}$$

$$\begin{array}{r} \mathbf{3} \quad 5 \\ \times 8 \\ \hline 40 \end{array}$$

$$\begin{array}{r} \mathbf{4} \quad 6 \\ \times 3 \\ \hline 18 \end{array}$$

$$\begin{array}{r} \mathbf{5} \quad 7 \\ \times 4 \\ \hline 28 \end{array}$$

$$\begin{array}{r} \mathbf{6} \quad 6 \\ \times 6 \\ \hline 36 \end{array}$$

$$\begin{array}{r} \mathbf{7} \quad 2 \\ \times 12 \\ \hline 24 \end{array}$$

$$\begin{array}{r} \mathbf{8} \quad 4 \\ \times 5 \\ \hline 20 \end{array}$$

$$\begin{array}{r} \mathbf{9} \quad 7 \\ \times 6 \\ \hline 42 \end{array}$$

$$\begin{array}{r} \mathbf{10} \quad 3 \\ \times 9 \\ \hline 27 \end{array}$$

$$\begin{array}{r} \mathbf{11} \quad 11 \\ \times 5 \\ \hline 55 \end{array}$$

$$\begin{array}{r} \mathbf{12} \quad 3 \\ \times 3 \\ \hline 9 \end{array}$$

$$\begin{array}{r} \mathbf{13} \quad 8 \\ \times 9 \\ \hline 72 \end{array}$$

$$\begin{array}{r} \mathbf{14} \quad 2 \\ \times 4 \\ \hline 8 \end{array}$$

$$\begin{array}{r} \mathbf{15} \quad 6 \\ \times 9 \\ \hline 54 \end{array}$$

$$\begin{array}{r} \mathbf{16} \quad 4 \\ \times 12 \\ \hline 48 \end{array}$$

$$\begin{array}{r} \mathbf{17} \quad 9 \\ \times 6 \\ \hline 54 \end{array}$$

$$\begin{array}{r} \mathbf{18} \quad 10 \\ \times 8 \\ \hline 80 \end{array}$$

$$\begin{array}{r} \mathbf{19} \quad 2 \\ \times 9 \\ \hline 18 \end{array}$$

$$\begin{array}{r} \mathbf{20} \quad 8 \\ \times 3 \\ \hline 24 \end{array}$$

Name: _____

Multiplication Timed Practice Sheet 2

Number Correct: _____

$$\begin{array}{r} 1 \quad 7 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \quad 5 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \quad 9 \\ \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \quad 7 \\ \times 11 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \quad 5 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \quad 10 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \quad 7 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \quad 3 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \quad 4 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \quad 4 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 11 \quad 12 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \quad 7 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 13 \quad 7 \\ \times 10 \\ \hline \end{array}$$

$$\begin{array}{r} 14 \quad 8 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 15 \quad 6 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 16 \quad 5 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 17 \quad 9 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 18 \quad 6 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 19 \quad 9 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 20 \quad 8 \\ \times 4 \\ \hline \end{array}$$

Multiplication Timed Practice Sheet 2

$$\begin{array}{r} \mathbf{1} \quad 7 \\ \times 2 \\ \hline 14 \end{array}$$

$$\begin{array}{r} \mathbf{2} \quad 5 \\ \times 5 \\ \hline 25 \end{array}$$

$$\begin{array}{r} \mathbf{3} \quad 9 \\ \times 1 \\ \hline 9 \end{array}$$

$$\begin{array}{r} \mathbf{4} \quad 7 \\ \times 11 \\ \hline 77 \end{array}$$

$$\begin{array}{r} \mathbf{5} \quad 5 \\ \times 6 \\ \hline 30 \end{array}$$

$$\begin{array}{r} \mathbf{6} \quad 10 \\ \times 3 \\ \hline 30 \end{array}$$

$$\begin{array}{r} \mathbf{7} \quad 7 \\ \times 5 \\ \hline 35 \end{array}$$

$$\begin{array}{r} \mathbf{8} \quad 3 \\ \times 4 \\ \hline 12 \end{array}$$

$$\begin{array}{r} \mathbf{9} \quad 4 \\ \times 9 \\ \hline 36 \end{array}$$

$$\begin{array}{r} \mathbf{10} \quad 4 \\ \times 7 \\ \hline 28 \end{array}$$

$$\begin{array}{r} \mathbf{11} \quad 12 \\ \times 6 \\ \hline 72 \end{array}$$

$$\begin{array}{r} \mathbf{12} \quad 7 \\ \times 8 \\ \hline 56 \end{array}$$

$$\begin{array}{r} \mathbf{13} \quad 7 \\ \times 10 \\ \hline 70 \end{array}$$

$$\begin{array}{r} \mathbf{14} \quad 8 \\ \times 6 \\ \hline 48 \end{array}$$

$$\begin{array}{r} \mathbf{15} \quad 6 \\ \times 7 \\ \hline 42 \end{array}$$

$$\begin{array}{r} \mathbf{16} \quad 5 \\ \times 3 \\ \hline 15 \end{array}$$

$$\begin{array}{r} \mathbf{17} \quad 9 \\ \times 8 \\ \hline 72 \end{array}$$

$$\begin{array}{r} \mathbf{18} \quad 6 \\ \times 4 \\ \hline 24 \end{array}$$

$$\begin{array}{r} \mathbf{19} \quad 9 \\ \times 4 \\ \hline 36 \end{array}$$

$$\begin{array}{r} \mathbf{20} \quad 8 \\ \times 4 \\ \hline 32 \end{array}$$

Name: _____

Multiplication Timed Practice Sheet 3

Number Correct: _____

1 1
 × 12
 —

2 4
 × 3
 —

3 5
 × 2
 —

4 10
 × 7
 —

5 10
 × 2
 —

6 4
 × 8
 —

7 3
 × 7
 —

8 12
 × 7
 —

9 11
 × 6
 —

10 3
 × 12
 —

11 4
 × 6
 —

12 5
 × 9
 —

13 8
 × 7
 —

14 7
 × 3
 —

15 8
 × 8
 —

16 5
 × 10
 —

17 5
 × 4
 —

18 9
 × 2
 —

19 3
 × 11
 —

20 9
 × 7
 —

Multiplication Timed Practice Sheet 3

$$\begin{array}{r} \mathbf{1} \quad 1 \\ \times 12 \\ \hline 12 \end{array}$$

$$\begin{array}{r} \mathbf{2} \quad 4 \\ \times 3 \\ \hline 12 \end{array}$$

$$\begin{array}{r} \mathbf{3} \quad 5 \\ \times 2 \\ \hline 10 \end{array}$$

$$\begin{array}{r} \mathbf{4} \quad 10 \\ \times 7 \\ \hline 70 \end{array}$$

$$\begin{array}{r} \mathbf{5} \quad 10 \\ \times 2 \\ \hline 20 \end{array}$$

$$\begin{array}{r} \mathbf{6} \quad 4 \\ \times 8 \\ \hline 32 \end{array}$$

$$\begin{array}{r} \mathbf{7} \quad 3 \\ \times 7 \\ \hline 21 \end{array}$$

$$\begin{array}{r} \mathbf{8} \quad 12 \\ \times 7 \\ \hline 84 \end{array}$$

$$\begin{array}{r} \mathbf{9} \quad 11 \\ \times 6 \\ \hline 66 \end{array}$$

$$\begin{array}{r} \mathbf{10} \quad 3 \\ \times 12 \\ \hline 36 \end{array}$$

$$\begin{array}{r} \mathbf{11} \quad 4 \\ \times 6 \\ \hline 24 \end{array}$$

$$\begin{array}{r} \mathbf{12} \quad 5 \\ \times 9 \\ \hline 45 \end{array}$$

$$\begin{array}{r} \mathbf{13} \quad 8 \\ \times 7 \\ \hline 56 \end{array}$$

$$\begin{array}{r} \mathbf{14} \quad 7 \\ \times 3 \\ \hline 21 \end{array}$$

$$\begin{array}{r} \mathbf{15} \quad 8 \\ \times 8 \\ \hline 64 \end{array}$$

$$\begin{array}{r} \mathbf{16} \quad 5 \\ \times 10 \\ \hline 50 \end{array}$$

$$\begin{array}{r} \mathbf{17} \quad 5 \\ \times 4 \\ \hline 20 \end{array}$$

$$\begin{array}{r} \mathbf{18} \quad 9 \\ \times 2 \\ \hline 18 \end{array}$$

$$\begin{array}{r} \mathbf{19} \quad 3 \\ \times 11 \\ \hline 33 \end{array}$$

$$\begin{array}{r} \mathbf{20} \quad 9 \\ \times 7 \\ \hline 63 \end{array}$$

Name: _____

Multiplication Timed Practice Sheet 4

Number Correct: _____

1 2
 × 8

2 3
 × 6

3 8
 × 5

4 2
 × 7

5 11
 × 9

6 4
 × 4

7 9
 × 4

8 3
 × 10

9 5
 × 9

10 5
 × 12

11 7
 × 3

12 1
 × 5

13 3
 × 2

14 6
 × 8

15 9
 × 11

16 4
 × 5

17 12
 × 5

18 4
 × 2

19 7
 × 7

20 10
 × 10

Multiplication Timed Practice Sheet 4

1
$$\begin{array}{r} 2 \\ \times 8 \\ \hline 16 \end{array}$$

2
$$\begin{array}{r} 3 \\ \times 6 \\ \hline 18 \end{array}$$

3
$$\begin{array}{r} 8 \\ \times 5 \\ \hline 40 \end{array}$$

4
$$\begin{array}{r} 2 \\ \times 7 \\ \hline 14 \end{array}$$

5
$$\begin{array}{r} 11 \\ \times 9 \\ \hline 99 \end{array}$$

6
$$\begin{array}{r} 4 \\ \times 4 \\ \hline 16 \end{array}$$

7
$$\begin{array}{r} 9 \\ \times 4 \\ \hline 36 \end{array}$$

8
$$\begin{array}{r} 3 \\ \times 10 \\ \hline 30 \end{array}$$

9
$$\begin{array}{r} 5 \\ \times 9 \\ \hline 45 \end{array}$$

10
$$\begin{array}{r} 5 \\ \times 12 \\ \hline 60 \end{array}$$

11
$$\begin{array}{r} 7 \\ \times 3 \\ \hline 21 \end{array}$$

12
$$\begin{array}{r} 1 \\ \times 5 \\ \hline 5 \end{array}$$

13
$$\begin{array}{r} 3 \\ \times 2 \\ \hline 6 \end{array}$$

14
$$\begin{array}{r} 6 \\ \times 8 \\ \hline 48 \end{array}$$

15
$$\begin{array}{r} 9 \\ \times 11 \\ \hline 99 \end{array}$$

16
$$\begin{array}{r} 4 \\ \times 5 \\ \hline 20 \end{array}$$

17
$$\begin{array}{r} 12 \\ \times 5 \\ \hline 60 \end{array}$$

18
$$\begin{array}{r} 4 \\ \times 2 \\ \hline 8 \end{array}$$

19
$$\begin{array}{r} 7 \\ \times 7 \\ \hline 49 \end{array}$$

20
$$\begin{array}{r} 10 \\ \times 10 \\ \hline 100 \end{array}$$

Name: _____

Multiplication Timed Practice Sheet 5

Number Correct: _____

1 4
 × 6

2 9
 × 3

3 5
 × 11

4 10
 × 5

5 5
 × 7

6 2
 × 10

7 3
 × 1

8 12
 × 5

9 8
 × 6

10 6
 × 12

11 6
 × 2

12 7
 × 7

13 4
 × 7

14 5
 × 3

15 3
 × 8

16 12
 × 2

17 9
 × 3

18 11
 × 4

19 7
 × 4

20 9
 × 10

Multiplication Timed Practice Sheet 5

$$\begin{array}{r} \mathbf{1} \quad 4 \\ \times 6 \\ \hline 24 \end{array}$$

$$\begin{array}{r} \mathbf{2} \quad 9 \\ \times 3 \\ \hline 27 \end{array}$$

$$\begin{array}{r} \mathbf{3} \quad 5 \\ \times 11 \\ \hline 55 \end{array}$$

$$\begin{array}{r} \mathbf{4} \quad 10 \\ \times 5 \\ \hline 50 \end{array}$$

$$\begin{array}{r} \mathbf{5} \quad 5 \\ \times 7 \\ \hline 35 \end{array}$$

$$\begin{array}{r} \mathbf{6} \quad 2 \\ \times 10 \\ \hline 20 \end{array}$$

$$\begin{array}{r} \mathbf{7} \quad 3 \\ \times 1 \\ \hline 3 \end{array}$$

$$\begin{array}{r} \mathbf{8} \quad 12 \\ \times 5 \\ \hline 60 \end{array}$$

$$\begin{array}{r} \mathbf{9} \quad 8 \\ \times 6 \\ \hline 48 \end{array}$$

$$\begin{array}{r} \mathbf{10} \quad 6 \\ \times 12 \\ \hline 72 \end{array}$$

$$\begin{array}{r} \mathbf{11} \quad 6 \\ \times 2 \\ \hline 12 \end{array}$$

$$\begin{array}{r} \mathbf{12} \quad 7 \\ \times 7 \\ \hline 49 \end{array}$$

$$\begin{array}{r} \mathbf{13} \quad 4 \\ \times 7 \\ \hline 28 \end{array}$$

$$\begin{array}{r} \mathbf{14} \quad 5 \\ \times 3 \\ \hline 15 \end{array}$$

$$\begin{array}{r} \mathbf{15} \quad 3 \\ \times 8 \\ \hline 24 \end{array}$$

$$\begin{array}{r} \mathbf{16} \quad 12 \\ \times 2 \\ \hline 24 \end{array}$$

$$\begin{array}{r} \mathbf{17} \quad 9 \\ \times 3 \\ \hline 27 \end{array}$$

$$\begin{array}{r} \mathbf{18} \quad 11 \\ \times 4 \\ \hline 44 \end{array}$$

$$\begin{array}{r} \mathbf{19} \quad 7 \\ \times 4 \\ \hline 28 \end{array}$$

$$\begin{array}{r} \mathbf{20} \quad 9 \\ \times 10 \\ \hline 90 \end{array}$$

Name: _____

Multiplication Timed Practice Sheet 6

Number Correct: _____

1 4
 × 3

2 3
 × 6

3 7
 × 5

4 6
 × 4

5 8
 × 10

6 2
 × 2

7 11
 × 2

8 5
 × 5

9 3
 × 5

10 4
 × 8

11 7
 × 9

12 8
 × 12

13 2
 × 10

14 1
 × 8

15 6
 × 11

16 11
 × 12

17 12
 × 8

18 10
 × 6

19 2
 × 5

20 9
 × 7

Multiplication Timed Practice Sheet 6

1
$$\begin{array}{r} 4 \\ \times 3 \\ \hline 12 \end{array}$$

2
$$\begin{array}{r} 3 \\ \times 6 \\ \hline 18 \end{array}$$

3
$$\begin{array}{r} 7 \\ \times 5 \\ \hline 35 \end{array}$$

4
$$\begin{array}{r} 6 \\ \times 4 \\ \hline 24 \end{array}$$

5
$$\begin{array}{r} 8 \\ \times 10 \\ \hline 80 \end{array}$$

6
$$\begin{array}{r} 2 \\ \times 2 \\ \hline 4 \end{array}$$

7
$$\begin{array}{r} 11 \\ \times 2 \\ \hline 22 \end{array}$$

8
$$\begin{array}{r} 5 \\ \times 5 \\ \hline 25 \end{array}$$

9
$$\begin{array}{r} 3 \\ \times 5 \\ \hline 15 \end{array}$$

10
$$\begin{array}{r} 4 \\ \times 8 \\ \hline 32 \end{array}$$

11
$$\begin{array}{r} 7 \\ \times 9 \\ \hline 63 \end{array}$$

12
$$\begin{array}{r} 8 \\ \times 12 \\ \hline 96 \end{array}$$

13
$$\begin{array}{r} 2 \\ \times 10 \\ \hline 20 \end{array}$$

14
$$\begin{array}{r} 1 \\ \times 8 \\ \hline 8 \end{array}$$

15
$$\begin{array}{r} 6 \\ \times 11 \\ \hline 66 \end{array}$$

16
$$\begin{array}{r} 11 \\ \times 12 \\ \hline 132 \end{array}$$

17
$$\begin{array}{r} 12 \\ \times 8 \\ \hline 96 \end{array}$$

18
$$\begin{array}{r} 10 \\ \times 6 \\ \hline 60 \end{array}$$

19
$$\begin{array}{r} 2 \\ \times 5 \\ \hline 10 \end{array}$$

20
$$\begin{array}{r} 9 \\ \times 7 \\ \hline 63 \end{array}$$

Name: _____

Multiplication Timed Practice Sheet 7

Number Correct: _____

1 5
 × 8

2 4
 × 4

3 5
 × 7

4 9
 × 2

5 8
 × 11

6 3
 × 7

7 2
 × 6

8 3
 × 5

9 3
 × 4

10 9
 × 12

11 6
 × 10

12 8
 × 3

13 12
 × 11

14 8
 × 8

15 5
 × 4

16 1
 × 11

17 6
 × 7

18 7
 × 6

19 10
 × 9

20 6
 × 5

Multiplication Timed Practice Sheet 7

1
$$\begin{array}{r} 5 \\ \times 8 \\ \hline 40 \end{array}$$

2
$$\begin{array}{r} 4 \\ \times 4 \\ \hline 16 \end{array}$$

3
$$\begin{array}{r} 5 \\ \times 7 \\ \hline 35 \end{array}$$

4
$$\begin{array}{r} 9 \\ \times 2 \\ \hline 18 \end{array}$$

5
$$\begin{array}{r} 8 \\ \times 11 \\ \hline 88 \end{array}$$

6
$$\begin{array}{r} 3 \\ \times 7 \\ \hline 21 \end{array}$$

7
$$\begin{array}{r} 2 \\ \times 6 \\ \hline 12 \end{array}$$

8
$$\begin{array}{r} 3 \\ \times 5 \\ \hline 15 \end{array}$$

9
$$\begin{array}{r} 3 \\ \times 4 \\ \hline 12 \end{array}$$

10
$$\begin{array}{r} 9 \\ \times 12 \\ \hline 108 \end{array}$$

11
$$\begin{array}{r} 6 \\ \times 10 \\ \hline 60 \end{array}$$

12
$$\begin{array}{r} 8 \\ \times 3 \\ \hline 24 \end{array}$$

13
$$\begin{array}{r} 12 \\ \times 11 \\ \hline 132 \end{array}$$

14
$$\begin{array}{r} 8 \\ \times 8 \\ \hline 64 \end{array}$$

15
$$\begin{array}{r} 5 \\ \times 4 \\ \hline 20 \end{array}$$

16
$$\begin{array}{r} 1 \\ \times 11 \\ \hline 11 \end{array}$$

17
$$\begin{array}{r} 6 \\ \times 7 \\ \hline 42 \end{array}$$

18
$$\begin{array}{r} 7 \\ \times 6 \\ \hline 42 \end{array}$$

19
$$\begin{array}{r} 10 \\ \times 9 \\ \hline 90 \end{array}$$

20
$$\begin{array}{r} 6 \\ \times 5 \\ \hline 30 \end{array}$$

Name: _____

Multiplication Timed Practice Sheet 8

Number Correct: _____

$$\begin{array}{r} 1 \quad 3 \\ \times 10 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \quad 9 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \quad 11 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \quad 6 \\ \times 10 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \quad 7 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \quad 8 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \quad 5 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \quad 4 \\ \times 11 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \quad 4 \\ \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \quad 6 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 11 \quad 6 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \quad 8 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 13 \quad 10 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 14 \quad 11 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 15 \quad 2 \\ \times 12 \\ \hline \end{array}$$

$$\begin{array}{r} 16 \quad 9 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 17 \quad 6 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 18 \quad 2 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 19 \quad 7 \\ \times 12 \\ \hline \end{array}$$

$$\begin{array}{r} 20 \quad 4 \\ \times 2 \\ \hline \end{array}$$

Multiplication Timed Practice Sheet 8

1
$$\begin{array}{r} 3 \\ \times 10 \\ \hline 30 \end{array}$$

2
$$\begin{array}{r} 9 \\ \times 6 \\ \hline 54 \end{array}$$

3
$$\begin{array}{r} 11 \\ \times 2 \\ \hline 22 \end{array}$$

4
$$\begin{array}{r} 6 \\ \times 10 \\ \hline 60 \end{array}$$

5
$$\begin{array}{r} 7 \\ \times 9 \\ \hline 63 \end{array}$$

6
$$\begin{array}{r} 8 \\ \times 7 \\ \hline 56 \end{array}$$

7
$$\begin{array}{r} 5 \\ \times 2 \\ \hline 10 \end{array}$$

8
$$\begin{array}{r} 4 \\ \times 11 \\ \hline 44 \end{array}$$

9
$$\begin{array}{r} 4 \\ \times 1 \\ \hline 4 \end{array}$$

10
$$\begin{array}{r} 6 \\ \times 9 \\ \hline 54 \end{array}$$

11
$$\begin{array}{r} 6 \\ \times 5 \\ \hline 30 \end{array}$$

12
$$\begin{array}{r} 8 \\ \times 5 \\ \hline 40 \end{array}$$

13
$$\begin{array}{r} 10 \\ \times 3 \\ \hline 30 \end{array}$$

14
$$\begin{array}{r} 11 \\ \times 7 \\ \hline 77 \end{array}$$

15
$$\begin{array}{r} 2 \\ \times 12 \\ \hline 24 \end{array}$$

16
$$\begin{array}{r} 9 \\ \times 9 \\ \hline 81 \end{array}$$

17
$$\begin{array}{r} 6 \\ \times 8 \\ \hline 48 \end{array}$$

18
$$\begin{array}{r} 2 \\ \times 3 \\ \hline 6 \end{array}$$

19
$$\begin{array}{r} 7 \\ \times 12 \\ \hline 84 \end{array}$$

20
$$\begin{array}{r} 4 \\ \times 2 \\ \hline 8 \end{array}$$

Name: _____

Multiplication Timed Practice Sheet 9

Number Correct: _____

1 6
 × 2

2 9
 × 5

3 11
 × 8

4 2
 × 6

5 5
 × 6

6 8
 × 9

7 9
 × 8

8 10
 × 4

9 12
 × 3

10 11
 × 11

11 4
 × 10

12 7
 × 8

13 3
 × 9

14 4
 × 9

15 8
 × 2

16 12
 × 9

17 11
 × 3

18 10
 × 7

19 1
 × 6

20 2
 × 8

Multiplication Timed Practice Sheet 9

$$\begin{array}{r} \mathbf{1} \quad 6 \\ \times 2 \\ \hline 12 \end{array}$$

$$\begin{array}{r} \mathbf{2} \quad 9 \\ \times 5 \\ \hline 45 \end{array}$$

$$\begin{array}{r} \mathbf{3} \quad 11 \\ \times 8 \\ \hline 88 \end{array}$$

$$\begin{array}{r} \mathbf{4} \quad 2 \\ \times 6 \\ \hline 12 \end{array}$$

$$\begin{array}{r} \mathbf{5} \quad 5 \\ \times 6 \\ \hline 30 \end{array}$$

$$\begin{array}{r} \mathbf{6} \quad 8 \\ \times 9 \\ \hline 72 \end{array}$$

$$\begin{array}{r} \mathbf{7} \quad 9 \\ \times 8 \\ \hline 72 \end{array}$$

$$\begin{array}{r} \mathbf{8} \quad 10 \\ \times 4 \\ \hline 40 \end{array}$$

$$\begin{array}{r} \mathbf{9} \quad 12 \\ \times 3 \\ \hline 36 \end{array}$$

$$\begin{array}{r} \mathbf{10} \quad 11 \\ \times 11 \\ \hline 121 \end{array}$$

$$\begin{array}{r} \mathbf{11} \quad 4 \\ \times 10 \\ \hline 40 \end{array}$$

$$\begin{array}{r} \mathbf{12} \quad 7 \\ \times 8 \\ \hline 56 \end{array}$$

$$\begin{array}{r} \mathbf{13} \quad 3 \\ \times 9 \\ \hline 27 \end{array}$$

$$\begin{array}{r} \mathbf{14} \quad 4 \\ \times 9 \\ \hline 36 \end{array}$$

$$\begin{array}{r} \mathbf{15} \quad 8 \\ \times 2 \\ \hline 16 \end{array}$$

$$\begin{array}{r} \mathbf{16} \quad 12 \\ \times 9 \\ \hline 108 \end{array}$$

$$\begin{array}{r} \mathbf{17} \quad 11 \\ \times 3 \\ \hline 33 \end{array}$$

$$\begin{array}{r} \mathbf{18} \quad 10 \\ \times 7 \\ \hline 70 \end{array}$$

$$\begin{array}{r} \mathbf{19} \quad 1 \\ \times 6 \\ \hline 6 \end{array}$$

$$\begin{array}{r} \mathbf{20} \quad 2 \\ \times 8 \\ \hline 16 \end{array}$$

Name: _____

Multiplication Timed Practice Sheet 10

Number Correct: _____

$$\begin{array}{r} 1 \quad 3 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \quad 6 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \quad 3 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \quad 10 \\ \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \quad 2 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \quad 2 \\ \times 11 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \quad 9 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \quad 9 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \quad 2 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \quad 6 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 11 \quad 2 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \quad 12 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 13 \quad 2 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 14 \quad 12 \\ \times 10 \\ \hline \end{array}$$

$$\begin{array}{r} 15 \quad 8 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 16 \quad 11 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 17 \quad 11 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 18 \quad 5 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 19 \quad 10 \\ \times 11 \\ \hline \end{array}$$

$$\begin{array}{r} 20 \quad 7 \\ \times 2 \\ \hline \end{array}$$

Multiplication Timed Practice Sheet 10

$$\begin{array}{r} \mathbf{1} \quad 3 \\ \times 8 \\ \hline 24 \end{array}$$

$$\begin{array}{r} \mathbf{2} \quad 6 \\ \times 3 \\ \hline 18 \end{array}$$

$$\begin{array}{r} \mathbf{3} \quad 3 \\ \times 3 \\ \hline 9 \end{array}$$

$$\begin{array}{r} \mathbf{4} \quad 10 \\ \times 1 \\ \hline 10 \end{array}$$

$$\begin{array}{r} \mathbf{5} \quad 2 \\ \times 5 \\ \hline 10 \end{array}$$

$$\begin{array}{r} \mathbf{6} \quad 2 \\ \times 11 \\ \hline 22 \end{array}$$

$$\begin{array}{r} \mathbf{7} \quad 9 \\ \times 9 \\ \hline 81 \end{array}$$

$$\begin{array}{r} \mathbf{8} \quad 9 \\ \times 5 \\ \hline 45 \end{array}$$

$$\begin{array}{r} \mathbf{9} \quad 2 \\ \times 9 \\ \hline 18 \end{array}$$

$$\begin{array}{r} \mathbf{10} \quad 6 \\ \times 6 \\ \hline 36 \end{array}$$

$$\begin{array}{r} \mathbf{11} \quad 2 \\ \times 3 \\ \hline 6 \end{array}$$

$$\begin{array}{r} \mathbf{12} \quad 12 \\ \times 3 \\ \hline 36 \end{array}$$

$$\begin{array}{r} \mathbf{13} \quad 2 \\ \times 7 \\ \hline 14 \end{array}$$

$$\begin{array}{r} \mathbf{14} \quad 12 \\ \times 10 \\ \hline 120 \end{array}$$

$$\begin{array}{r} \mathbf{15} \quad 8 \\ \times 4 \\ \hline 32 \end{array}$$

$$\begin{array}{r} \mathbf{16} \quad 11 \\ \times 8 \\ \hline 88 \end{array}$$

$$\begin{array}{r} \mathbf{17} \quad 11 \\ \times 4 \\ \hline 44 \end{array}$$

$$\begin{array}{r} \mathbf{18} \quad 5 \\ \times 5 \\ \hline 25 \end{array}$$

$$\begin{array}{r} \mathbf{19} \quad 10 \\ \times 11 \\ \hline 110 \end{array}$$

$$\begin{array}{r} \mathbf{20} \quad 7 \\ \times 2 \\ \hline 14 \end{array}$$

Name: _____

Division Timed Practice Sheet 1

Number Correct: _____

1 $7 \overline{)21}$

2 $5 \overline{)10}$

3 $2 \overline{)14}$

4 $9 \overline{)27}$

5 $6 \overline{)24}$

6 $10 \overline{)70}$

7 $8 \overline{)32}$

8 $6 \overline{)36}$

9 $3 \overline{)9}$

10 $5 \overline{)35}$

11 $1 \overline{)8}$

12 $12 \overline{)24}$

13 $2 \overline{)20}$

14 $8 \overline{)40}$

15 $3 \overline{)15}$

16 $4 \overline{)32}$

17 $4 \overline{)28}$

18 $7 \overline{)42}$

19 $9 \overline{)63}$

20 $6 \overline{)66}$

Division Timed Practice Sheet 1

1 $7 \overline{)21}^3$

2 $5 \overline{)10}^2$

3 $2 \overline{)14}^7$

4 $9 \overline{)27}^3$

5 $6 \overline{)24}^4$

6 $10 \overline{)70}^7$

7 $8 \overline{)32}^4$

8 $6 \overline{)36}^6$

9 $3 \overline{)9}^3$

10 $5 \overline{)35}^7$

11 $1 \overline{)8}^8$

12 $12 \overline{)24}^2$

13 $2 \overline{)20}^{10}$

14 $8 \overline{)40}^5$

15 $3 \overline{)15}^5$

16 $4 \overline{)32}^8$

17 $4 \overline{)28}^7$

18 $7 \overline{)42}^6$

19 $9 \overline{)63}^7$

20 $6 \overline{)66}^{11}$

Name: _____

Division Timed Practice Sheet 2

Number Correct: _____

1 $2 \overline{)10}$

2 $3 \overline{)27}$

3 $3 \overline{)21}$

4 $7 \overline{)14}$

5 $6 \overline{)30}$

6 $1 \overline{)6}$

7 $6 \overline{)54}$

8 $12 \overline{)60}$

9 $3 \overline{)36}$

10 $4 \overline{)24}$

11 $5 \overline{)25}$

12 $10 \overline{)80}$

13 $8 \overline{)16}$

14 $11 \overline{)44}$

15 $8 \overline{)24}$

16 $5 \overline{)30}$

17 $9 \overline{)54}$

18 $6 \overline{)60}$

19 $8 \overline{)72}$

20 $7 \overline{)56}$

Division Timed Practice Sheet 2

1 $2 \overline{)10^5}$

2 $3 \overline{)27^9}$

3 $3 \overline{)21^7}$

4 $7 \overline{)14^2}$

5 $6 \overline{)30^5}$

6 $1 \overline{)6^6}$

7 $6 \overline{)54^9}$

8 $12 \overline{)60^5}$

9 $3 \overline{)36^{12}}$

10 $4 \overline{)24^6}$

11 $5 \overline{)25^5}$

12 $10 \overline{)80^8}$

13 $8 \overline{)16^2}$

14 $11 \overline{)44^4}$

15 $8 \overline{)24^3}$

16 $5 \overline{)30^6}$

17 $9 \overline{)54^6}$

18 $6 \overline{)60^{10}}$

19 $8 \overline{)72^9}$

20 $7 \overline{)56^8}$

Name: _____

Division Timed Practice Sheet 3

Number Correct: _____

1 $11 \overline{)66}$

2 $2 \overline{)18}$

3 $6 \overline{)42}$

4 $7 \overline{)63}$

5 $5 \overline{)45}$

6 $3 \overline{)24}$

7 $9 \overline{)36}$

8 $1 \overline{)12}$

9 $4 \overline{)20}$

10 $10 \overline{)30}$

11 $9 \overline{)36}$

12 $9 \overline{)90}$

13 $8 \overline{)80}$

14 $3 \overline{)18}$

15 $8 \overline{)24}$

16 $4 \overline{)16}$

17 $7 \overline{)35}$

18 $6 \overline{)18}$

19 $9 \overline{)99}$

20 $12 \overline{)120}$

Division Timed Practice Sheet 3

1 $11 \overline{)66}^6$

2 $2 \overline{)18}^9$

3 $6 \overline{)42}^7$

4 $7 \overline{)63}^9$

5 $5 \overline{)45}^9$

6 $3 \overline{)24}^8$

7 $9 \overline{)36}^4$

8 $1 \overline{)12}^{12}$

9 $4 \overline{)20}^5$

10 $10 \overline{)30}^3$

11 $9 \overline{)36}^4$

12 $9 \overline{)90}^{10}$

13 $8 \overline{)80}^{10}$

14 $3 \overline{)18}^6$

15 $8 \overline{)24}^3$

16 $4 \overline{)16}^4$

17 $7 \overline{)35}^5$

18 $6 \overline{)18}^3$

19 $9 \overline{)99}^{11}$

20 $12 \overline{)120}^{10}$

Name: _____

Division Timed Practice Sheet 4

Number Correct: _____

1 $5 \overline{)15}$

2 $11 \overline{)55}$

3 $4 \overline{)12}$

4 $9 \overline{)45}$

5 $7 \overline{)28}$

6 $4 \overline{)36}$

7 $1 \overline{)7}$

8 $10 \overline{)60}$

9 $2 \overline{)16}$

10 $5 \overline{)40}$

11 $8 \overline{)56}$

12 $2 \overline{)24}$

13 $9 \overline{)18}$

14 $11 \overline{)88}$

15 $12 \overline{)48}$

16 $7 \overline{)49}$

17 $7 \overline{)56}$

18 $3 \overline{)6}$

19 $4 \overline{)40}$

20 $6 \overline{)30}$

Division Timed Practice Sheet 4

1 $5 \overline{)15}^3$

2 $11 \overline{)55}^5$

3 $4 \overline{)12}^3$

4 $9 \overline{)45}^5$

5 $7 \overline{)28}^4$

6 $4 \overline{)36}^9$

7 $1 \overline{)7}^7$

8 $10 \overline{)60}^6$

9 $2 \overline{)16}^8$

10 $5 \overline{)40}^8$

11 $8 \overline{)56}^7$

12 $2 \overline{)24}^{12}$

13 $9 \overline{)18}^2$

14 $11 \overline{)88}^8$

15 $12 \overline{)48}^4$

16 $7 \overline{)49}^7$

17 $7 \overline{)56}^8$

18 $3 \overline{)6}^2$

19 $4 \overline{)40}^{10}$

20 $6 \overline{)30}^5$

Name: _____

Division Timed Practice Sheet 5

Number Correct: _____

1 $3 \overline{)21}$

2 $6 \overline{)12}$

3 $3 \overline{)36}$

4 $3 \overline{)15}$

5 $9 \overline{)36}$

6 $8 \overline{)48}$

7 $3 \overline{)12}$

8 $10 \overline{)90}$

9 $4 \overline{)24}$

10 $5 \overline{)60}$

11 $11 \overline{)33}$

12 $8 \overline{)64}$

13 $1 \overline{)4}$

14 $4 \overline{)28}$

15 $6 \overline{)48}$

16 $5 \overline{)55}$

17 $12 \overline{)24}$

18 $7 \overline{)70}$

19 $9 \overline{)27}$

20 $12 \overline{)96}$

Division Timed Practice Sheet 5

1 $3 \overline{)21}^7$

2 $6 \overline{)12}^2$

3 $3 \overline{)36}^{12}$

4 $3 \overline{)15}^5$

5 $9 \overline{)36}^4$

6 $8 \overline{)48}^6$

7 $3 \overline{)12}^4$

8 $10 \overline{)90}^9$

9 $4 \overline{)24}^6$

10 $5 \overline{)60}^{12}$

11 $11 \overline{)33}^3$

12 $8 \overline{)64}^8$

13 $1 \overline{)4}^4$

14 $4 \overline{)28}^7$

15 $6 \overline{)48}^8$

16 $5 \overline{)55}^{11}$

17 $12 \overline{)24}^2$

18 $7 \overline{)70}^{10}$

19 $9 \overline{)27}^3$

20 $12 \overline{)96}^8$

Name: _____

Division Timed Practice Sheet 6

Number Correct: _____

1 $2 \overline{)20}$

2 $8 \overline{)16}$

3 $5 \overline{)20}$

4 $1 \overline{)3}$

5 $5 \overline{)35}$

6 $4 \overline{)44}$

7 $6 \overline{)48}$

8 $11 \overline{)110}$

9 $3 \overline{)18}$

10 $2 \overline{)4}$

11 $3 \overline{)27}$

12 $6 \overline{)72}$

13 $9 \overline{)81}$

14 $3 \overline{)24}$

15 $10 \overline{)20}$

16 $4 \overline{)48}$

17 $6 \overline{)30}$

18 $10 \overline{)110}$

19 $9 \overline{)54}$

20 $7 \overline{)28}$

Division Timed Practice Sheet 6

1 $2 \overline{)20}^{\text{10}}$

2 $8 \overline{)16}^{\text{2}}$

3 $5 \overline{)20}^{\text{4}}$

4 $1 \overline{)3}^{\text{3}}$

5 $5 \overline{)35}^{\text{7}}$

6 $4 \overline{)44}^{\text{11}}$

7 $6 \overline{)48}^{\text{8}}$

8 $11 \overline{)110}^{\text{10}}$

9 $3 \overline{)18}^{\text{6}}$

10 $2 \overline{)4}^{\text{2}}$

11 $3 \overline{)27}^{\text{9}}$

12 $6 \overline{)72}^{\text{12}}$

13 $9 \overline{)81}^{\text{9}}$

14 $3 \overline{)24}^{\text{8}}$

15 $10 \overline{)20}^{\text{2}}$

16 $4 \overline{)48}^{\text{12}}$

17 $6 \overline{)30}^{\text{5}}$

18 $10 \overline{)110}^{\text{11}}$

19 $9 \overline{)54}^{\text{6}}$

20 $7 \overline{)28}^{\text{4}}$

Name: _____

Division Timed Practice Sheet 7

Number Correct: _____

1 $2 \overline{)10}$

2 $8 \overline{)40}$

3 $3 \overline{)9}$

4 $11 \overline{)55}$

5 $8 \overline{)56}$

6 $8 \overline{)32}$

7 $7 \overline{)63}$

8 $2 \overline{)22}$

9 $4 \overline{)36}$

10 $10 \overline{)80}$

11 $8 \overline{)64}$

12 $12 \overline{)72}$

13 $5 \overline{)15}$

14 $9 \overline{)63}$

15 $7 \overline{)77}$

16 $6 \overline{)18}$

17 $5 \overline{)50}$

18 $6 \overline{)36}$

19 $6 \overline{)24}$

20 $1 \overline{)9}$

Division Timed Practice Sheet 7

1 $2 \overline{)10^5}$

2 $8 \overline{)40^5}$

3 $3 \overline{)9^3}$

4 $11 \overline{)55^5}$

5 $8 \overline{)56^7}$

6 $8 \overline{)32^4}$

7 $7 \overline{)63^9}$

8 $2 \overline{)22^{11}}$

9 $4 \overline{)36^9}$

10 $10 \overline{)80^8}$

11 $8 \overline{)64^8}$

12 $12 \overline{)72^6}$

13 $5 \overline{)15^3}$

14 $9 \overline{)63^7}$

15 $7 \overline{)77^{11}}$

16 $6 \overline{)18^3}$

17 $5 \overline{)50^{10}}$

18 $6 \overline{)36^6}$

19 $6 \overline{)24^4}$

20 $1 \overline{)9^9}$

Name: _____

Division Timed Practice Sheet 8

Number Correct: _____

1 $9 \overline{)45}$

2 $11 \overline{)66}$

3 $2 \overline{)4}$

4 $2 \overline{)12}$

5 $1 \overline{)5}$

6 $12 \overline{)108}$

7 $5 \overline{)55}$

8 $7 \overline{)49}$

9 $5 \overline{)60}$

10 $4 \overline{)8}$

11 $4 \overline{)32}$

12 $10 \overline{)40}$

13 $7 \overline{)84}$

14 $7 \overline{)21}$

15 $12 \overline{)144}$

16 $6 \overline{)54}$

17 $9 \overline{)81}$

18 $11 \overline{)99}$

19 $4 \overline{)40}$

20 $5 \overline{)50}$

Division Timed Practice Sheet 8

1 $9 \overline{)45}^5$

2 $11 \overline{)66}^6$

3 $2 \overline{)4}^2$

4 $2 \overline{)12}^6$

5 $1 \overline{)5}^5$

6 $12 \overline{)108}^9$

7 $5 \overline{)55}^{11}$

8 $7 \overline{)49}^7$

9 $5 \overline{)60}^{12}$

10 $4 \overline{)8}^2$

11 $4 \overline{)32}^8$

12 $10 \overline{)40}^4$

13 $7 \overline{)84}^{12}$

14 $7 \overline{)21}^3$

15 $12 \overline{)144}^{12}$

16 $6 \overline{)54}^9$

17 $9 \overline{)81}^9$

18 $11 \overline{)99}^9$

19 $4 \overline{)40}^{10}$

20 $5 \overline{)50}^{10}$

Name: _____

Division Timed Practice Sheet 9

Number Correct: _____

1 $11 \overline{)22}$

2 $4 \overline{)12}$

3 $6 \overline{)66}$

4 $5 \overline{)30}$

5 $4 \overline{)16}$

6 $2 \overline{)6}$

7 $5 \overline{)45}$

8 $10 \overline{)120}$

9 $10 \overline{)40}$

10 $8 \overline{)88}$

11 $8 \overline{)72}$

12 $12 \overline{)36}$

13 $2 \overline{)14}$

14 $11 \overline{)121}$

15 $7 \overline{)35}$

16 $1 \overline{)10}$

17 $4 \overline{)48}$

18 $9 \overline{)72}$

19 $12 \overline{)84}$

20 $3 \overline{)33}$

Division Timed Practice Sheet 9

1 $11 \overline{)22}^2$

2 $4 \overline{)12}^3$

3 $6 \overline{)66}^{11}$

4 $5 \overline{)30}^6$

5 $4 \overline{)16}^4$

6 $2 \overline{)6}^3$

7 $5 \overline{)45}^9$

8 $10 \overline{)120}^{12}$

9 $10 \overline{)40}^4$

10 $8 \overline{)88}^{11}$

11 $8 \overline{)72}^9$

12 $12 \overline{)36}^3$

13 $2 \overline{)14}^7$

14 $11 \overline{)121}^{11}$

15 $7 \overline{)35}^5$

16 $1 \overline{)10}^{10}$

17 $4 \overline{)48}^{12}$

18 $9 \overline{)72}^8$

19 $12 \overline{)84}^7$

20 $3 \overline{)33}^{11}$

Name: _____

Division Timed Practice Sheet 10

Number Correct: _____

1 $10 \overline{)70}$

2 $6 \overline{)12}$

3 $2 \overline{)8}$

4 $3 \overline{)12}$

5 $5 \overline{)25}$

6 $6 \overline{)42}$

7 $5 \overline{)20}$

8 $3 \overline{)30}$

9 $2 \overline{)18}$

10 $10 \overline{)100}$

11 $4 \overline{)12}$

12 $8 \overline{)48}$

13 $7 \overline{)42}$

14 $12 \overline{)36}$

15 $4 \overline{)48}$

16 $11 \overline{)77}$

17 $9 \overline{)72}$

18 $1 \overline{)11}$

19 $3 \overline{)33}$

20 $5 \overline{)10}$

Division Timed Practice Sheet 10

1 $10 \overline{)70}^7$

2 $6 \overline{)12}^2$

3 $2 \overline{)8}^4$

4 $3 \overline{)12}^4$

5 $5 \overline{)25}^5$

6 $6 \overline{)42}^7$

7 $5 \overline{)20}^4$

8 $3 \overline{)30}^{10}$

9 $2 \overline{)18}^9$

10 $10 \overline{)100}^{10}$

11 $4 \overline{)12}^3$

12 $8 \overline{)48}^6$

13 $7 \overline{)42}^6$

14 $12 \overline{)36}^3$

15 $4 \overline{)48}^{12}$

16 $11 \overline{)77}^7$

17 $9 \overline{)72}^8$

18 $1 \overline{)11}^{11}$

19 $3 \overline{)33}^{11}$

20 $5 \overline{)10}^2$

Name: _____

Mixed Facts Timed Practice Sheet 1

Number Correct: _____

1 4
 × 7

2 2)16

3 4
 × 5

4 7)21

5 11
 × 1

6 7)56

7 8
 × 8

8 3
 × 4

9 4)36

10 3)18

11 8)64

12 3
 × 12

13 9)45

14 7)70

15 7
 × 6

16 10
 × 6

17 8
 × 2

18 9
 × 6

19 5)20

20 5)55

Mixed Facts Timed Practice Sheet 1

1
$$\begin{array}{r} 4 \\ \times 7 \\ \hline 28 \end{array}$$

2
$$2 \overline{)16}^8$$

3
$$\begin{array}{r} 4 \\ \times 5 \\ \hline 20 \end{array}$$

4
$$7 \overline{)21}^3$$

5
$$\begin{array}{r} 11 \\ \times 1 \\ \hline 11 \end{array}$$

6
$$7 \overline{)56}^8$$

7
$$\begin{array}{r} 8 \\ \times 8 \\ \hline 64 \end{array}$$

8
$$\begin{array}{r} 3 \\ \times 4 \\ \hline 12 \end{array}$$

9
$$4 \overline{)36}^9$$

10
$$3 \overline{)18}^6$$

11
$$8 \overline{)64}^8$$

12
$$\begin{array}{r} 3 \\ \times 12 \\ \hline 36 \end{array}$$

13
$$9 \overline{)45}^5$$

14
$$7 \overline{)70}^{10}$$

15
$$\begin{array}{r} 7 \\ \times 6 \\ \hline 42 \end{array}$$

16
$$\begin{array}{r} 10 \\ \times 6 \\ \hline 60 \end{array}$$

17
$$\begin{array}{r} 8 \\ \times 2 \\ \hline 16 \end{array}$$

18
$$\begin{array}{r} 9 \\ \times 6 \\ \hline 54 \end{array}$$

19
$$5 \overline{)20}^4$$

20
$$5 \overline{)55}^{11}$$

Name: _____

Mixed Facts Timed Practice Sheet 2

Number Correct: _____

1 2
 × 9
 —

2 5
 × 10
 —

3 2) $\overline{12}$

4 5
 × 7
 —

5 6) $\overline{42}$

6 11
 × 4
 —

7 7
 × 8
 —

8 8) $\overline{32}$

9 6) $\overline{54}$

10 3) $\overline{33}$

11 5
 × 12
 —

12 1) $\overline{12}$

13 12
 × 2
 —

14 4) $\overline{16}$

15 6
 × 9
 —

16 3
 × 6
 —

17 12) $\overline{24}$

18 3
 × 8
 —

19 10) $\overline{20}$

20 4) $\overline{8}$

Mixed Facts Timed Practice Sheet 2

1
$$\begin{array}{r} 2 \\ \times 9 \\ \hline 18 \end{array}$$

2
$$\begin{array}{r} 5 \\ \times 10 \\ \hline 50 \end{array}$$

3
$$2 \overline{)12}^6$$

4
$$\begin{array}{r} 5 \\ \times 7 \\ \hline 35 \end{array}$$

5
$$6 \overline{)42}^7$$

6
$$\begin{array}{r} 11 \\ \times 4 \\ \hline 44 \end{array}$$

7
$$\begin{array}{r} 7 \\ \times 8 \\ \hline 56 \end{array}$$

8
$$8 \overline{)32}^4$$

9
$$6 \overline{)54}^9$$

10
$$3 \overline{)33}^{11}$$

11
$$\begin{array}{r} 5 \\ \times 12 \\ \hline 60 \end{array}$$

12
$$1 \overline{)12}^{12}$$

13
$$\begin{array}{r} 12 \\ \times 2 \\ \hline 24 \end{array}$$

14
$$4 \overline{)16}^4$$

15
$$\begin{array}{r} 6 \\ \times 9 \\ \hline 54 \end{array}$$

16
$$\begin{array}{r} 3 \\ \times 6 \\ \hline 18 \end{array}$$

17
$$12 \overline{)24}^2$$

18
$$\begin{array}{r} 3 \\ \times 8 \\ \hline 24 \end{array}$$

19
$$10 \overline{)20}^2$$

20
$$4 \overline{)8}^2$$

Name: _____

Mixed Facts Timed Practice Sheet 3

Number Correct: _____

1 8
 × 5

2 3)12

3 4
 × 8

4 8)56

5 7
 × 7

6 10)60

7 4)8

8 6
 × 1

9 10)100

10 9
 × 2

11 9)99

12 3
 × 5

13 10
 × 11

14 5
 × 2

15 3)27

16 12
 × 4

17 8)40

18 7
 × 9

19 5)35

20 12)36

Mixed Facts Timed Practice Sheet 3

$$\begin{array}{r} \mathbf{1} \quad 8 \\ \times 5 \\ \hline 40 \end{array}$$

$$\begin{array}{r} \mathbf{2} \quad 4 \\ 3 \overline{)12} \end{array}$$

$$\begin{array}{r} \mathbf{3} \quad 4 \\ \times 8 \\ \hline 32 \end{array}$$

$$\begin{array}{r} \mathbf{4} \quad 7 \\ 8 \overline{)56} \end{array}$$

$$\begin{array}{r} \mathbf{5} \quad 7 \\ \times 7 \\ \hline 49 \end{array}$$

$$\begin{array}{r} \mathbf{6} \quad 6 \\ 10 \overline{)60} \end{array}$$

$$\begin{array}{r} \mathbf{7} \quad 2 \\ 4 \overline{)8} \end{array}$$

$$\begin{array}{r} \mathbf{8} \quad 6 \\ \times 1 \\ \hline 6 \end{array}$$

$$\begin{array}{r} \mathbf{9} \quad 10 \\ 10 \overline{)100} \end{array}$$

$$\begin{array}{r} \mathbf{10} \quad 9 \\ \times 2 \\ \hline 18 \end{array}$$

$$\begin{array}{r} \mathbf{11} \quad 11 \\ 9 \overline{)99} \end{array}$$

$$\begin{array}{r} \mathbf{12} \quad 3 \\ \times 5 \\ \hline 15 \end{array}$$

$$\begin{array}{r} \mathbf{13} \quad 10 \\ \times 11 \\ \hline 110 \end{array}$$

$$\begin{array}{r} \mathbf{14} \quad 5 \\ \times 2 \\ \hline 10 \end{array}$$

$$\begin{array}{r} \mathbf{15} \quad 9 \\ 3 \overline{)27} \end{array}$$

$$\begin{array}{r} \mathbf{16} \quad 12 \\ \times 4 \\ \hline 48 \end{array}$$

$$\begin{array}{r} \mathbf{17} \quad 5 \\ 8 \overline{)40} \end{array}$$

$$\begin{array}{r} \mathbf{18} \quad 7 \\ \times 9 \\ \hline 63 \end{array}$$

$$\begin{array}{r} \mathbf{19} \quad 7 \\ 5 \overline{)35} \end{array}$$

$$\begin{array}{r} \mathbf{20} \quad 3 \\ 12 \overline{)36} \end{array}$$

Name: _____

Mixed Facts Timed Practice Sheet 4

Number Correct: _____

1 4
 × 6
 —

2 5 $\overline{)40}$

3 2
 × 11
 —

4 3 $\overline{)21}$

5 1 $\overline{)7}$

6 12
 × 6
 —

7 4 $\overline{)12}$

8 2
 × 10
 —

9 6
 × 8
 —

10 5 $\overline{)50}$

11 3
 × 3
 —

12 9 $\overline{)72}$

13 8
 × 10
 —

14 7
 × 4
 —

15 11 $\overline{)99}$

16 5
 × 9
 —

17 12 $\overline{)60}$

18 6 $\overline{)36}$

19 3
 × 5
 —

20 7 $\overline{)28}$

Mixed Facts Timed Practice Sheet 4

$$\begin{array}{r} \mathbf{1} \quad 4 \\ \times 6 \\ \hline 24 \end{array}$$

$$\mathbf{2} \quad \begin{array}{r} 8 \\ 5 \overline{)40} \end{array}$$

$$\mathbf{3} \quad \begin{array}{r} 2 \\ \times 11 \\ \hline 22 \end{array}$$

$$\mathbf{4} \quad \begin{array}{r} 7 \\ 3 \overline{)21} \end{array}$$

$$\mathbf{5} \quad \begin{array}{r} 7 \\ 1 \overline{)7} \end{array}$$

$$\mathbf{6} \quad \begin{array}{r} 12 \\ \times 6 \\ \hline 72 \end{array}$$

$$\mathbf{7} \quad \begin{array}{r} 3 \\ 4 \overline{)12} \end{array}$$

$$\mathbf{8} \quad \begin{array}{r} 2 \\ \times 10 \\ \hline 20 \end{array}$$

$$\mathbf{9} \quad \begin{array}{r} 6 \\ \times 8 \\ \hline 48 \end{array}$$

$$\mathbf{10} \quad \begin{array}{r} 10 \\ 5 \overline{)50} \end{array}$$

$$\mathbf{11} \quad \begin{array}{r} 3 \\ \times 3 \\ \hline 9 \end{array}$$

$$\mathbf{12} \quad \begin{array}{r} 8 \\ 9 \overline{)72} \end{array}$$

$$\mathbf{13} \quad \begin{array}{r} 8 \\ \times 10 \\ \hline 80 \end{array}$$

$$\mathbf{14} \quad \begin{array}{r} 7 \\ \times 4 \\ \hline 28 \end{array}$$

$$\mathbf{15} \quad \begin{array}{r} 9 \\ 11 \overline{)99} \end{array}$$

$$\mathbf{16} \quad \begin{array}{r} 5 \\ \times 9 \\ \hline 45 \end{array}$$

$$\mathbf{17} \quad \begin{array}{r} 5 \\ 12 \overline{)60} \end{array}$$

$$\mathbf{18} \quad \begin{array}{r} 6 \\ 6 \overline{)36} \end{array}$$

$$\mathbf{19} \quad \begin{array}{r} 3 \\ \times 5 \\ \hline 15 \end{array}$$

$$\mathbf{20} \quad \begin{array}{r} 4 \\ 7 \overline{)28} \end{array}$$

Name: _____

Mixed Facts Timed Practice Sheet 5

Number Correct: _____

1
$$\begin{array}{r} 10 \\ \times 2 \\ \hline \end{array}$$

2
$$\begin{array}{r} 3 \\ \times 11 \\ \hline \end{array}$$

3
$$3 \overline{)15}$$

4
$$11 \overline{)55}$$

5
$$12 \overline{)24}$$

6
$$\begin{array}{r} 7 \\ \times 5 \\ \hline \end{array}$$

7
$$\begin{array}{r} 9 \\ \times 1 \\ \hline \end{array}$$

8
$$\begin{array}{r} 9 \\ \times 7 \\ \hline \end{array}$$

9
$$\begin{array}{r} 8 \\ \times 4 \\ \hline \end{array}$$

10
$$\begin{array}{r} 11 \\ \times 7 \\ \hline \end{array}$$

11
$$3 \overline{)12}$$

12
$$4 \overline{)20}$$

13
$$7 \overline{)35}$$

14
$$9 \overline{)36}$$

15
$$\begin{array}{r} 12 \\ \times 10 \\ \hline \end{array}$$

16
$$\begin{array}{r} 8 \\ \times 9 \\ \hline \end{array}$$

17
$$\begin{array}{r} 9 \\ \times 9 \\ \hline \end{array}$$

18
$$8 \overline{)48}$$

19
$$6 \overline{)60}$$

20
$$4 \overline{)24}$$

Mixed Facts Timed Practice Sheet 5

$$\begin{array}{r} \mathbf{1} \quad 10 \\ \times 2 \\ \hline 20 \end{array}$$

$$\begin{array}{r} \mathbf{2} \quad 3 \\ \times 11 \\ \hline 33 \end{array}$$

$$\begin{array}{r} \mathbf{3} \quad 5 \\ 3 \overline{)15} \end{array}$$

$$\begin{array}{r} \mathbf{4} \quad 5 \\ 11 \overline{)55} \end{array}$$

$$\begin{array}{r} \mathbf{5} \quad 2 \\ 12 \overline{)24} \end{array}$$

$$\begin{array}{r} \mathbf{6} \quad 7 \\ \times 5 \\ \hline 35 \end{array}$$

$$\begin{array}{r} \mathbf{7} \quad 9 \\ \times 1 \\ \hline 9 \end{array}$$

$$\begin{array}{r} \mathbf{8} \quad 9 \\ \times 7 \\ \hline 63 \end{array}$$

$$\begin{array}{r} \mathbf{9} \quad 8 \\ \times 4 \\ \hline 32 \end{array}$$

$$\begin{array}{r} \mathbf{10} \quad 11 \\ \times 7 \\ \hline 77 \end{array}$$

$$\begin{array}{r} \mathbf{11} \quad 4 \\ 3 \overline{)12} \end{array}$$

$$\begin{array}{r} \mathbf{12} \quad 5 \\ 4 \overline{)20} \end{array}$$

$$\begin{array}{r} \mathbf{13} \quad 5 \\ 7 \overline{)35} \end{array}$$

$$\begin{array}{r} \mathbf{14} \quad 4 \\ 9 \overline{)36} \end{array}$$

$$\begin{array}{r} \mathbf{15} \quad 12 \\ \times 10 \\ \hline 120 \end{array}$$

$$\begin{array}{r} \mathbf{16} \quad 8 \\ \times 9 \\ \hline 72 \end{array}$$

$$\begin{array}{r} \mathbf{17} \quad 9 \\ \times 9 \\ \hline 81 \end{array}$$

$$\begin{array}{r} \mathbf{18} \quad 6 \\ 8 \overline{)48} \end{array}$$

$$\begin{array}{r} \mathbf{19} \quad 10 \\ 6 \overline{)60} \end{array}$$

$$\begin{array}{r} \mathbf{20} \quad 6 \\ 4 \overline{)24} \end{array}$$

Name: _____

Mixed Facts Timed Practice Sheet 6

Number Correct: _____

1 3
 × 9

2 5)30

3 4)28

4 10
 × 8

5 8
 × 7

6 7
 × 3

7 2)20

8 5)25

9 6)24

10 2
 × 12

11 11
 × 2

12 12)48

13 1)11

14 11)44

15 9
 × 9

16 5
 × 3

17 5)15

18 9
 × 4

19 6)48

20 3
 × 10

Mixed Facts Timed Practice Sheet 6

1
$$\begin{array}{r} 3 \\ \times 9 \\ \hline 27 \end{array}$$

2
$$\begin{array}{r} 6 \\ 5 \overline{)30} \end{array}$$

3
$$\begin{array}{r} 7 \\ 4 \overline{)28} \end{array}$$

4
$$\begin{array}{r} 10 \\ \times 8 \\ \hline 80 \end{array}$$

5
$$\begin{array}{r} 8 \\ \times 7 \\ \hline 56 \end{array}$$

6
$$\begin{array}{r} 7 \\ \times 3 \\ \hline 21 \end{array}$$

7
$$\begin{array}{r} 10 \\ 2 \overline{)20} \end{array}$$

8
$$\begin{array}{r} 5 \\ 5 \overline{)25} \end{array}$$

9
$$\begin{array}{r} 4 \\ 6 \overline{)24} \end{array}$$

10
$$\begin{array}{r} 2 \\ \times 12 \\ \hline 24 \end{array}$$

11
$$\begin{array}{r} 11 \\ \times 2 \\ \hline 22 \end{array}$$

12
$$\begin{array}{r} 4 \\ 12 \overline{)48} \end{array}$$

13
$$\begin{array}{r} 11 \\ 1 \overline{)11} \end{array}$$

14
$$\begin{array}{r} 4 \\ 11 \overline{)44} \end{array}$$

15
$$\begin{array}{r} 9 \\ \times 9 \\ \hline 81 \end{array}$$

16
$$\begin{array}{r} 5 \\ \times 3 \\ \hline 15 \end{array}$$

17
$$\begin{array}{r} 3 \\ 5 \overline{)15} \end{array}$$

18
$$\begin{array}{r} 9 \\ \times 4 \\ \hline 36 \end{array}$$

19
$$\begin{array}{r} 8 \\ 6 \overline{)48} \end{array}$$

20
$$\begin{array}{r} 3 \\ \times 10 \\ \hline 30 \end{array}$$

Name: _____

Mixed Facts Timed Practice Sheet 7

Number Correct: _____

1 5
 × 4
 —

2 4)32

3 8
 × 3
 —

4 7)14

5 3)30

6 7)42

7 6)30

8 6
 × 7
 —

9 6
 × 4
 —

10 4)40

11 7
 × 1
 —

12 5
 × 8
 —

13 9)81

14 10
 × 12
 —

15 9)63

16 4
 × 9
 —

17 6
 × 2
 —

18 11
 × 3
 —

19 11)22

20 10)70

Mixed Facts Timed Practice Sheet 7

1
$$\begin{array}{r} 5 \\ \times 4 \\ \hline 20 \end{array}$$

2
$$4 \overline{)32}^8$$

3
$$\begin{array}{r} 8 \\ \times 3 \\ \hline 24 \end{array}$$

4
$$7 \overline{)14}^2$$

5
$$3 \overline{)30}^{10}$$

6
$$7 \overline{)42}^6$$

7
$$6 \overline{)30}^5$$

8
$$\begin{array}{r} 6 \\ \times 7 \\ \hline 42 \end{array}$$

9
$$\begin{array}{r} 6 \\ \times 4 \\ \hline 24 \end{array}$$

10
$$4 \overline{)40}^{10}$$

11
$$\begin{array}{r} 7 \\ \times 1 \\ \hline 7 \end{array}$$

12
$$\begin{array}{r} 5 \\ \times 8 \\ \hline 40 \end{array}$$

13
$$9 \overline{)81}^9$$

14
$$\begin{array}{r} 10 \\ \times 12 \\ \hline 120 \end{array}$$

15
$$9 \overline{)63}^7$$

16
$$\begin{array}{r} 4 \\ \times 9 \\ \hline 36 \end{array}$$

17
$$\begin{array}{r} 6 \\ \times 2 \\ \hline 12 \end{array}$$

18
$$\begin{array}{r} 11 \\ \times 3 \\ \hline 33 \end{array}$$

19
$$11 \overline{)22}^2$$

20
$$10 \overline{)70}^7$$

Name: _____

Mixed Facts Timed Practice Sheet 8

Number Correct: _____

1
$$\begin{array}{r} 10 \\ \times 4 \\ \hline \end{array}$$

2
$$3 \overline{)24}$$

3
$$5 \overline{)45}$$

4
$$\begin{array}{r} 9 \\ \times 3 \\ \hline \end{array}$$

5
$$\begin{array}{r} 6 \\ \times 11 \\ \hline \end{array}$$

6
$$\begin{array}{r} 6 \\ \times 5 \\ \hline \end{array}$$

7
$$10 \overline{)40}$$

8
$$1 \overline{)5}$$

9
$$8 \overline{)24}$$

10
$$3 \overline{)36}$$

11
$$\begin{array}{r} 11 \\ \times 9 \\ \hline \end{array}$$

12
$$6 \overline{)18}$$

13
$$12 \overline{)72}$$

14
$$\begin{array}{r} 9 \\ \times 8 \\ \hline \end{array}$$

15
$$9 \overline{)54}$$

16
$$\begin{array}{r} 8 \\ \times 6 \\ \hline \end{array}$$

17
$$7 \overline{)14}$$

18
$$\begin{array}{r} 6 \\ \times 7 \\ \hline \end{array}$$

19
$$\begin{array}{r} 7 \\ \times 12 \\ \hline \end{array}$$

20
$$\begin{array}{r} 5 \\ \times 5 \\ \hline \end{array}$$

Mixed Facts Timed Practice Sheet 8

1
$$\begin{array}{r} 10 \\ \times 4 \\ \hline 40 \end{array}$$

2
$$\begin{array}{r} 8 \\ 3 \overline{)24} \end{array}$$

3
$$\begin{array}{r} 9 \\ 5 \overline{)45} \end{array}$$

4
$$\begin{array}{r} 9 \\ \times 3 \\ \hline 27 \end{array}$$

5
$$\begin{array}{r} 6 \\ \times 11 \\ \hline 66 \end{array}$$

6
$$\begin{array}{r} 6 \\ \times 5 \\ \hline 30 \end{array}$$

7
$$\begin{array}{r} 4 \\ 10 \overline{)40} \end{array}$$

8
$$\begin{array}{r} 5 \\ 1 \overline{)5} \end{array}$$

9
$$\begin{array}{r} 3 \\ 8 \overline{)24} \end{array}$$

10
$$\begin{array}{r} 12 \\ 3 \overline{)36} \end{array}$$

11
$$\begin{array}{r} 11 \\ \times 9 \\ \hline 99 \end{array}$$

12
$$\begin{array}{r} 3 \\ 6 \overline{)18} \end{array}$$

13
$$\begin{array}{r} 6 \\ 12 \overline{)72} \end{array}$$

14
$$\begin{array}{r} 9 \\ \times 8 \\ \hline 72 \end{array}$$

15
$$\begin{array}{r} 6 \\ 9 \overline{)54} \end{array}$$

16
$$\begin{array}{r} 8 \\ \times 6 \\ \hline 48 \end{array}$$

17
$$\begin{array}{r} 2 \\ 7 \overline{)14} \end{array}$$

18
$$\begin{array}{r} 6 \\ \times 7 \\ \hline 42 \end{array}$$

19
$$\begin{array}{r} 7 \\ \times 12 \\ \hline 84 \end{array}$$

20
$$\begin{array}{r} 5 \\ \times 5 \\ \hline 25 \end{array}$$

Name: _____

Mixed Facts Timed Practice Sheet 9

Number Correct: _____

1 4
 × 4
 —

2 9)18

3 9
 × 5
 —

4 3)12

5 9)27

6 11
 × 11
 —

7 5)60

8 6)12

9 6)60

10 5
 × 6
 —

11 12
 × 8
 —

12 8
 × 1
 —

13 7)49

14 6
 × 2
 —

15 11
 × 10
 —

16 7)77

17 7
 × 10
 —

18 11)121

19 8)16

20 4
 × 12
 —

Mixed Facts Timed Practice Sheet 9

$$\begin{array}{r} \mathbf{1} \quad 4 \\ \times 4 \\ \hline 16 \end{array}$$

$$\mathbf{2} \quad 9 \overline{)18}^2$$

$$\mathbf{3} \quad \begin{array}{r} 9 \\ \times 5 \\ \hline 45 \end{array}$$

$$\mathbf{4} \quad 3 \overline{)12}^4$$

$$\mathbf{5} \quad 9 \overline{)27}^3$$

$$\mathbf{6} \quad \begin{array}{r} 11 \\ \times 11 \\ \hline 121 \end{array}$$

$$\mathbf{7} \quad 5 \overline{)60}^{12}$$

$$\mathbf{8} \quad 6 \overline{)12}^2$$

$$\mathbf{9} \quad 6 \overline{)60}^{10}$$

$$\mathbf{10} \quad \begin{array}{r} 5 \\ \times 6 \\ \hline 30 \end{array}$$

$$\mathbf{11} \quad \begin{array}{r} 12 \\ \times 8 \\ \hline 96 \end{array}$$

$$\mathbf{12} \quad \begin{array}{r} 8 \\ \times 1 \\ \hline 8 \end{array}$$

$$\mathbf{13} \quad 7 \overline{)49}^7$$

$$\mathbf{14} \quad \begin{array}{r} 6 \\ \times 2 \\ \hline 12 \end{array}$$

$$\mathbf{15} \quad \begin{array}{r} 11 \\ \times 10 \\ \hline 110 \end{array}$$

$$\mathbf{16} \quad 7 \overline{)77}^{11}$$

$$\mathbf{17} \quad \begin{array}{r} 7 \\ \times 10 \\ \hline 70 \end{array}$$

$$\mathbf{18} \quad 11 \overline{)121}^{11}$$

$$\mathbf{19} \quad 8 \overline{)16}^2$$

$$\mathbf{20} \quad \begin{array}{r} 4 \\ \times 12 \\ \hline 48 \end{array}$$

Name: _____

Mixed Facts Timed Practice Sheet 10

Number Correct: _____

1 3
 × 6
 —

2 10
 × 7
 —

3 2)18

4 11)88

5 7
 × 2
 —

6 4)48

7 9
 × 10
 —

8 8)72

9 4
 × 3
 —

10 7)63

11 3
 × 7
 —

12 11
 × 6
 —

13 3)9

14 12)96

15 1)10

16 5)15

17 10)90

18 9
 × 12
 —

19 2
 × 5
 —

20 11
 × 12
 —

Mixed Facts Timed Practice Sheet 10

1
$$\begin{array}{r} 3 \\ \times 6 \\ \hline 18 \end{array}$$

2
$$\begin{array}{r} 10 \\ \times 7 \\ \hline 70 \end{array}$$

3
$$2 \overline{)18}^9$$

4
$$11 \overline{)88}^8$$

5
$$\begin{array}{r} 7 \\ \times 2 \\ \hline 14 \end{array}$$

6
$$4 \overline{)48}^{12}$$

7
$$\begin{array}{r} 9 \\ \times 10 \\ \hline 90 \end{array}$$

8
$$8 \overline{)72}^9$$

9
$$\begin{array}{r} 4 \\ \times 3 \\ \hline 12 \end{array}$$

10
$$7 \overline{)63}^9$$

11
$$\begin{array}{r} 3 \\ \times 7 \\ \hline 21 \end{array}$$

12
$$\begin{array}{r} 11 \\ \times 6 \\ \hline 66 \end{array}$$

13
$$3 \overline{)9}^3$$

14
$$12 \overline{)96}^8$$

15
$$1 \overline{)10}^{10}$$

16
$$5 \overline{)15}^3$$

17
$$10 \overline{)90}^9$$

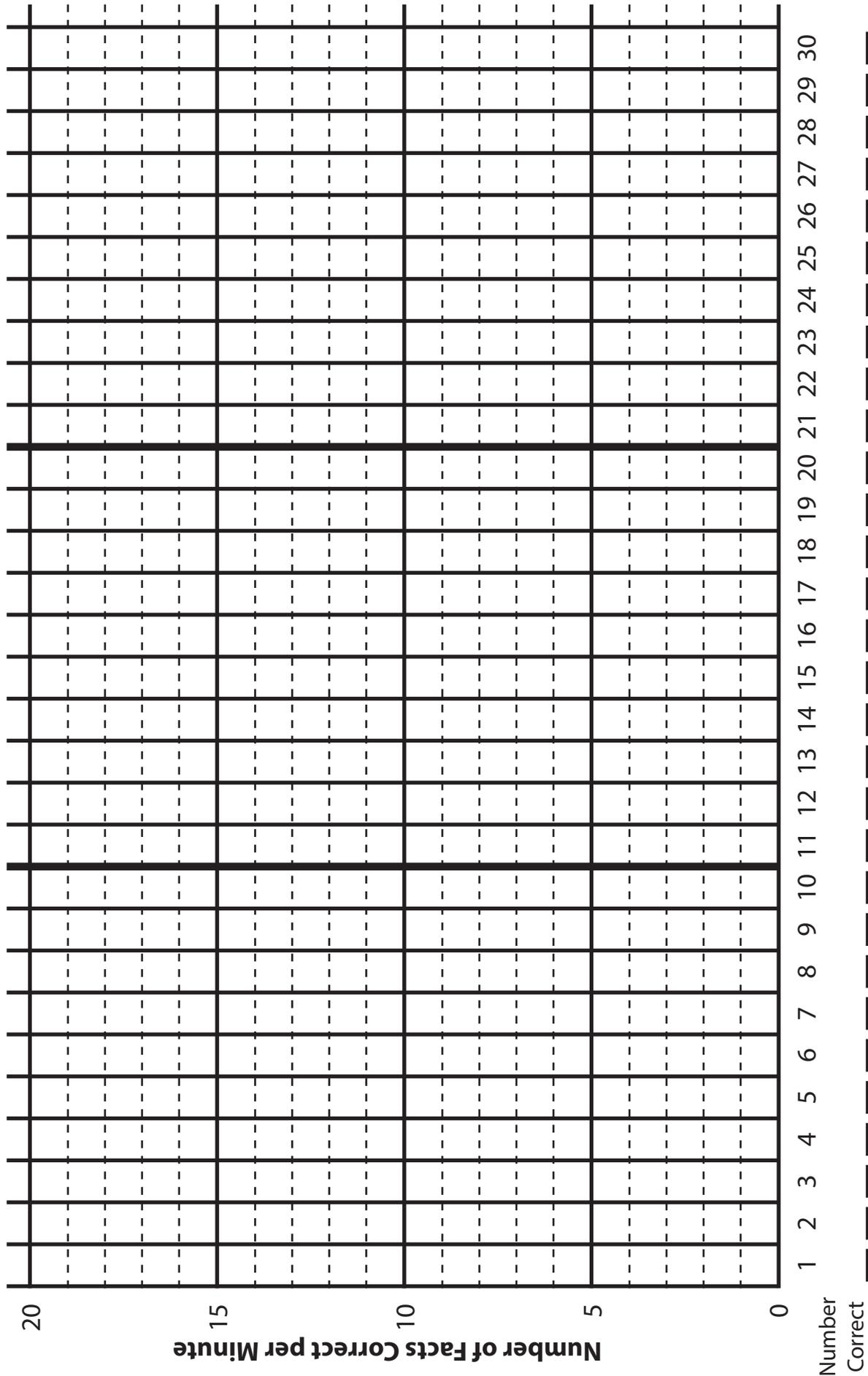
18
$$\begin{array}{r} 9 \\ \times 12 \\ \hline 108 \end{array}$$

19
$$\begin{array}{r} 2 \\ \times 5 \\ \hline 10 \end{array}$$

20
$$\begin{array}{r} 11 \\ \times 12 \\ \hline 132 \end{array}$$

Name _____

Fact Practice Graph



Fact Practice Lesson Number

