Intervention for Algebra I

Module 1: Teacher Masters

The Meadows Center
FOR PREVENTING EDUCATIONAL RISK

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The Meadows Center

FOR PREVENTING EDUCATIONAL RISK

THE UNIVERSITY OF TEXAS AT AUSTIN

COLLEGE OF EDUCATION

Mathematics Institute for Learning Disabilities and Difficulties

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Engage Prior Knowledge Practice

Brainstorm

List symbols that are used in mathematics.

Engage Prior Knowledge Practice Key

Brainstorm

List symbols that are used in mathematics.

+	−	×	÷
		•	/
		*	$\frac{1}{2}$
		()	
		{}	
		[]	
		$()^2$	

Other possible symbols:

≥ ≤ > < = ≠ $\sqrt{\ }$

Demonstration Practice

Determine whether each of the following situations represents an example of a variable or a nonexample of a variable. Circle "Example" or "Nonexample" and justify your reasoning in the space provided.

1. 1 g = 1,000 mg

Example or Nonexample

Because _____

_____

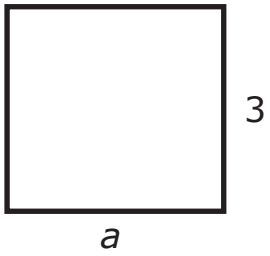
2. $3x - 1 = y$

Example or Nonexample

Because _____

_____

3.

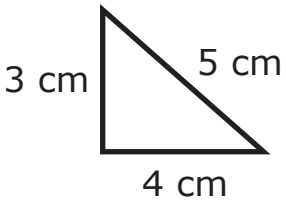


Example or Nonexample

Because _____

_____

4.



Example or Nonexample

Because _____

_____

Demonstration Practice Key

Determine whether each of the following situations represents an example of a variable or a nonexample of a variable. Circle "Example" or "Nonexample" and justify your reasoning in the space provided.

1. 1 g = 1,000 mg

Example or (Nonexample)

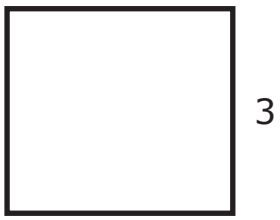
Because "g" and "mg" are abbreviations for units of measure

2. $3x - 1 = y$

(Example) or Nonexample

Because "x" and "y" represent a set of values

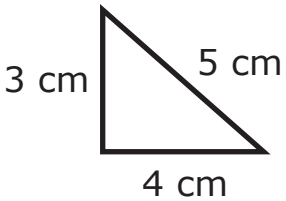
3.



(Example) or Nonexample

Because "a" represents the value of the length of 1 side

4.



Example or (Nonexample)

Because "cm" is an abbreviation for a unit of measure

Practice

Activity 1: Guided Practice

Determine whether each of the following situations represents an example of a variable or a nonexample of a variable. Circle "Example" or "Nonexample" and justify your reasoning in the space provided.

$3^3 \geq 25$

Example or (Nonexample)

Because there are no symbols that represent 1 value or set of values

---

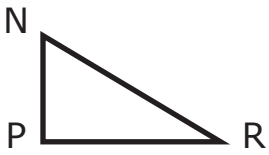
1. 5 m = 500 cm

Example or Nonexample

Because _____

_____

2.



Example or Nonexample

Because _____

_____

3. $V = \frac{100}{p}$

Example or Nonexample

Because _____

_____

Practice (cont.)

Activity 2: Pair Practice

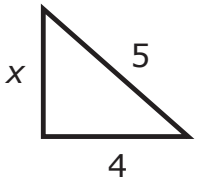
Work with your partner to determine whether each of the following situations represents an example of a variable or a nonexample of a variable. Circle "Example" or "Nonexample" and justify your reasoning in the space provided.

$5x - 1 = 13$

(Example) or Nonexample

Because the variable "x" represents 1 value in the equation

1.



Example or Nonexample

Because _____

_____

2.

Example or Nonexample

Because _____

_____

3. 100 cm = 1 m

Example or Nonexample

Because _____

_____

Practice Key

Activity 1: Guided Practice

Determine whether each of the following situations represents an example of a variable or a nonexample of a variable. Circle "Example" or "Nonexample" and justify your reasoning in the space provided.

$3^3 \geq 25$

Example or (Nonexample)

Because there are no symbols that represent a value or set of values

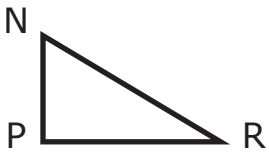
---

1. 5 m = 500 cm

Example or (Nonexample)

Because "m" and "cm" are units that label the numbers as 5 meters and 500 centimeters

2.



Example or (Nonexample)

Because "A," "B," and "C" label the vertices, or corners, of the triangle

3. $V = \frac{100}{p}$

(Example) or Nonexample

Because "V" and "p" represent a set of unknown values

Practice Key (cont.)

Activity 2: Pair Practice

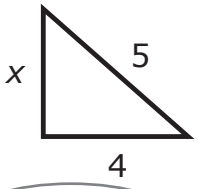
Work with your partner to determine whether each of the following situations represents an example of a variable or a nonexample of a variable. Circle "Example" or "Nonexample" and justify your reasoning in the space provided.

$5x - 1 = 13$

(Example) or Nonexample

Because the variable "x" represents a value in the equation

1.



(Example) or Nonexample

Because "x" represents the value for the side length

2.

Example or (Nonexample)

Because "ft" is an abbreviation for the unit feet and "in" is the unit inches

3. 100 cm = 1 m

Example or (Nonexample)

Because "cm" represents the unit centimeter and "m" represents the unit meters

Name: _____

Independent Practice

Score:____ / 11 correct

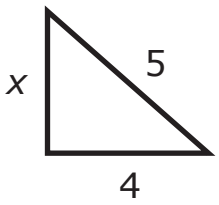
1. Fill in the blank with the correct term. (1 pt.)

A _____ is a symbol, usually a letter, that represents 1 value or set of values.

2. Determine whether each of the following situations represents an example of a variable or a nonexample of a variable. Circle all examples and cross out all nonexamples. Be prepared to justify your answer. Each situation is worth 1 point.

Example Nonexample

1 m = 0.001 km

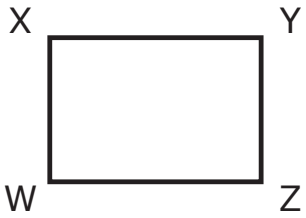


$p \geq 13$

$15(p) - 7 = 2$

24 in = 2 ft

$4^3 = 64$



$22 + 3m = -4$

2 g = 200 cg

$\sqrt{9} = 3$

Independent Practice Key

Score:____ / 11 correct

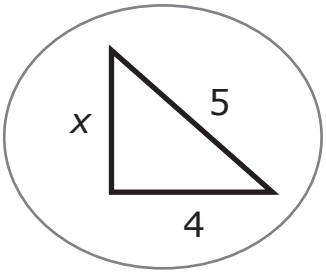
1. Fill in the blank with the correct term. (1 pt.)

A variable is a symbol, usually a letter, that represents 1 value or set of values.

2. Determine whether each of the following situations represents an example of a variable or a nonexample of a variable. Circle all examples and cross out all nonexamples. Be prepared to justify your answer. Each situation is worth 1 point.

Example Nonexample

~~1 m = 0.001 km~~

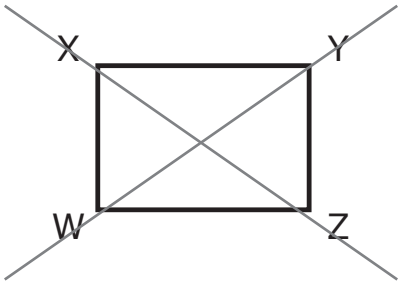


$p \geq 13$

$15(p) - 7 = 2$

~~24 in = 2 ft~~

~~$4^3 = 64$~~



$22 + 3m = -4$

~~2 g = 200 cg~~

~~$\sqrt{9} = 3$~~

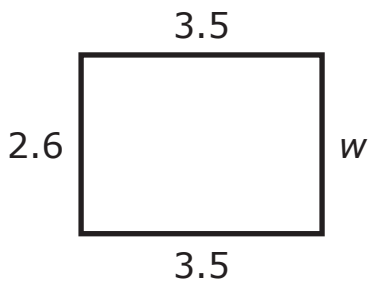
Cumulative Review Practice

Score:____ / 2 correct

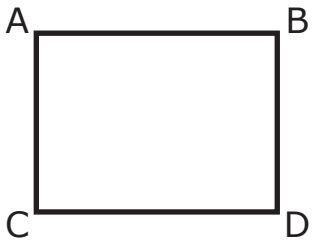
For each question, circle the letter of the correct response.

1. An example of a variable is (1 pt.)

A



B



2. A situation that does not use a variable is (1 pt.)

A $3(p)^2 + 8 - \frac{10}{2}$

B $\{(7 + 1)^2 - 9\} + 4$

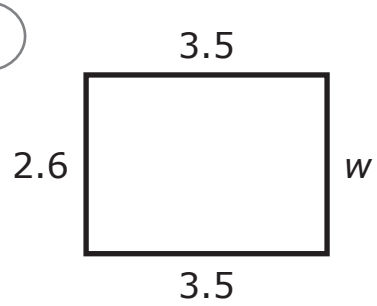
Cumulative Review Practice Key

Score:____ / 2 correct

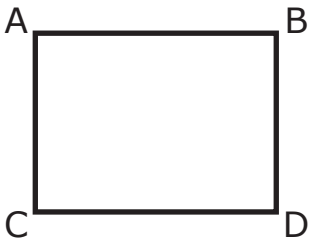
For each question, circle the letter of the correct response.

1. An example of a variable is (1 pt.)

A



B

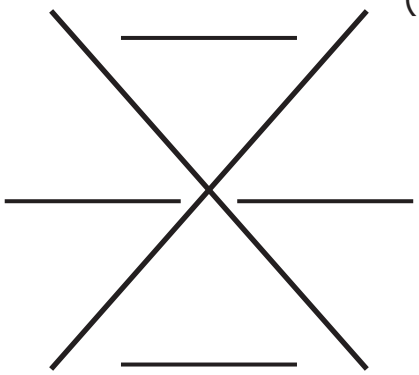


2. A situation that does not use a variable is (1 pt.)

A $3(p)^2 + 8 - \frac{10}{2}$

B $\{(7 + 1)^2 - 9\} + 4$

Demonstration Practice

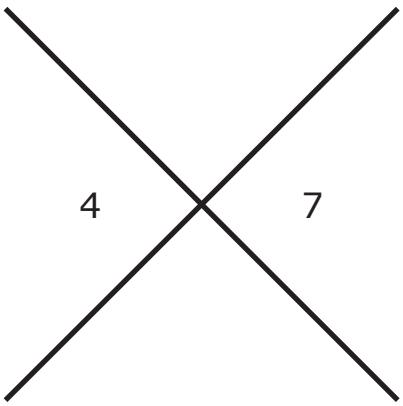


(_____)(_____) = _____

_____ + _____ = _____

For the following number puzzles, write the equations and determine the missing values for the fixed unknown variables.

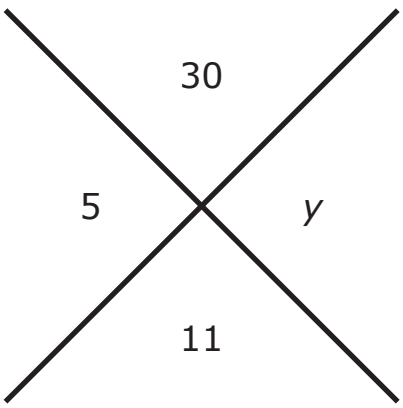
1.



(____) (____) = ____

____ + ____ = ____

2.



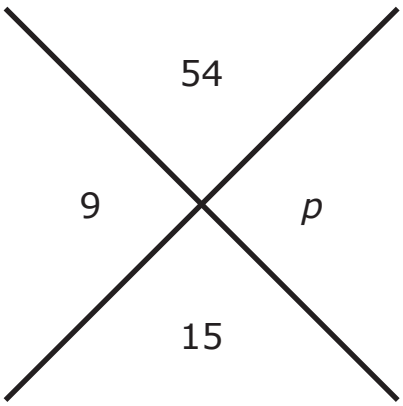
(____) (____) = ____

y represents ____

____ + ____ = ____

Demonstration Practice (cont.)

3.

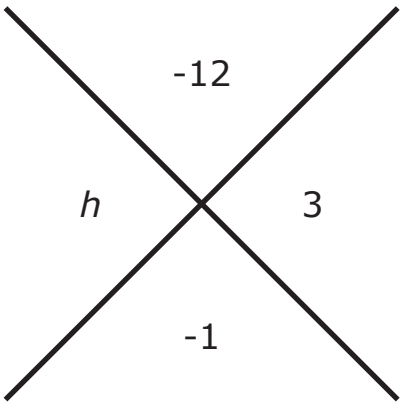


(____) (____) = ____

p represents ____

____ + ____ = ____

4.

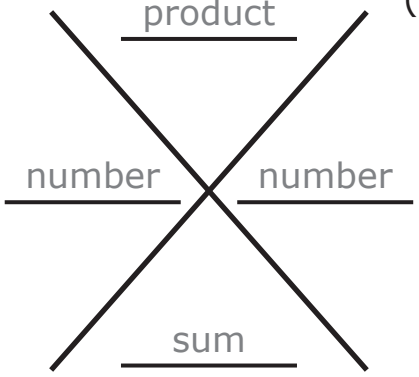


(____) (____) = ____

h represents ____

____ + ____ = ____

Demonstration Practice Key

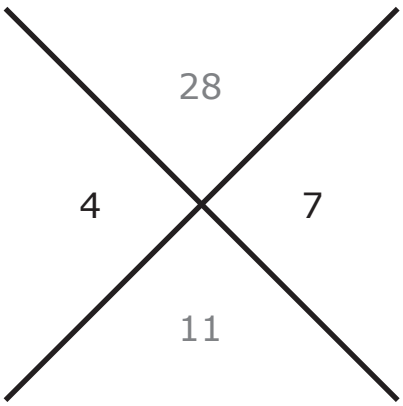


(number)(number) = product

number + number = sum

For the following number puzzles, write the equations and determine the missing values for the fixed unknown variables.

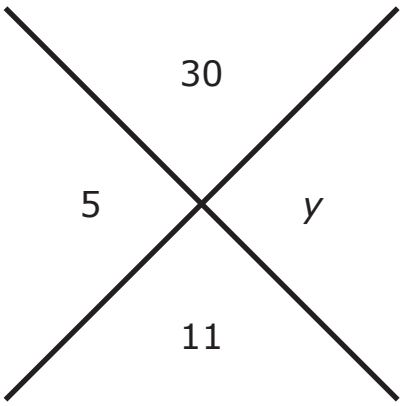
1.



(4)(7) = 28

4 + 7 = 11

2.



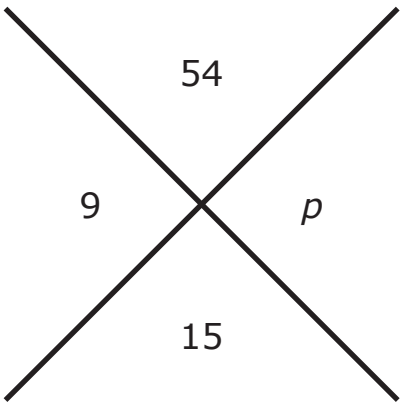
(5)(*y*) = 30

y represents 6

5 + *y* = 11

Demonstration Practice Key (cont.)

3.

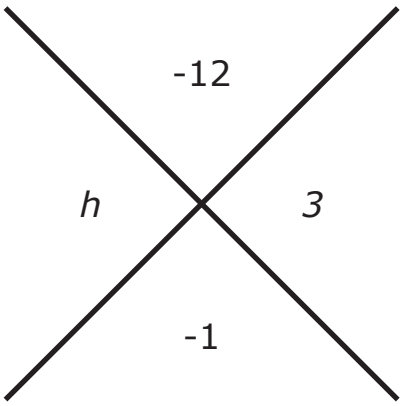


(9) (*p*) = 54

p represents 6

9 + *p* = 15

4.



(*h*) (3) = -12

h represents -4

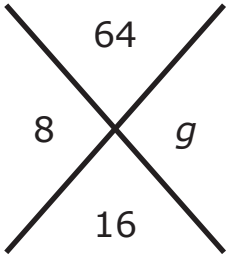
h + 3 = -1

Practice

Pair Practice

With your partner, for each of the following number puzzles, determine what the fixed unknown variable represents.

1. Determine the value for the variable that is a fixed unknown.

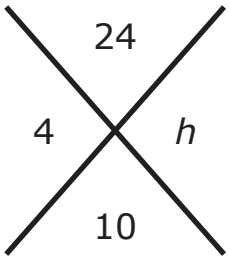


(____)(____) = ____

____ + ____ = ____

The variable *g* represents _____

2. Determine the value for the variable that is a fixed unknown.

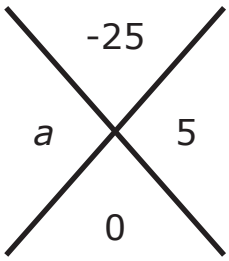


(____)(____) = ____

____ + ____ = ____

The variable *h* represents _____

3. Determine the value for the variable that is a fixed unknown.



(____)(____) = ____

____ + ____ = ____

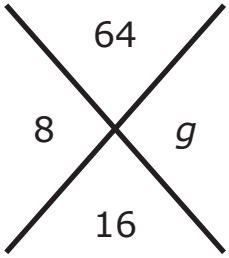
The variable *a* represents _____

Practice Key

Pair Practice

With your partner, for each of the following number puzzles, determine what the fixed unknown variable represents.

1. Determine the value for the variable that is a fixed unknown.

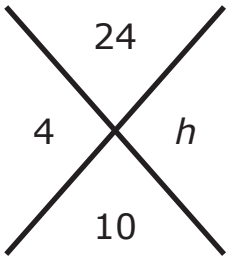


(8)(*g*) = 64

8 + *g* = 16

The variable *g* represents 8

2. Determine the value for the variable that is a fixed unknown.

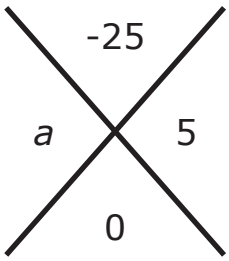


(4)(*h*) = 24

4 + *h* = 10

The variable *h* represents 6

3. Determine the value for the variable that is a fixed unknown.



(*a*)(5) = -25

a + 5 = 0

The variable *a* represents -5

Error Correction Practice

The given situations are work completed by two different students. Determine which student is incorrect and explain the error.

Question:

For the following equations, determine the value of the fixed unknown variable.

$$6h = 24$$
$$6 + h = 10$$

Student 1

$6h = 24$ $\qquad$ $6 + h = 10$

$\frac{6h}{6} = \frac{24}{6}$ $\qquad$ $-6 \quad -6$

$h = 4$ $\qquad$ $h = 4$

Student 2

$6h = 24$ $\qquad$ $6 + h = 10$

$-6 \quad -6$ $\qquad$ $-6 \quad -6$

$h = 18$ $\qquad$ $h = 4$

Error Correction Practice Key

The given situations are work completed by two different students. Determine which student is incorrect and explain the error.

Question:

For the following equations, determine the value of the fixed unknown variable.

$$6h = 24$$
$$6 + h = 10$$

Student 1

$6h = 24$ $\qquad$ $6 + h = 10$

$\frac{6h}{6} = \frac{24}{6}$ $\qquad$ $-6 \quad -6$

$h = 4$ $\qquad$ $h = 4$

Student 2

$6h = 24$ $\qquad$ $6 + h = 10$

$-6 \quad -6$ $\qquad$ $-6 \quad -6$

$h = 18$ $\qquad$ $h = 4$

Student 2 is incorrect because when solved, the variable *h* is representing 2 different values. Student 2 subtracted 6 in the first equation rather than dividing by 6.

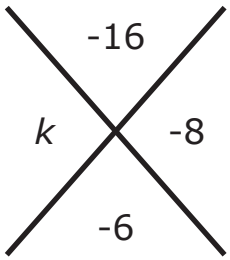
Name: _____

Independent Practice

Score:____ / 3 correct

For each of the following number puzzles, determine the value of the fixed unknown variable that makes the puzzle true. Each puzzle is worth 1 point.

1.

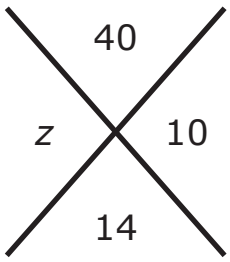


(____)(____) = ____

____ + ____ = ____

The variable *k* represents _____

2.

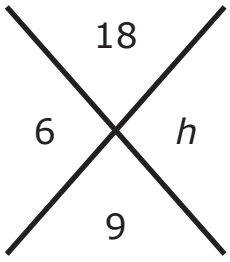


(____)(____) = ____

____ + ____ = ____

The variable *z* represents _____

3.



(____)(____) = ____

____ + ____ = ____

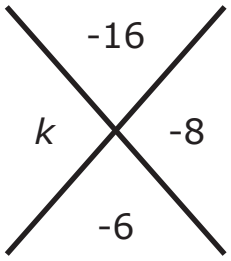
The variable *h* represents _____

Independent Practice Key

Score:____ / 3 correct

For each of the following number puzzles, determine the value of the fixed unknown variable that makes the puzzle true. Each puzzle is worth 1 point.

1.

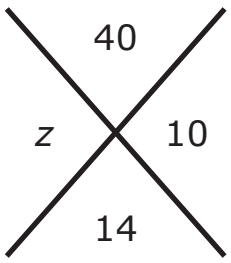


(*k*)(-8) = -16

k + -8 = -6

The variable *k* represents 2

2.

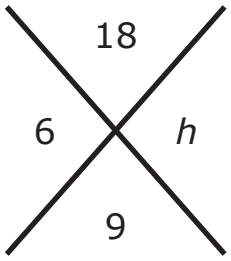


(*z*)(10) = 40

z + 10 = 14

The variable *z* represents 4

3.



(6)(*h*) = 18

6 + *h* = 9

The variable *h* represents 3

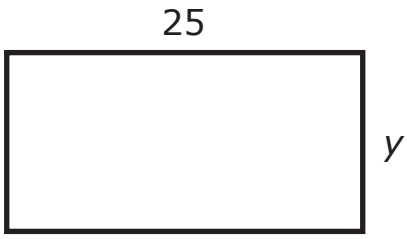
Cumulative Review Practice

Score:____ / 4 correct

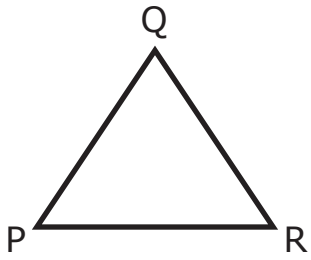
1. Determine which of the following situations is an example of a variable. For each item, circle the letter of the correct response. (1 pt.)

A 1,000 g = **2.**2 lb

C

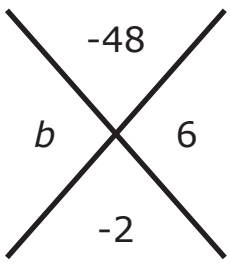


B



D $81 < 10^2$

2. For the following problem, determine the value that makes the number puzzle true.



(____)(____) = ____ (1 pt.)

____ + ____ = ____ (1 pt.)

The variable *b* represents _____ (1 pt.)

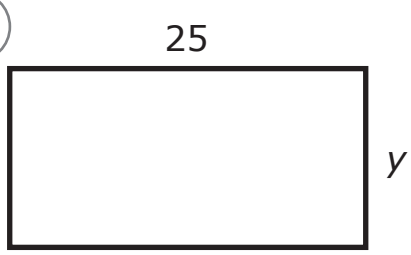
Cumulative Review Practice Key

Score:____ / 4 correct

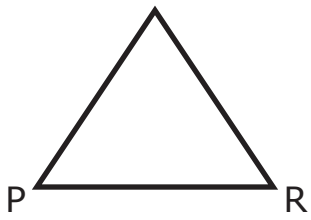
1. Determine which of the following situations is an example of a variable. For each item, circle the letter of the correct response. (1 pt.)

A 1,000 g = **2.**2 lb

C

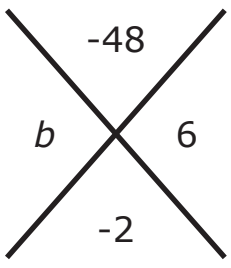


B



D $81 < 10^2$

2. For the following problem, determine the value that makes the factor puzzle true.



(6)(*b*) = -48 (1 pt.)

b + 6 = -2 (1 pt.)

The variable *b* represents -8 (1 pt.)

Demonstration Practice

The following equations represent a pattern. Determine the pattern for each set of equations and use variables to write a generalization of the pattern.

1. 2(1) = 2 Check your generalization.
3(1) = 3
4(1) = 4
5(1) = 5

In each equation we _____

_____.

The variable _____ represents _____

_____

because _____

_____.

The generalization for this pattern is _____

In other words: _____

2. 6 − 6 = 0 Check your generalization.
7 − 7 = 0
8 − 8 = 0

In each equation we _____

_____.

The variable _____ represents _____

_____

because _____

_____.

The generalization for this pattern is _____

In other words: _____

Demonstration Practice (cont.)

3. $\frac{2}{1} = 2$ Check your generalization.

$\frac{4}{1} = 4$

$\frac{8}{1} = 8$

In each equation we _____

_____.

The variable _____ represents _____

_____

because _____

_____.

The generalization for this pattern is _____

In other words: _____

Demonstration Practice Key

The following equations represent a pattern. Determine the pattern for each set of equations and use variables to write a generalization of the pattern.

1. 2(1) = 2
3(1) = 3
4(1) = 4
5(1) = 5

Check your generalization.
a(1) = *a* (answers will vary)
10(1) = 10 ✓

In each equation we multiply by 1.

The variable *a* represents the numbers 2, 3, 4 and 5

because the numbers change from equation to equation.

The generalization for this pattern is *a*(1) = *a*

In other words: a number multiplied by 1 will equal itself

2. 6 − 6 = 0
7 − 7 = 0
8 − 8 = 0

Check your generalization.
b − *b* = 0 (answers will vary)
10 − 10 = 0 ✓

In each equation we subtract a number from itself and get 0.

The variable *b* represents the numbers 6, 7, and 8

because the numbers change from equation to equation.

The generalization for this pattern is *b* − *b* = 0

In other words: a number subtracted from itself equals 0

Demonstration Practice Key (cont.)

3. $\frac{2}{1} = 2$

$\frac{4}{1} = 4$

$\frac{8}{1} = 8$

Check your generalization.
$\frac{c}{1} = c$ (answers will vary)
$\frac{10}{1} = 10$ ✓

In each equation we divide a number by 1 and get the same number.

The variable *c* represents the numbers 2, 4, and 8

because the numbers change from equation to equation.

The generalization for this pattern is $\frac{c}{1} = c$

In other words: a number divided by 1 will equal itself

Practice

Pair Practice

The following equations represent a pattern. With your partner, determine the pattern for each set of equations and match to the correct generalization equation.

Pattern Equations

-2(0) = 0

1. -1(0) = 0 ____

5(0) = 0

7 − 7 = 0

2. 8 − 8 = 0 ____

15 − 15 = 0

-4(1) = -4

3. 3(1) = 3 ____

8(1) = 8

$\frac{-2}{1} = -2$

4. $\frac{0}{1} = 0$ ____

$\frac{2}{1} = 2$

Generalizations

A $a(1) = a$

B $b(0) = 0$

C $\frac{c}{1} = c$

D $d - d = 0$

Practice Key

Pair Practice

The following equations represent a pattern. With your partner, determine the pattern for each set of equations and match to the correct generalization equation.

Pattern Equations

1.
-2(0) = 0
-1(0) = 0
5(0) = 0
B

2.
7 − 7 = 0
8 − 8 = 0
15 − 15 = 0
D

3.
-4(1) = -4
3(1) = 3
8(1) = 8
A

4.
$\frac{-2}{1} = -2$
$\frac{0}{1} = 0$
$\frac{2}{1} = 2$
C

Generalizations

A $a(1) = a$

B $b(0) = 0$

C $\frac{c}{1} = c$

D $d - d = 0$

Error Correction Practice

The given situations are work completed by two different students. Determine which student is incorrect and explain the error.

Question:

Write the equation that represents the generalization from the set of numeric equations.

$$-3 + 0 = -3$$

$$-1 + 0 = -1$$

$$1 + 0 = 1$$

$$3 + 0 = 3$$

Student 1

$-x + 0 = x$

Student 2

$x + 0 = x$

Error Correction Practice Key

The given situations are work completed by two different students. Determine which student is incorrect and explain the error.

Question:

Write the equation that represents the generalization from the set of numeric equations.

$$-3 + 0 = -3$$

$$-1 + 0 = -1$$

$$1 + 0 = 1$$

$$3 + 0 = 3$$

Student 1

$-x + 0 = x$

Student 2

$x + 0 = x$

Student 1 is incorrect because the variable should not be negated or taken the opposite of the value.

Name: _____

Independent Practice

Score:____ / 4 correct

Determine the pattern for each set of equations and match to the correct generalization equation. Each match is worth 1 point.

Pattern Equations		**Generalizations**
10 + 0 = 10 **1.** 20 + 0 = 20 35 + 0 = 35	_____	**A** $m(1) = m$
3(1) = 3 **2.** 4(1) = 4 11(1) = 11	_____	**B** $p - p = 0$ **C** $h + 0 = h$
4 − 4 = 0 **3.** 7 − 7 = 0 9 − 9 = 0	_____	**D** $a(0) = 0$
-7(0) = 0 **4.** 15(0) = 0 -8(0) = 0	_____	

Independent Practice Key

Score:____ / 4 correct

Determine the pattern for each set of equations and match to the correct generalization equation. Each match is worth 1 point.

Pattern Equations

1.
10 + 0 = 10
20 + 0 = 20
35 + 0 = 35
C

2.
3(1) = 3
4(1) = 4
11(1) = 11
A

3.
4 − 4 = 0
7 − 7 = 0
9 − 9 = 0
B

4.
-7(0) = 0
15(0) = 0
-8(0) = 0
D

Generalizations

A $m(1) = m$

B $p - p = 0$

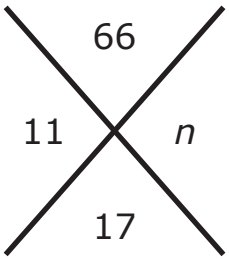
C $h + 0 = h$

D $a(0) = 0$

Cumulative Review Practice

Score:____ / 4 correct

1. Determine the fixed unknown value that makes the number puzzle true.



____ (____) = ____ (1 pt.)

____ + ____ = ____ (1 pt.)

The variable *n* represents _____ (1 pt.)

2. The following 3 equations represent a pattern. Determine the pattern.

$$5 - 0 = 5$$
$$7 - 0 = 7$$
$$8 - 0 = 8$$

Which of the following generalizations best represents the pattern? (1 pt.)

A $h - 0 = h$

B $h + 0 = h$

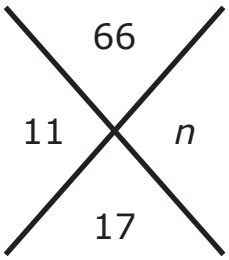
C $h - h = 0$

D $h(1) = h$

Cumulative Review Practice Key

Score:____ / 4 correct

1. Determine the fixed unknown value that makes the number puzzle true.



11 (*n*) = 66 (1 pt.)

11 + *n* = 17 (1 pt.)

The variable *n* represents 6 (1 pt.)

2. The following 3 equations represent a pattern. Determine the pattern.

$$5 - 0 = 5$$
$$7 - 0 = 7$$
$$8 - 0 = 8$$

Which of the following generalizations best represents the pattern? (1 pt.)

A $h - 0 = h$

B $h + 0 = h$

C $h - h = 0$

D $h(1) = h$

Demonstration Practice

Use the pattern in the tile design to fill out each table and use a variable to write a generalization.

1.

_____ _____ _____

(Stage) ***n***	**Thinking Process**	**Total**
1		
2		
3		
4		

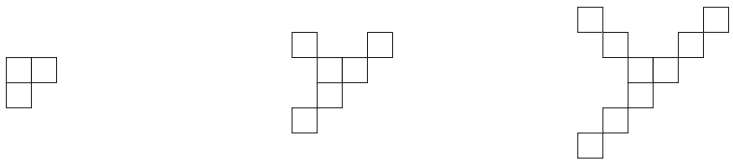
_____
_____
_____

Common Difference: _____

Generalization: _____

Demonstration Practice (cont.)

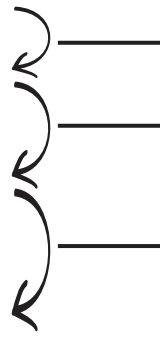
2.



Stage 1 **Stage 2** **Stage 3** **Stage 4**

_____ _____ _____

(Stage) ***n***	**Thinking Process**	**Total**
1		
2		
3		
4		



Common Difference: _____

Generalization: _____

Demonstration Practice Key

Use the pattern in the tile design to fill out each table and use a variable to write a generalization.

1.

(Stage) ***n***	**Thinking Process**	**Total**
1	⊕ ⊕ ⊕ ⊕ 1 (4)	**4**
2	⊕ ⊕ ⊕ ⊕ / ⊕ ⊕ ⊕ ⊕ 2 (4)	**8**
3	⊕ ⊕ ⊕ ⊕ / ⊕ ⊕ ⊕ ⊕ / ⊕ ⊕ ⊕ ⊕ 3 (4)	**12**
4	⊕ ⊕ ⊕ ⊕ / ⊕ ⊕ ⊕ ⊕ / ⊕ ⊕ ⊕ ⊕ / ⊕ ⊕ ⊕ ⊕ 4 (4)	**16**

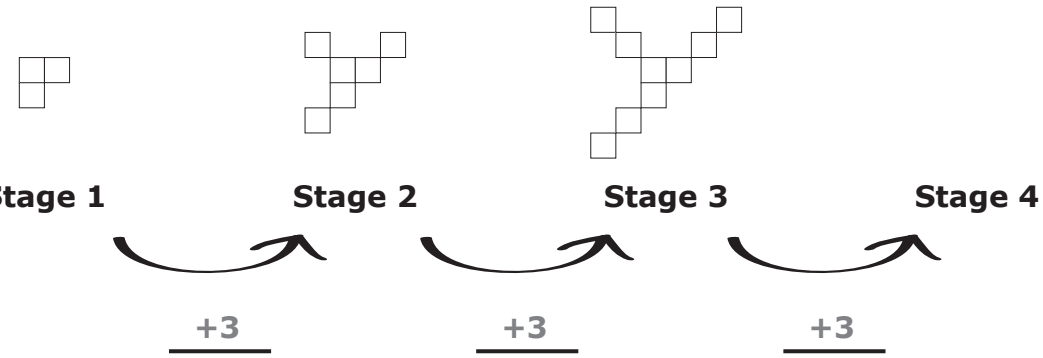
+4
+4
+4

Common Difference: 4

Generalization: 4*n*

Demonstration Practice Key (cont.)

2.



(Stage) ***n***	**Thinking Process**	**Total**
1	⊕ ⊕ ⊕ 1 (3)	**3**
2	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ 2 (3)	**6**
3	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ 3 (3)	**9**
4	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ 4 (3)	**12**

+3
+3
+3

Common Difference: 3

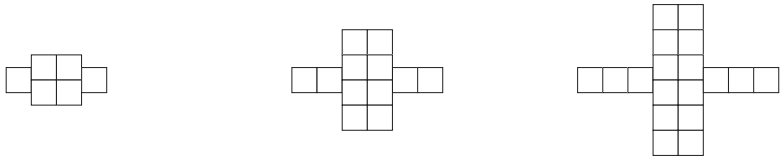
Generalization: $3n$

Practice

Guided Practice

Use the pattern in the tile design to fill out each table and use a variable to write a generalization.

1.



Stage 1 **Stage 2** **Stage 3** **Stage 4**

(Stage) ***n***	**Thinking Process**	**Total**
1		
2		
3		
4		

Common Difference: _____

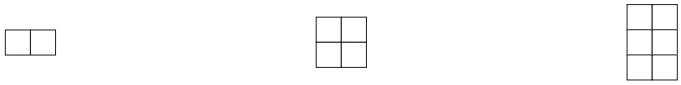
Generalization: _____

Practice (cont.)

Pair Practice

Use the pattern in the tile design to fill out each table and use a variable to write a generalization.

1.



Stage 1 **Stage 2** **Stage 3** **Stage 4**

(Stage) ***n***	**Thinking Process**	**Total**
1		
2		
3		
4		

Common Difference: _____

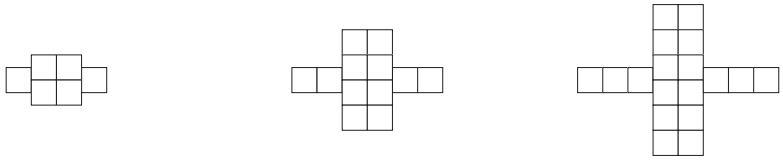
Generalization: _____

Practice Key

Guided Practice

Use the pattern in the tile design to fill out each table and use a variable to write a generalization.

1.



Stage 1 **Stage 2** **Stage 3** **Stage 4**

(Stage) ***n***	**Thinking Process**	**Total**
1	1 (6)	**6**
2	2 (6)	**12**
3	3 (6)	**18**
4	4 (6)	**24**

+6 **+6** **+6**

Common Difference: 6

Generalization: 6*n*

Practice Key (cont.)

Pair Practice

Use the pattern in the tile design to fill out each table and use a variable to write a generalization.

1.

Stage 1

Stage 2

Stage 3

Stage 4

(Stage) ***n***	**Thinking Process**	**Total**
1	⊕ ⊕ 1 (2)	**2**
2	⊕ ⊕ ⊕ ⊕ 2 (2)	**4**
3	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ 3 (2)	**6**
4	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ 4 (2)	**8**

+2 **+2** **+2**

Common Difference: 2

Generalization: 2*n*

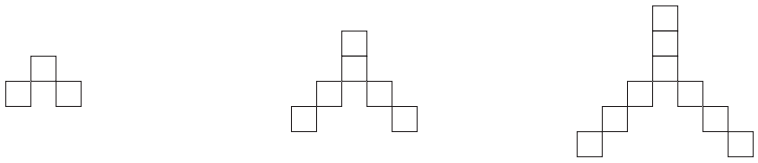
Name: _____

Independent Practice

Score:____ / 13 correct

Use the pattern in the tile design to fill out each table and use a variable to write a generalization. (13 pts.)

1.



Stage 1 **Stage 2** **Stage 3** **Stage 4**

(Stage) ***n***	**Thinking Process**	**Total**
1		
2		
3		
4		

Common Difference: _____

Generalization: _____

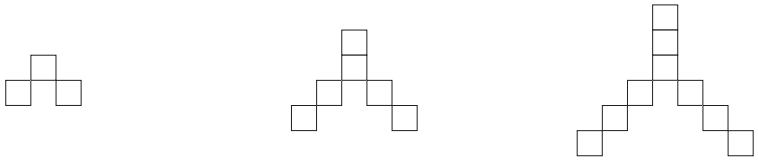
Scoring Key:
1 point for each table,
1 point for each common difference, and
1 point for generalization

Independent Practice Key

Score:____ / 13 correct

Use the pattern in the tile design to fill out each table and use a variable to write a generalization. (13 pts.)

1.



Stage 1 **Stage 2** **Stage 3** **Stage 4**

(Stage) ***n***	**Thinking Process**	**Total**
1	⊕ ⊕ ⊕ 1 (3)	**3**
2	⊕ ⊕ ⊕ / ⊕ ⊕ ⊕ 2 (3)	**6**
3	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ / ⊕ ⊕ ⊕ 3 (3)	**9**
4	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ / ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ 4 (3)	**12**

+3 **+3** **+3**

Common Difference: *3*

Generalization: *3n*

Cumulative Review Practice

Score:____ / 2 correct

1. Determine the pattern and select the correct generalization. (1 pt.)

$\frac{-3}{1} = -3$

$\frac{8}{1} = 8$

$\frac{13}{1} = 13$

A $\frac{3}{1} = 3$

B $\frac{n}{1} = -n$

C $\frac{n}{1} = 1$

D $\frac{n}{1} = n$

2. Use the pattern in the tile design to fill out the table and use a variable to write a generalization of this pattern.

Stage 1 **Stage 2** **Stage 3** **Stage 4**

Stage	Process	Total
1	⊕ ⊕	2
2	⊕ ⊕ ⊕ ⊕	4
3	⊕ ⊕ ⊕ ⊕ ⊕ ⊕	6
4	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	8

Which of the following is the correct generalization for the pattern in the table? (1 pt.)

A $2n$

B $n + 3$

C $6n$

D $n + 2$

Cumulative Review Practice Key

Score:____ / 2 correct

1. Determine the pattern and select the correct generalization. (1 pt.)

$\frac{-3}{1} = -3$

$\frac{8}{1} = 8$

$\frac{13}{1} = 13$

A $\frac{3}{1} = 3$

B $\frac{n}{1} = -n$

C $\frac{n}{1} = 1$

D $\frac{n}{1} = n$

2. Use the pattern in the tile design to fill out the table and use a variable to write a generalization of this pattern.

Stage 1 **Stage 2** **Stage 3** **Stage 4**

Stage	Process	Total
1	⊕ ⊕	2
2	⊕ ⊕ ⊕ ⊕	4
3	⊕ ⊕ ⊕ ⊕ ⊕ ⊕	6
4	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	8

+ 2
+ 2
+ 2

Which of the following is the correct generalization for the pattern in the table? (1 pt.)

A $2n$

B $n + 3$

C $6n$

D $n + 2$

Demonstration Practice

For the following problems, determine the pattern from the table and use variables to write a generalization of the pattern.

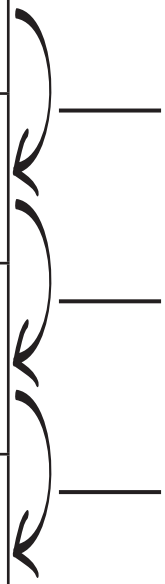
Term	Thinking Process	Total
1	⊕ ⊕ ____ (____) + ____	2
2	⊕ ⊕ ⊕ ⊕ ____ (____) + ____	4
3	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ____ (____) + ____	6
4	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ____ (____) + ____	8
n	____ group(s) of ____ plus ____ extra ____ (____) + ____	

The generalization of this pattern is _____

Demonstration Practice (cont.)

2.

Term	Thinking Process	Total
1	⊕ ⊕ ⊕ ⊕ ____ (____) + ____	4
2	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ____ (____) + ____	7
3	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ____ (____) + ____	10
4	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ____ (____) + ____	13
n	____ group(s) of ____ plus ____ extra ____ (____) + ____	



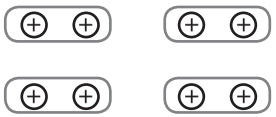
Constant: _____

The generalization of this pattern is _____

Demonstration Practice Key

For the following problems, determine the pattern from the table and use variables to write a generalization of the pattern.

Stage 1 **Stage 2** **Stage 3** **Stage 4**

Term	Thinking Process	Total
1	 1 (2) + 0	2
2	 2 (2) + 0	4
3	 3 (2) + 0	6
4	 4 (2) + 0	8
n	*n* group(s) of 2 plus 0 extra *n* (2) + 0	2*n* + 0

+2 +2 +2

The generalization of this pattern is 2*n*

Demonstration Practice Key (cont.)

2.

Term	Thinking Process	Total
1	⊕ ⊕ ⊕ ⊕	1 (3) + 1	4
2	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	2 (3) + 1	7
3	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	3 (3) + 1	10
4	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	4 (3) + 1	13
n	*n* group(s) of 3 plus 1 extra	*n* (3) + 1	3*n* + 1

+3 +3 +3

Constant: a term that contains no variables and does not change value

The generalization of this pattern is 3*n* + 1

Practice

Guided Practice

Determine the pattern from the table and use a variable to write a generalization of the pattern.

Term	Thinking Process	Total
1	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ____ (____) + ____	8
2	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ____ (____) + ____	13
3	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ____ (____) + ____	18
4	⊕ ____ (____) + ____	23

n	____ group(s) of ____ plus ____ extra ____ (____) + ____	

The generalization of this pattern is _____

Practice (cont.)

Pair Practice

With a partner, determine the pattern from the table and use a variable to write a generalization of the pattern.

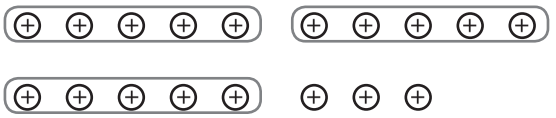
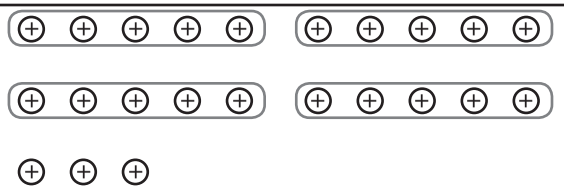
Term	Thinking Process	Total
1	⊕ ⊕ ⊕ ⊕ ⊕ ____ (____) + ____	5
2	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ____ (____) + ____	9
3	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ____ (____) + ____	13
4	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ____ (____) + ____	17
n	____ group(s) of ____ plus ____ extra ____ (____) + ____	

The generalization of this pattern is _____

Practice Key

Guided Practice

Determine the pattern from the table and use a variable to write a generalization of the pattern.

Term	Thinking Process	Total
1	 1 (5) + 3	8
2	 2 (5) + 3	13
3	 3 (5) + 3	18
4	 4 (5) + 3	23

+5 +5 +5

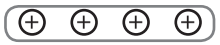
n	*n* group(s) of 5 plus 3 extra *n* (5) + 3	5*n* + 3

The generalization of this pattern is 5*n* + 3

Practice Key (cont.)

Pair Practice

With a partner, determine the pattern from the table and use a variable to write a generalization of the pattern.

Term	Thinking Process	Total
1	  1 (4) + 1	5
2	   2 (4) + 1	9
3	    3 (4) + 1	13
4	     4 (4) + 1	17
n	*n* group(s) of 4 plus 1 extra *n* (4) + 1	4*n* + 1

+4 +4 +4

The generalization of this pattern is 4*n* + 1

Name: _____

Independent Practice

Score:____ / 12 correct

Determine the pattern from the table and use a variable to write a generalization of the pattern. (10 pts.)

Term	Thinking Process		Total
1	⊕ ⊕ ⊕ ⊕ ⊕	____ (____) + ____	5
2	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	____ (____) + ____	8
3	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	____ (____) + ____	11
4	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	____ (____) + ____	14
n	____ group(s) of ____ plus ____ extra	____ (____) + ____	

The generalization of this pattern is _____

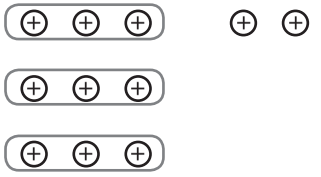
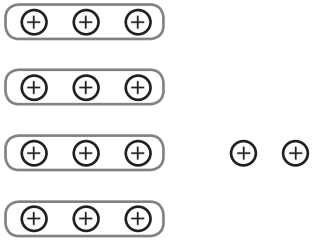
Name: _____

Independent Practice Key

Score:____ / 10 correct

Scoring Key:
1 point for each table,
1 point for each common difference, and
1 point for generalization

Determine the pattern from the table and use a variable to write a generalization of the pattern. (10 pts.)

Term	Thinking Process	Total
1		5
2		8
3		11
4		14
n	*n* group(s) of 3 plus 2 extra	3*n* + 2

+3 +3 +3

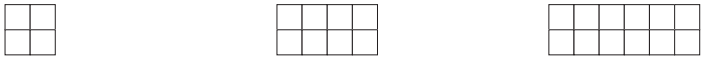
The generalization of this pattern is 3*n* + 2

Cumulative Review Practice

Score:____ / 2 correct

1. Use the pattern blocks and the table below to answer the questions.

Stage 1 **Stage 2** **Stage 3**



Stage	Thinking Process	Total Number of Tiles
1		4
2		8
3		12

Which of the following is the correct generalization? (1 pt.)

A $2n$

B $n + 8$

C $4n$

D $n + 4$

2. Look at the table below.

Term	Thinking Process		Total
1	⊕ ⊕ ⊕ ⊕ ⊕	(1)(3) + 2	5
2	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	(2)(3) + 2	8
3	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	(3)(3) + 2	11
4	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	(4)(3) + 2	14
n			??

Which of the following is the correct generalization for the pattern in the table? (1 pt.)

A $3n$

B $n + 5$

C $n + 2$

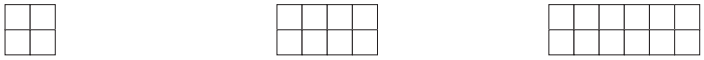
D $3n + 2$

Cumulative Review Practice Key

Score:____ / 2 correct

1. Use the pattern blocks and the table below to answer the questions.

Stage 1 **Stage 2** **Stage 3**



Stage	Thinking Process	Total Number of Tiles
1		4
2		8
3		12

+ 4
+ 4

Which of the following is the correct generalization? (1 pt.)

A $2n$

B $n + 8$

C $4n$

D $n + 4$

2. Look at the table below.

Term	Thinking Process		Total
1	⊕ ⊕ ⊕ ⊕ ⊕	(1)(3) + 2	5
2	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	(2)(3) + 2	8
3	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	(3)(3) + 2	11
4	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	(4)(3) + 2	14
n			??

Which of the following is the correct generalization for the pattern in the table? (1 pt.)

A $3n$

B $n + 5$

C $n + 2$

D $3n + 2$

Demonstration Practice

Determine the pattern from the table and use a variable to write a generalization of the pattern.

1.

Term	Thinking Process	Total
1	⊕ ⊕ ⊕ ____ (____) + ____	3
2	⊕ ⊕ ⊕ ⊕ ⊕ ____ (____) + ____	5
3	____ (____) + ____	7
4	____ (____) + ____	9
n	group(s) of ____ plus ____ extra ____ (____) + ____	

The generalization of this pattern is _____

Demonstration Practice (cont.)

2.

Term	Thinking Process	Total
1	⊕ ⊕ ⊕ ⊕ ___ (___) + ___	5
2	___ (___) + ___	7
3	___ (___) + ___	9
4	___ (___) + ___	11
n		

The generalization of this pattern is _____

Demonstration Practice Key

Determine the pattern from the table and use a variable to write a generalization of the pattern.

1.

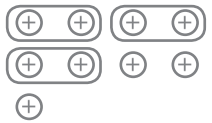
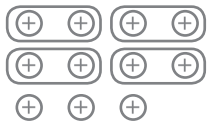
Term	Thinking Process	Total
1	 1 (2) + 1	3
2	 2 (2) + 1	5
3	 3 (2) + 1	7
4	 4 (2) + 1	9
n	*n* groups of 2 plus 1 extra *n* (2) + 1	2*n* + 1

+2 +2 +2

The generalization of this pattern is 2*n* + 1

Demonstration Practice Key (cont.)

2.

Term	Thinking Process	Total
1	 1 (2) + 3	5
2	 2 (2) + 3	7
3	 3 (2) + 3	9
4	 4 (2) + 3	11
n	*n* groups of 2 plus 3 extra *n* (2) + 3	2*n* + 3

+2 +2 +2

The generalization of this pattern is 2*n* + 3

Practice

Pair Practice

With a partner, determine the pattern from the table and use a variable to write a generalization of the pattern.

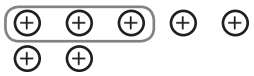
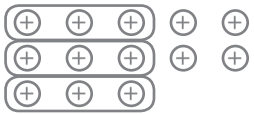
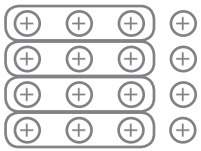
Term	Thinking Process	Total
1	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ____ (____) + ____	7
2	____ (____) + ____	10
3	____ (____) + ____	13
4	____ (____) + ____	16
n	____ (____) + ____	

The generalization of this pattern is _____

Practice Key

Pair Practice

With a partner, determine the pattern from the table and use a variable to write a generalization of the pattern.

Term	Thinking Process	Total
1	 1 (3) + 4	7
2	 2 (3) + 4	10
3	 3 (3) + 4	13
4	 4 (3) + 4	16
n	*n* groups of 3 plus 4 extra *n* (3) + 4	3*n* + 4

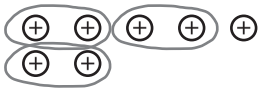
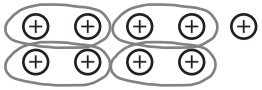
+3 +3 +3

The generalization of this pattern is 3*n* + 4

Error Correction Practice

The given situation is work completed by a student. Explain the error(s) the student made in the work.

Given the following table, write a generalization for the pattern.

Term	Process	Total
1	 $2(2) + 1$	5
2	 $3(2) + 1$	7
3	 $4(2) + 1$	9

The student circled the counters in the Process column and wrote the numeric statements.

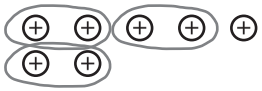
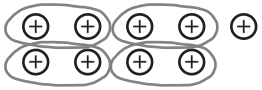
Student conclusion:

The generalization for this pattern is 2n + 1.

Error Correction Practice Key

The given situation is work completed by a student. Explain the error(s) the student made in the work.

Given the following table, write a generalization for the pattern.

Term	Process	Total
1	 2(2) + 1	5
2	 3(2) + 1	7
3	 4(2) + 1	9

The student circled the counters in the Process column and wrote the numeric statements.

Student conclusion:

The generalization for this pattern is 2n + 1.

The student circled 2 sets of 2 counters for the 1st term. The student should have only circled 1 set of counters to making the numeric statement 1(2) + **3.** Each term has 1 set too many circled. The correct generalization is 2*n* + **3.**

Name: _____

Independent Practice

Score:____ / 10 correct

Determine the pattern from the table and use a variable to write a generalization of the pattern. (10 pts.)

Term	Thinking Process	Total
1	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ____ (____) + ____	7
2	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ____ (____) + ____	9
3	____ (____) + ____	11
4	____ (____) + ____	13
n	____ group(s) of ____ plus ____ extra ____ (____) + ____	

The generalization of this pattern is _____

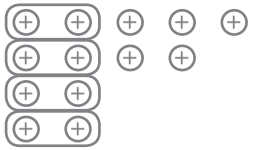
Name: _____

Independent Practice Key

Score:____ / 10 correct

Scoring Key:
1 point for each table,
1 point for each common difference, and
1 point for generalization

Determine the pattern from the table and use a variable to write a generalization of the pattern. (10 pts.)

Term	Thinking Process	Total
1	 1 (2) + 5	7
2	 2 (2) + 5	9
3	 3 (2) + 5	11
4	 4 (2) + 5	13

+2 +2 +2

n	*n* group(s) of 2 plus 5 extra *n* (2) + 5	2*n* + 5

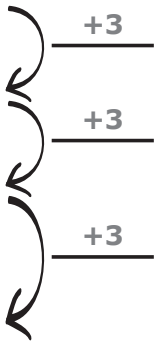
The generalization of this pattern is 2*n* + 5

Cumulative Review Practice

Score:____ / 2 correct

1. Use the completed table to answer the following question.

(Stage) ***n***	**Thinking Process**	**Total**
1	⊕ ⊕ ⊕ 1(3)	**3**
2	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ 2(3)	**6**
3	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ 3(3)	**9**
4	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ 4(3)	**12**
n		**??**

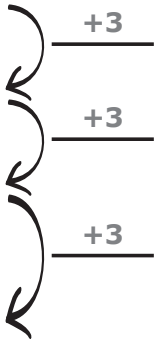


Which of the following is the correct generalization of the table's pattern? (1 pt.)

A $3n$ **B** $3n + 3$ **C** $n + 3$ **D** $n + 2$

2. Use the completed table to answer the following question.

(Stage) ***n***	**Thinking Process**	**Total**
1	⊕ ⊕ ⊕ ⊕ ⊕ 1(3)+2	**5**
2	⊕ ⊕ ⊕ ⊕ ⊕ 2(3)+2 ⊕ ⊕ ⊕	**8**
3	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ 3(3)+2 ⊕	**11**
4	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ 4(3)+2 ⊕ ⊕ ⊕ ⊕	**14**
n		**??**



Which of the following is the correct generalization of the table's pattern? (1 pt.)

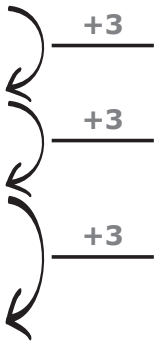
A $n + 1$ **B** $3n + 2$ **C** $3n$ **D** $5n + 2$

Cumulative Review Practice Key

Score:____ / 2 correct

1. Use the completed table to answer the following question.

(Stage) ***n***	**Thinking Process**	**Total**
1	⊕ ⊕ ⊕ 1(3)	**3**
2	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ 2(3)	**6**
3	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ 3(3)	**9**
4	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ 4(3)	**12**
n		**??**

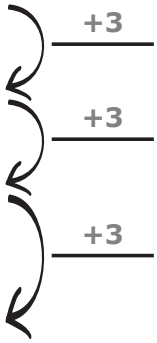


Which of the following is the correct generalization of the table's pattern? (1 pt.)

A $3n$ **B** $3n + 3$ **C** $n + 3$ **D** $n + 2$

2. Use the completed table to answer the following question.

(Stage) ***n***	**Thinking Process**	**Total**
1	⊕ ⊕ ⊕ ⊕ ⊕ 1(3)+2	**5**
2	⊕ ⊕ ⊕ ⊕ ⊕ 2(3)+2 ⊕ ⊕ ⊕	**8**
3	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ 3(3)+2	**11**
4	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ 4(3)+2	**14**
n		**??**



Which of the following is the correct generalization of the table's pattern? (1 pt.)

A $n + 1$ **B** $3n + 2$ **C** $3n$ **D** $5n + 2$

Demonstration Practice

Brainstorm:

Addition	Subtraction	Multiplication	Division	Equals

For the following situations, define the variables that are appropriate and write an equation to describe the relationship.

1. The sum of a number and 7 is 15.

Variable(s):_____

_____

Equation: _____

2. The product of the first number and 3 is equal to the second number.

Variable(s):_____

_____

Equation: _____

Demonstration Practice (cont.)

3. The quotient of the first number and 2 is equal to the second number.

Variable(s): _____

_____

Equation: _____

4. The second number is 3 less than the first number.

Variable(s): _____

_____

Equation: _____

Demonstration Practice Key

Brainstorm:

Addition	Subtraction	Multiplication	Division	Equals
add	subtract	multiply	divide	is
plus	minus	product	quotient	is equal to
sum	difference	times	halved	makes
more than	less than	double	third	totals
		twice	quartered	gives
		triple		

For the following situations, define the variables that are appropriate and write an equation to describe the relationship.

1. The sum of a number and 7 is 15.

Variable(s): *n* = the value of the number

Equation: $n + 7 = 15$

2. The product of the first number and 3 is equal to the second number.

Variable(s): *f* = the value of the first number

h = the value of the second number

Equation: $3f = h$

Demonstration Practice Key (cont.)

3. The quotient of the first number and 2 is equal to the second number.

Variable(s): *a* = the value of the first number

b = the value of the second number

Equation: $\frac{a}{2} = b$

(note: the letter choice of the variable may vary)

4. The second number is 3 less than the first number.

Variable(s): *c* = the value of the first number

d = the value of the second number

Equation: $d = c - 3$

Practice

Pair Practice

For the following situation, work with your partner to define each variable and then match each verbal situation to the correct equation.

	Verbal Description	**Equation**
1.	The quotient of the first number and 9 is equal to the second number. $a =$ _____ $b =$ _____	**A** $a = b + 9$
2.	The difference of the number and 9 equals the second number. $a =$ _____ $b =$ _____	**B** $\frac{a}{9} = b$
3.	A number is equal to 9 more than the second number. $a =$ _____ $b =$ _____	**C** $a - 9 = b$

Practice Key

Pair Practice

For the following situation, work with your partner to define each variable and then match each verbal situation to the correct equation.

	Verbal Description		**Equation**
1.	The quotient of the first number and 9 is equal to the second number. a = the value of a number b = the value of the second number	**A**	$a = b + 9$
2.	The difference of the number and 9 equals the second number. a = the value of a number b = the value of the second number	**B**	$\frac{a}{9} = b$
3.	A number is equal to 9 more than the second number. a = the value of a number b = the value of the second number	**C**	$a - 9 = b$

Name: _____

Independent Practice

Score:____ / 12 correct

For the following situation, define each variable and then match each verbal situation to the correct equation. Each problem is worth 3 points.

	Verbal Description		**Equation**
1.	The difference between two numbers is 2. a = _____ b = _____	**A**	$\frac{a}{2} = b$
2.	The quotient of the first number and 2 is equal to the second number. a = _____ b = _____	**B**	$b = a + 2$
3.	The second number is 2 more than the first number. a = _____ b = _____	**C**	$a - b = 2$
4.	The product of the number and 2 is equal to the second number. a = _____ b = _____	**D**	$2a = b$

Independent Practice Key

Score:____ / 12 correct

For the following situation, define each variable and then match each verbal situation to the correct equation. Each problem is worth 3 points.

Verbal Description **Equation**

1. The difference between two numbers is 2.

a = the value of a number

b = the value of the second number

2. The quotient of the first number and 2 is equal to the second number.

a = the value of the first number

b = the value of the second number

3. The second number is 2 more than the first number.

a = the value of the first number

b = the value of the second number

4. The product of the number and 2 is equal to the second number.

a = the value of a number

b = the value of the second number

A $\frac{a}{2} = b$

B $b = a + 2$

C $a - b = 2$

D $2a = b$

Cumulative Review Practice

Score:____ / 2 correct

1. Use the completed table to answer the following question.

Term	Thinking Process	Total
1	⊕ ⊕ ⊕ ⊕ ⊕ 1(4)+1	**5**
2	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ 2(4)+1	**9**
3	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ 3(4)+1	**13**
4	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ 4(4)+1	**17**
n		**??**

+4 **+4** **+4**

Which of the following is the correct generalization of the table's pattern? (1 pt.)

A $n + 4$ **C** $4n$

B $4n + 1$ **D** $5n + 1$

2. Read the following situations and select the equation that represents the relationship given in the word problem. (1 pt.)

The product of the first number and 12 is equal to the second number. a = the value of the first number. b = the value of the second number.

A $12b = a$ **C** $12a = b$

B $a \cdot b = 12$ **D** $12 - a = b$

Cumulative Review Practice Key

Score:____ / 2 correct

1. Use the completed table to answer the following question.

Term	Thinking Process	Total
1	⊕⊕⊕⊕⊕ 1(4)+1	**5**
2	⊕⊕⊕⊕⊕ ⊕⊕⊕⊕ 2(4)+1	**9**
3	⊕⊕⊕⊕⊕ ⊕⊕⊕⊕ ⊕⊕⊕⊕ 3(4)+1	**13**
4	⊕⊕⊕⊕⊕ ⊕⊕⊕⊕ ⊕⊕⊕⊕ ⊕⊕⊕⊕ 4(4)+1	**17**
n		**??**

+4 **+4** **+4**

Which of the following is the correct generalization of the table's pattern? (1 pt.)

A $n + 4$ **C** $4n$

B $4n + 1$ **D** $5n + 1$

2. Read the following situations and select the equation that represents the relationship given in the word problem. (1 pt.)

The product of the first number and 12 is equal to the second number. a = the value of the first number. b = the value of the second number.

A $12b = a$ **C** $12a = b$

B $a \cdot b = 12$ **D** $12 - a = b$

Demonstration Practice

For the following situation, define the variables that are appropriate and write an equation to describe the relationship.

1. The second number is 5 more than twice the first number.

Variable(s): _____

_____

Equation: _____

2. Double the first number is equal to the difference of the second number and 1.

Variable(s): _____

_____

Equation: _____

3. The quotient of the first number and 3 plus 7 is the second number.

Variable(s): _____

_____

Equation: _____

4. The product of the first number and 8 is equal to the sum of the second number and 4.

Variable(s): _____

_____

Equation: _____

Demonstration Practice Key

For the following situation, define the variables that are appropriate and write an equation to describe the relationship.

1. The second number is 5 more than twice the first number.

Variable(s): *x = the value of the first number*

w = the value of the second number

Equation: *w = 2x + 5 or w = 5 + 2x*

2. Double the first number is equal to the difference of the second number and 1.

Variable(s): *f = the value of the first number*

b = the value of the second number

Equation: $2f = b - 1$

3. The quotient of the first number and 3 plus 7 is the second number.

Variable(s): *h = the value of the first number*

c = the value of the second number

Equation: $\frac{h}{3} + 7 = c$

4. The product of the first number and 8 is equal to the sum of the second number and 4.

Variable(s): *g = the value of the first number*

d = the value of the second number

Equation: $8g = d + 4$

Practice

Pair Practice

With your partner, define each variable in the space provided.
Draw a line to match each word problem to the correct equation.
Be prepared to justify your answers.

Verbal Description **Equation**

1. Twice the first number minus 6 is equal to the second number.

g = _____

d = _____

A $g - d = 6(2)$

2. The quotient of the first number and 2 is 6 more than the second number.

g = _____

d = _____

B $2g - 6 = d$

3. The difference of the first number and the second number is equal to the product of 6 and 2.

g = _____

d = _____

C $\frac{g}{2} = d + 6$

Practice Key

Pair Practice

With your partner, define each variable in the space provided.
Draw a line to match each word problem to the correct equation.
Be prepared to justify your answers.

	Verbal Description		**Equation**
1.	Twice the first number minus 6 is equal to the second number. g = the value of the first number d = the value of the second number	**A**	$g - d = 6(2)$
2.	The quotient of the first number and 2 is 6 more than the second number. g = the value of the first number d = the value of the second number	**B**	$2g - 6 = d$
3.	The difference of the first number and the second number is equal to the product of 6 and 2. g = the value of the first number d = the value of the second number	**C**	$\frac{g}{2} = d + 6$

Error Correction Practice

The given situations are work completed by two different students. Determine which student is incorrect and explain the error.

Write the equation from the given verbal description.

The product of the first number and 5 is equal to 3 less than the second number.

Student 1:	Student 2:
$5x = y - 3$	$5 + x = 3 - y$

Error Correction Practice Key

The given situations are work completed by two different students. Determine which student is incorrect and explain the error.

Write the equation from the given verbal description.

The product of the first number and 5 is equal to 3 less than the second number.

Student 1:	Student 2:
$5x = y - 3$	$5 + x = 3 - y$

Student 2 is incorrect. The product of the first number and 5 should be $5x$, not $5 + x$.

Name: _____

Independent Practice

Score:____ / 12 correct

Define each variable in the space provided. Draw a line to match each word problem to the correct equation. Be prepared to justify your answers. Each problem is worth 3 points.

	Verbal Description		**Equation**
1.	5 added to triple the first number is the second number. f = _____ h = _____	**A**	$5f = h - 3$
2.	The first number times 5 is 3 less than the second number. f = _____ h = _____	**B**	$f + 3h = 5$
3.	The sum of the first number and triple the second number is 5. f = _____ h = _____	**C**	$3f + 5 = h$
4.	The quotient of the first number and 5 is equal to the difference of the second number and 3. f = _____ h = _____	**D**	$\frac{f}{5} = h - 3$

Independent Practice Key

Score:____ / 12 correct

Define each variable in the space provided. Draw a line to match each word problem to the correct equation. Be prepared to justify your answers. Each problem is worth 3 points.

Verbal Description **Equation**

1. 5 added to triple the first number is the second number.

f = the value of the first number

h = the value of the second number

2. The first number times 5 is 3 less than the second number.

f = the value of the first number

h = the value of the second number

3. The sum of the first number and triple the second number is 5.

f = the value of the first number

h = the value of the second number

4. The quotient of the first number and 5 is equal to the difference of the second number and 3.

f = the value of the first number

h = the value of the second number

A $5f = h - 3$

B $f + 3h = 5$

C $3f + 5 = h$

D $\frac{f}{5} = h - 3$

Cumulative Review Practice

Score:____ / 2 correct

Read the following situations and select the equation that represents the relationship given in the word problem.

1. The sum of the first number and 15 is equal to the second number. (1 pt.)

f = the value of the first number.
s = the value of the second number.

A $15 + s = f$

B $15 + f = s$

C $s + f = 15$

D $15 - f = s$

2. The product of the first number and 6 is equal to the difference of the second number and 2. (1 pt.)

f = the value of the first number.
s = the value of the second number.

A $6 - s = 2f$

B $6 - f = 2s$

C $6f = s - 2$

D $6s = f - 2$

Cumulative Review Practice Key

Score:____ / 2 correct

Read the following situations and select the equation that represents the relationship given in the word problem.

1. The sum of the first number and 15 is equal to the second number. (1 pt.)

f = the value of the first number.
s = the value of the second number.

A $15 + s = f$

B $15 + f = s$

C $s + f = 15$

D $15 - f = s$

2. The product of the first number and 6 is equal to the difference of the second number and 2. (1 pt.)

f = the value of the first number.
s = the value of the second number.

A $6 - s = 2f$

B $6 - f = 2s$

C $6f = s - 2$

D $6s = f - 2$

Demonstration Practice

Independent and Dependent

When 2 quantities vary together, there is an independent variable and a dependent variable.

Independent Variable	Dependent Variable

Read the following situations and identify the 2 quantities that vary and the independent and dependent variables.

1. Every day I eat pizza in the cafeteria. The cost of my lunch varies, or changes based on how many slices of pizza I buy.

p = the number of slices of pizza I buy
c = the total cost of my lunch

_____
depends on

_____

Independent variable _____

Dependent variable _____

Demonstration Practice (cont.)

2. Sandra has a job passing out flyers for a sandwich shop. The total number of flyers that she passes out each day is determined by the number of people that walk by her that day.

_____ = the number of people that walk by

_____ = the total number of flyers passed out

_____
depends on
_____

Independent variable _____

Dependent variable _____

3. Jonathan is trying to make money by washing cars in his neighborhood. The number of cars that he washes will determine how much money that he makes.

_____ = the total amount of money made

_____ = the number of cars washed

_____
depends on
_____

Independent variable _____

Dependent variable _____

Demonstration Practice Key

Independent and Dependent

When 2 quantities vary together, there is an independent variable and a dependent variable.

Independent Variable	Dependent Variable
The independent variable determines the value of the other variable. It does not depend on any other variable.	The dependent variable depends on the value of the other variable.

Read the following situations and identify the 2 quantities that vary and the independent and dependent variables.

1. Every day I eat pizza in the cafeteria. The cost of my lunch varies, or changes based on how many slices of pizza I buy.

p = the number of slices of pizza I buy
c = the total cost of my lunch

total cost of lunch
depends on
the number of pizza slices I buy.

Independent variable p = the number of slices of pizza.

Dependent variable c = total cost of my lunch .

Demonstration Practice Key (cont.)

2. Sandra has a job passing out flyers for a sandwich shop. The total number of flyers that she passes out each day is determined by the number of people that walk by her that day.

_____*p*_____ = the number of people that walk by

_____*f*_____ = the total number of flyers passed out

_____total number of flyers passed out_____
depends on
_____the number of people that walk by._____

Independent variable _____*p* = the number of people that walk by_____

Dependent variable _____*f* = the number of flyers passed out_____

3. Jonathan is trying to make money by washing cars in his neighborhood. The number of cars that he washes will determine how much money that he makes.

_____*t*_____ = the total amount of money made

_____*c*_____ = the number of cars washed

_____total amount of money made_____
depends on
_____number of cars washed._____

Independent variable _____*c* = number of cars washed_____

Dependent variable _____*t* = total amount of money made_____

Practice

Pair Practice

Read the following situations and work with your partner to identify the 2 quantities that vary and the independent and dependent variables.

1. Marisol is putting money away each month to save for a vacation.

Every month she puts $25 in her savings account.

_____ = the total amount of money saved

_____ = the number of months

_____
depends on
_____

2. Sara is trying to figure out her final grade in Mr. Reed's math class.

Each student gets a final grade based on the number of assignments that they turn in.

_____ = the number of assignments turned in

_____ = the final grade

_____
depends on
_____

Practice Key

Pair Practice

Read the following situations and work with your partner to identify the 2 quantities that vary and the independent and dependent variables.

1. Marisol is putting money away each month to save for a vacation.

Every month she puts $25 in her savings account.

t = the total amount of money saved

m = the number of months

total amount of money saved depends on number of months.

2. Sara is trying to figure out her final grade in Mr. Reed's math class.

Each student gets a final grade based on the number of assignments that they turn in.

a = the number of assignments turned in

f = the final grade

final grade depends on number of assignments turned in.

Name: _____

Independent Practice

Score:____ / 12 correct

Read the following situations. Choose a variable to represent each quantity and label as independent or dependent. Each problem is worth 4 points.

1. Jose just got a summer job where the total amount of money he makes each paycheck will be based on how many hours that he works.

_____ = the number of hours that Jose works

_____

_____ = the amount of money Jose makes

_____

2. Mark drives his car a lot for work and frequently needs to change the oil in his car. The number of oil changes that Mark's car needs each year is determined by how many miles he drove that year.

_____ = the number of oil changes Mark's car needs

_____

_____ = the number of miles driven

_____

3. Angelica is having a party for her birthday. The number of people that come to the party will determine how many pizzas that she will order.

_____ = the number of pizzas that Angelica orders

_____

_____ = the number of people that come to the party

_____

Independent Practice Key

Score:____ / 12 correct

Read the following situations. Choose a variable to represent each quantity and label as independent or dependent. Each problem is worth 4 points.

1. Jose just got a summer job where the total amount of money he makes each paycheck will be based on how many hours that he works.

h = the number of hours that Jose works

independent

p = the amount of money Jose makes

dependent

2. Mark drives his car a lot for work and frequently needs to change the oil in his car. The number of oil changes that Mark's car needs each year is determined by how many miles he drove that year.

c = the number of oil changes Mark's car needs

dependent

m = the number of miles driven

independent

3. Angelica is having a party for her birthday. The number of people that come to the party will determine how many pizzas that she will order.

p = the number of pizzas that Angelica orders

dependent

t = the number of people that come to the party

independent

Cumulative Review

Score:____ / 5 correct

Read the following situation and select the equation that represents the relationship given in the word problem. (1 pt.)

1. *The product of the first number and 6 is equal to the quotient of 24 and a second number.*

f = the value of the first number
s = the value of the second number

A $6f = 24 + s$

B $6 + s = 24 - f$

C $f + 6 = 24s$

D $6f = 24 \div s$

Read the following situation and label each quantity that varies as independent or dependent. (4 pts.)

2. *The total amount of money that Aldo spends on gas each month is determined by the number of miles that he drives that month.*

_____ = the number of miles driven each month

_____

_____ = the total amount of money spent on gas

_____

Cumulative Review Key

Score:____ / 5 correct

Read the following situation and select the equation that represents the relationship given in the word problem. (1 pt.)

1. *The product of the first number and 6 is equal to the quotient of 24 and a second number.*

f = the value of the first number
s = the value of the second number

A $6f = 24 + s$

B $6 + s = 24 - f$

C $f + 6 = 24s$

D $6f = 24 \div s$

Read the following situation and label each quantity that varies as independent or dependent. (4 pts.)

2. *The total amount of money that Aldo spends on gas each month is determined by the number of miles that he drives that month.*

m = the number of miles driven each month

independent

t = the total amount of money spent on gas

dependent

Demonstration Practice

1. Word Problem:	**Define Variable(s):**
Alicia works at an electronic store where she makes $11 each hour. Find the total amount of money Alicia makes.	Let the variable _____ stand for _____ _____ Let the variable _____ stand for _____ _____

Write an Equation:

Write an equation that can be used to find the total amount of money that Alicia makes based on how many hours that she works.

Calculate the money earned	=	Total money made

Demonstration Practice (cont.)

2. Word Problem:	**Define Variable(s):**
The total cost of shipping a package is $2 per pound. Find the total cost of shipping a package.	Let the variable _____ stand for _____ _____ Let the variable _____ stand for _____ _____

Write an Equation:

Write an equation that can be used to find the total cost of a package based on its weight.

Calculate the package shipping cost	=	Total cost

Demonstration Practice (cont.)

3. Word Problem:	Define Variable(s):
Stephen is saving up to buy a car. He is putting $40 per month in his savings account. Find the total amount Stephen has saved.	Let the variable _____ stand for _____ _____ Let the variable _____ stand for _____ _____

Write an Equation:

Write an equation that can be used to find the total amount of money that Stephen saves based on the number of months he has saved for.

Calculate the savings	=	Total savings

Demonstration Practice Key

1. Word Problem:	Define Variable(s):
Alicia works at an electronic store where she makes $11 each hour. Find the total amount of money Alicia makes.	Let the variable *t* stand for total amount of money that Alicia makes. Let the variable *h* stand for number of hours Alicia works.

Write an Equation:

Write an equation that can be used to find the total amount of money that Alicia makes based on how many hours that she works.

Calculate the money earned	=	Total money made
$11h$		t

Demonstration Practice Key (cont.)

2. Word Problem:	**Define Variable(s):**
The total cost of shipping a package is $2 per pound. Find the total cost of shipping a package.	Let the variable *t* stand for total cost of shipping the package. Let the variable *w* stand for weight of the package in pounds.

Write an Equation:

Write an equation that can be used to find the total cost of a package based on its weight.

Calculate the package shipping cost	=	Total cost
$2w$		t

Demonstration Practice Key (cont.)

3. Word Problem:	**Define Variable(s):**
Stephen is saving up to buy a car. He is putting $40 per month in his savings account. Find the total amount Stephen has saved.	Let the variable *t* stand for total amount of money saved. Let the variable *m* stand for the number of months.

Write an Equation:

Write an equation that can be used to find the total amount of money that Stephen saves based on the number of months he has saved for.

Calculate the savings	=	Total savings
$40m$		t

Practice

Pair Practice

For each of the following situations, work with your partner to define the variables and write the equation to represent the situation.

Jorge went to the carnival with his friend. The carnival charges $3 per ride. Jorge needs to figure out how much money he will spend at the carnival based on the number of rides he takes.

1. Determine and define the variables:

Let the variable _____

stand for _____

Let the variable _____

stand for _____

2. Based on the variables you defined above, write an equation to represent the carnival situation above.

Calculate the ride cost	=	Total Carnival cost

Practice Key

Pair Practice

For each of the following situations, work with your partner to define the variables and write the equation to represent the situation.

Jorge went to the carnival with his friend. The carnival charges $3 per ride. Jorge needs to figure out how much money he will spend at the carnival based on the number of rides he takes.

1. Determine and define the variables:

Let the variable _____*r*_____

stand for _____the number of rides_____

Let the variable _____*m*_____

stand for _____amount of money spent_____

2. Based on the variables you defined above, write an equation to represent the carnival situation above.

Calculate the ride cost	=	Total Carnival cost
$3r$		m

Name: _____

Independent Practice

Score:____ / 4 correct

Read the following word problems and find the matching equation that represents the relationship. Each match is worth 1 point.

1. Sally works at a cell phone store where she earns $15 commission for every cell phone (c) that she sells. Find the equation for the total (t) money made. _____

2. The cost (c) of the membership to a gym is $15 per month ($t$). Find the equation for the total cost for t months. _____

3. A DVD club charges $3 per DVD ($c$). Find the equation for the total (t) cost of the DVD club per month. _____

4. The cost (c) of renting a canoe is $3 per hour ($t$). Find the equation for the total cost for renting a canoe t hours. _____

A $t = 3c$

B $c = 3t$

C $c = 15t$

D $t = 15c$

Independent Practice Key

Score:____ / 4 correct

Read the following word problems and find the matching equation that represents the relationship. Each match is worth 1 point.

1. Sally works at a cell phone store where she earns $15 commission for every cell phone (c) that she sells. Find the equation for the total (t) money made. ____D____

A $t = 3c$

2. The cost (c) of the membership to a gym is $15 per month ($t$). Find the equation for the total cost for t months. ____C____

B $c = 3t$

3. A DVD club charges $3 per DVD ($c$). Find the equation for the total (t) cost of the DVD club per month. ____A____

C $c = 15t$

4. The cost (c) of renting a canoe is $3 per hour ($t$). Find the equation for the total cost for renting a canoe t hours. ____B____

D $t = 15c$

Cumulative Review

Score:____ / 3 correct

1. Read the following situation. Label each quantity that varies as independent or dependent. (2 pts.)

Amirali was organizing a dinner party for his company. The number of people who attend the function will determine the cost for the dinner party.

p = the number of people attending

_____

c = the cost of the dinner party

_____

2. For the following word problem select the equation that represents the relationship. (1 pt.)

The neighborhood butcher is having a sale on steaks. The butcher is selling steaks for $5 per pound (p). Find the equation for the total cost (t) of buying steaks based on the number of pounds.

A $t = 5p$

B $p = 5 + t$

C $p = 5t$

D $t = 5 + p$

Cumulative Review Key

Score:____ / 3 correct

1. Read the following situation. Label each quantity that varies as independent or dependent. (2 pts.)

Amirali was organizing a dinner party for his company. The number of people who attend the function will determine the cost for the dinner party.

p = the number of people attending

independent

c = the cost of the dinner party

dependent

2. For the following word problem select the equation that represents the relationship. (1 pt.)

The neighborhood butcher is having a sale on steaks. The butcher is selling steaks for $5 per pound (p). Find the equation for the total cost (t) of buying steaks based on the number of pounds.

A $t = 5p$

B $p = 5 + t$

C $p = 5t$

D $t = 5 + p$

Demonstration Practice

For each of the following situations, define and describe the variables, create an equation and a table representation.

1. Word Problem:	**Define Variable(s):**
Midori is saving up to buy a car. Her account has an initial balance of $300 and she is depositing $40 per month into her account. Find an equation to represent the amount Midori has saved.	Let the variable _____ stand for _____ _____ Let the variable _____ stand for _____ _____
Write an Equation:	**Make a Table:**
Write an equation that can be used to find the balance in Midori's account based on how long she has saved. Amount Deposited + Initial Balance = Total Saved	Use the table to find out how much money Midori has saved for the different number of months. Process

Demonstration Practice (cont.)

2. Word Problem:	**Define Variable(s):**
The cost of a taxi ride in Chicago is $0.50 per mile plus an additional fee of $5. Find the total cost of a taxi ride.	Let the variable _____ stand for _____ _____ Let the variable _____ stand for _____ _____
Write an Equation:	**Make a Table:**
Write an equation that can be used to find the total cost of a taxi ride based on the distance traveled. Total Cost = Cost of Miles + Initial Fee	Use the table to find out how much a taxi ride costs for different distances traveled. Process

Demonstration Practice (cont.)

3. Word Problem:	**Define Variable(s):**
Johanna is planning a trip and will rent a car. The cost of renting a car is $10 per day plus the initial fee of $25. Find the total cost of a rental car.	Let the variable _____ stand for _____ _____ Let the variable _____ stand for _____ _____
Write an Equation:	**Make a Table:**
Write an equation that can be used to find the total rental cost based on how long Johanna rents the car. Cost of Days + Initial Fee = Total Cost	Use the table to find out the total cost for different number of days. | | Process | | | |---|---|---| | | | | | | | | | | | | | | |

Demonstration Practice Key

For each of the following situations, define and describe the variables, create an equation and a table representation.

1. Word Problem:	**Define Variable(s):**
Midori is saving up to buy a car. Her account has an initial balance of $300 and she is depositing $40 per month into her account. Find an equation to represent the amount Midori has saved.	Let the variable *m* stand for the number of months saving. Let the variable *t* stand for the total amount of money saved.

Write an Equation:	**Make a Table:**
Write an equation that can be used to find the balance in Midori's account based on how long she has saved. Amount Deposited: $40m$ + Initial Balance: 300 = Total Saved: t	Use the table to find out how much money Midori has saved for the different number of months. (answers may vary)

m	Process	*t*
2	40(2)+300	380
3	40(3)+300	420
4	40(4)+300	460

Demonstration Practice Key (cont.)

2. Word Problem:

The cost of a taxi ride in Chicago is $0.50 per mile plus an additional fee of $5. Find the total cost of a taxi ride.

Define Variable(s):

Let the variable *t* stand for the total cost of taxi ride.

Let the variable *m* stand for the number of miles driven.

Write an Equation:

Write an equation that can be used to find the total cost of a taxi ride based on the distance traveled.

Total Cost	=	Cost of Miles	+	Initial Fee
t	=	$0.50m$	+	5

Make a Table:

Use the table to find out how much a taxi ride costs for different distances traveled.

m	Process	*t*
1	0.50(1)+5	5.50
2	0.50(2)+5	6
3	0.50(3)+5	6.50

(answers may vary)

Demonstration Practice Key (cont.)

3. Word Problem:	**Define Variable(s):**
Johanna is planning a trip and will rent a car. The cost of renting a car is $10 per day plus the initial fee of $25. Find the total cost of a rental car.	Let the variable *d* stand for the number of days renting a car. Let the variable *t* stand for total cost of renting the car.
Write an Equation:	**Make a Table:**
Write an equation that can be used to find the total rental cost based on how long Johanna rents the car. Cost of Days: $10d$ + Initial Fee: 25 = Total Cost: t	Use the table to find out the total cost for different number of days. (answers may vary)

d	Process	*t*
1	10(1)+25	35
2	10(2)+25	45
3	10(3)+25	55

Practice

Pair Practice

With a partner, define and describe the variables, circle the letter for the correct equation and table representation.

Peter signed up for a new cell phone plan. His plan each month will cost him $35 plus $0.10 per minute.

Define and describe variables to represent each of the unknown values:

_____

_____

1. The equation that represents the situation is:

A $c = 0.10m + 35$ **C** $m = 0.10c + 35$

B $c = 35.10m$ **D** $c + 35 = 0.10m$

2. The table that represents the situation is:

A

Number of minutes (*m*)	Total phone bill cost (*c*)
20	55
50	85
100	135

C

Number of minutes (*m*)	Total phone bill cost (*c*)
55	20
85	50
135	100

B

Number of minutes (*m*)	Total phone bill cost (*c*)
37	20
40	50
45	100

D

Number of minutes (*m*)	Total phone bill cost (*c*)
20	37
50	40
100	45

Practice Key

Pair Practice

With a partner, define and describe the variables, circle the letter for the correct equation and table representation.

Peter signed up for a new cell phone plan. His plan each month will cost him $35 plus $0.10 per minute.

Define and describe variables to represent each of the unknown values:

m = the number of minutes used.

c = the cost of his plan each month.

1. The equation that represents the situation is:

A $c = 0.10m + 35$ **C** $m = 0.10c + 35$

B $c = 35.10m$ **D** $c + 35 = 0.10m$

2. The table that represents the situation is:

A

Number of minutes (*m*)	Total phone bill cost (*c*)
20	55
50	85
100	135

C

Number of minutes (*m*)	Total phone bill cost (*c*)
55	20
85	50
135	100

B

Number of minutes (*m*)	Total phone bill cost (*c*)
37	20
40	50
45	100

D

Number of minutes (*m*)	Total phone bill cost (*c*)
20	37
50	40
100	45

Error Correction Practice

The given situation is work completed by a student. Determine the error in the students work and explain your reasoning.

For the given situation, write the equation and complete a table.

Isabella rented a motor scooter for the day. To rent a scooter, it costs $20 plus an additional $10 an hour.

$c = 10 + 20h$

Hours Rented (*h*)	Total Cost (*c*)
1	30
2	50
3	70

Error Correction Practice Key

The given situation is work completed by a student. Determine the error in the students work and explain your reasoning.

For the given situation, write the equation and complete a table.

Isabella rented a motor scooter for the day. To rent a scooter, it costs $20 plus an additional $10 an hour.

$c = 10 + 20h$

Hours Rented (*h*)	Total Cost (*c*)
1	30
2	50
3	70

The equation is wrong. It should be $c = 10h + 20$. The unit rate is $10 an hour, therefore $10 is multiplied by the number of hours. The table is also wrong. The cost of renting for 2 hours should be $40 and the cost of renting for 3 hours should be $50.

Name: _____

Independent Practice

Score:____ / 2 correct

For the following situation, circle the correct equation and table representation.

George signed up for a new cable plan. Each month, he is charged a $50 fee, plus $5 per movie package. Find George's total cost for cable.

1. The equation that represents the situation is: (1 pt.)

A $c = m + 50$

B $c = 5m + 50$

C $c = 50m$

D $c = 50m + 5$

2. The table that represents the situation is: (1 pt.)

A

Movie packages(*m*)	cost (*c*)
1	50
2	55
3	60

B

Movie packages(*m*)	cost (*c*)
1	50
2	100
3	150

C

Movie packages(*m*)	cost (*c*)
1	55
2	60
3	65

D

Movie packages(*m*)	cost (*c*)
1	5
2	55
3	105

Independent Practice Key

Score:_____ / 2 correct

For the following situation, circle the correct equation and table representation.

George signed up for a new cable plan. Each month, he is charged a $50 fee, plus $5 per movie package. Find George's total cost for cable.

1. The equation that represents the situation is: (1 pt.)

A $c = m + 50$

B $c = 5m + 50$

C $c = 50m$

D $c = 50m + 5$

2. The table that represents the situation is: (1 pt.)

A

Movie packages(*m*)	cost (*c*)
1	50
2	55
3	60

C

Movie packages(*m*)	cost (*c*)
1	55
2	60
3	65

B

Movie packages(*m*)	cost (*c*)
1	50
2	100
3	150

D

Movie packages(*m*)	cost (*c*)
1	5
2	55
3	105

Cumulative Review

Score:____ / 3 correct

1. Read the following word problem and select the equation that represents the relationship. (1 pt.)

The cost (c) of renting a bike to tour downtown is $15 per hour (h).

Find the equation for the total cost for renting a bike.

A $c = h + 15$ **C** $h = 15c$

B $h = c + 15$ **D** $c = 15h$

Use the following word problem to answer questions 2 and 3.

Nikita is planning the company summer party. The party will cost (c) $6 per person ($p$) plus a rental fee of $65 for setup services.

2. Select the equation that represents the word problem. (1 pt.)

A $c = 65p + 6$ **C** $c = p + 65$

B $c = 6p + 65$ **D** $c = p + 6$

3. Select the table that represents the word problem. (1 pt.)

A

Number of People (p)	Total Cost (c)
1	71
2	77
3	83

C

Number of People (p)	Total Cost (c)
1	65
2	71
3	77

B

Number of People (p)	Total Cost (c)
1	71
2	136
3	201

D

Number of People (p)	Total Cost (c)
1	66
2	67
3	68

Cumulative Review Key

Score:____ / 3 correct

1. Read the following word problem and select the equation that represents the relationship. (1 pt.)

The cost (c) of renting a bike to tour downtown is $15 per hour (h).

Find the equation for the total cost for renting a bike.

A $c = h + 15$

B $h = c + 15$

C $h = 15c$

D $c = 15h$

Use the following word problem to answer questions 2 and 3.

Nikita is planning the company summer party. The party will cost (c) $6 per person ($p$) plus a rental fee of $65 for setup services.

2. Select the equation that represents the word problem. (1 pt.)

A $c = 65p + 6$

B $c = 6p + 65$

C $c = p + 65$

D $c = p + 6$

3. Select the table that represents the word problem. (1 pt.)

A

Number of People (p)	Total Cost (c)
1	71
2	77
3	83

C

Number of People (p)	Total Cost (c)
1	65
2	71
3	77

B

Number of People (p)	Total Cost (c)
1	71
2	136
3	201

D

Number of People (p)	Total Cost (c)
1	66
2	67
3	68

Demonstration Practice

For each of the following situations, define and describe the variables, create an equation and a table representation.

1. Word Problem:	**Define Variable(s):**
Margret is selling cups of lemonade to earn money. She already has $5 and is selling the lemonade for $1.50 per cup. Find the total amount of money Margret has.	Let the variable _____ stand for _____ _____ Let the variable _____ stand for _____ _____
Write an Equation:	**Make a Table:**
Write an equation that can be used to find Margret's total amount of money based on the number of cups of lemonade she has sold. _____	Use the table to calculate the varying amount of money Margret made for your selected numbers of cups of lemonade sold.

	Process	

Demonstration Practice (cont.)

2. Word Problem:	**Define Variable(s):**
Lilia wants to rent a motor scooter. To rent a scooter it costs $0.30 per mile, plus an initial fee of $45. Find the total cost to rent a scooter.	Let the variable _____ stand for _____ _____ Let the variable _____ stand for _____ _____
Write an Equation:	**Make a Table:**
Write an equation that can be used to find the total cost of renting a motor scooter based on the number of miles driven. _____	Use the table to calculate the varying costs to rent a scooter for your selected numbers of miles driven. | | Process | | | | | | | | | | | | | |

Demonstration Practice (cont.)

3. Word Problem:	**Define Variable(s):**
Lorenzo joined a soccer league for $20. Lorenzo pays $5 for each game he plays. Find the total cost to play on the soccer league.	Let the variable _____ stand for _____ _____ Let the variable _____ stand for _____ _____
Write an Equation:	**Make a Table:**
Write an equation that can be used to find the total cost for Lorenzo to play soccer based on the number of games he plays. _____	Use the table to calculate the varying total costs for the league for your selected numbers of soccer games played. | | Process | | | |---|---|---| | | | | | | | | | | | | | | |

Demonstration Practice Key

For each of the following situations, define and describe the variables, create an equation and a table representation.

1. Word Problem:	**Define Variable(s):**
Margret is selling cups of lemonade to earn money. She already has $5 and is selling the lemonade for $1.50 per cup. Find the total amount of money Margret has.	Let the variable *c* stand for the number of cups sold. Let the variable *t* stand for the total amount of money.
Write an Equation:	**Make a Table:**
Write an equation that can be used to find Margret's total amount of money based on the number of cups of lemonade she has sold. $1.50c + 5 = t$	Use the table to calculate the varying amount of money Margret made for your selected numbers of cups of lemonade sold.

c	Process	*t*
2	1.50(2)+5	8.00
3	1.50(3)+5	9.50
4	1.50(4)+5	11.00

(answers may vary)

Demonstration Practice Key (cont.)

2. Word Problem:	Define Variable(s):
Lilia wants to rent a motor scooter. To rent a scooter it costs $0.30 per mile, plus an initial fee of $45. Find the total cost to rent a scooter.	Let the variable *t* stand for the total cost of the rental. Let the variable *m* stand for the number of miles driven.
Write an Equation:	**Make a Table:**
Write an equation that can be used to find the total cost of renting a motor scooter based on the number of miles driven. $t = .30m + 45$	Use the table to calculate the varying costs to rent a scooter for your selected numbers of miles driven.

m	Process	*t*
5	.30(5)+45	46.50
10	.30(10)+45	47.00
20	.30(20)+45	51.00

(answers may vary)

Demonstration Practice Key (cont.)

3. Word Problem:	Define Variable(s):
Lorenzo joined a soccer league for $20. Lorenzo pays $5 for each game he plays. Find the total cost to play on the soccer league.	Let the variable *g* stand for the number of games played. Let the variable *t* stand for the total cost of the soccer league.
Write an Equation:	**Make a Table:**
Write an equation that can be used to find the total cost for Lorenzo to play soccer based on the number of games he plays. $t = 5g + 20$	Use the table to calculate the varying total costs for the league for your selected numbers of soccer games played.

g	Process	*t*
5	5(5)+20	45
10	5(10)+20	70
15	5(15)+20	95

(answers may vary)

Practice

Pair Practice

With a partner, define and describe the variables, circle the letter for the correct equation and table representation.

At a local copy shop, it costs $0.50 per page of colored copy plus an initial processing fee of $4. Find the cost of making color copies.

Define and describe variables to represent each of the unknown values:

_____

_____

1. The equation that represents the situation is:

A $p = 0.50c + 5$ **C** $c = 0.50p + 4$

B $c + 4 = 0.50p$ **D** $c = 4.50p$

2. The table that represents the situation is:

A

Number of Pages (*p*)	Total Copy Cost (*c*)
5	2
7	6
9	10

C

Number of Pages (*p*)	Total Copy Cost (*c*)
2	9
6	27
10	45

B

Number of Pages (*p*)	Total Copy Cost (*c*)
2	5
6	7
10	9

D

Number of Pages (*p*)	Total Copy Cost (*c*)
2	4.50
6	5.50
10	8

Practice Key

Pair Practice

With a partner, define and describe the variables, circle the letter for the correct equation and table representation.

At a local copy shop, it costs $0.50 per page of colored copy plus an initial processing fee of $4. Find the cost of making color copies.

Define and describe variables to represent each of the unknown values:

c = the cost of the copies

p = the the number of pages

1. The equation that represents the situation is:

A $p = 0.50c + 5$

B $c + 4 = 0.50p$

C $c = 0.50p + 4$

D $c = 4.50p$

2. The table that represents the situation is:

A

Number of Pages (p)	Total Copy Cost (c)
5	2
7	6
9	10

C

Number of Pages (p)	Total Copy Cost (c)
2	9
6	27
10	45

B

Number of Pages (p)	Total Copy Cost (c)
2	5
6	7
10	9

D

Number of Pages (p)	Total Copy Cost (c)
2	4.50
6	5.50
10	8

Error Correction Practice

The given situations are work completed by two different students. Determine which student is incorrect and explain the error(s).

Given the following contextual situation, write an equation to describe the relationship between the quantities that vary.

Marie and Joanna are renting a canoe. The canoe rental costs a flat fee of $7 plus $5 per hour (h). Find the equation for the total cost (c).

Student 1:	Student 2:
$7h + 5 = c$	$7 + 5h = c$

Error Correction Practice Key

The given situations are work completed by two different students. Determine which student is incorrect and explain the error(s).

Given the following contextual situation, write an equation to describe the relationship between the quantities that vary.

Marie and Joanna are renting a canoe. The canoe rental costs a flat fee of $7 plus $5 per hour (h). Find the equation for the total cost (c).

Student 1:	Student 2:
$7h + 5 = c$	$7 + 5h = c$

Student 1 was incorrect because $5 per hour should be $5h$ and a flat fee is +7, so the equation should be $7 + 5h = c$.

Name: _____

Independent Practice

Score:____ / 2 correct

For the following situation, circle the correct equation and table representation.

Amir is purchasing a pizza from a local shop. The pizza costs $12 plus $0.50 for each topping. Find the cost of a pizza.

1. The correct equation is: (1 pt.)

A $c = t + 12$

B $c = 12t + 0.50$

C $c = 12.50t$

D $c = 0.50t + 12$

2. The correct table is: (1 pt.)

A

Number of Toppings (t)	Cost of a Pizza (c)
1	13.50
2	14.00
3	14.50

B

Number of Toppings (t)	Cost of a Pizza (c)
1	12.00
2	13.00
3	14.00

C

Number of Toppings (t)	Cost of a Pizza (c)
1	12.50
2	13.00
3	13.50

D

Number of Toppings (t)	Cost of a Pizza (c)
1	12.50
2	24.00
3	36.50

Independent Practice Key

Score:_____ / 2 correct

For the following situation, circle the correct equation and table representation.

Amir is purchasing a pizza from a local shop. The pizza costs $12 plus $0.50 for each topping. Find the cost of a pizza.

1. The correct equation is: (1 pt.)

A $c = t + 12$

B $c = 12t + 0.50$

C $c = 12.50t$

D $c = 0.50t + 12$

2. The correct table is: (1 pt.)

A

Number of Toppings (t)	Cost of a Pizza (c)
1	13.50
2	14.00
3	14.50

B

Number of Toppings (t)	Cost of a Pizza (c)
1	12.00
2	13.00
3	14.00

C

Number of Toppings (t)	Cost of a Pizza (c)
1	12.50
2	13.00
3	13.50

D

Number of Toppings (t)	Cost of a Pizza (c)
1	12.50
2	24.00
3	36.50