

Unit 2 Extension – (Chapter 2 in text)

The Language of Algebra

Topics

Words and Expressions

Variable and Expressions

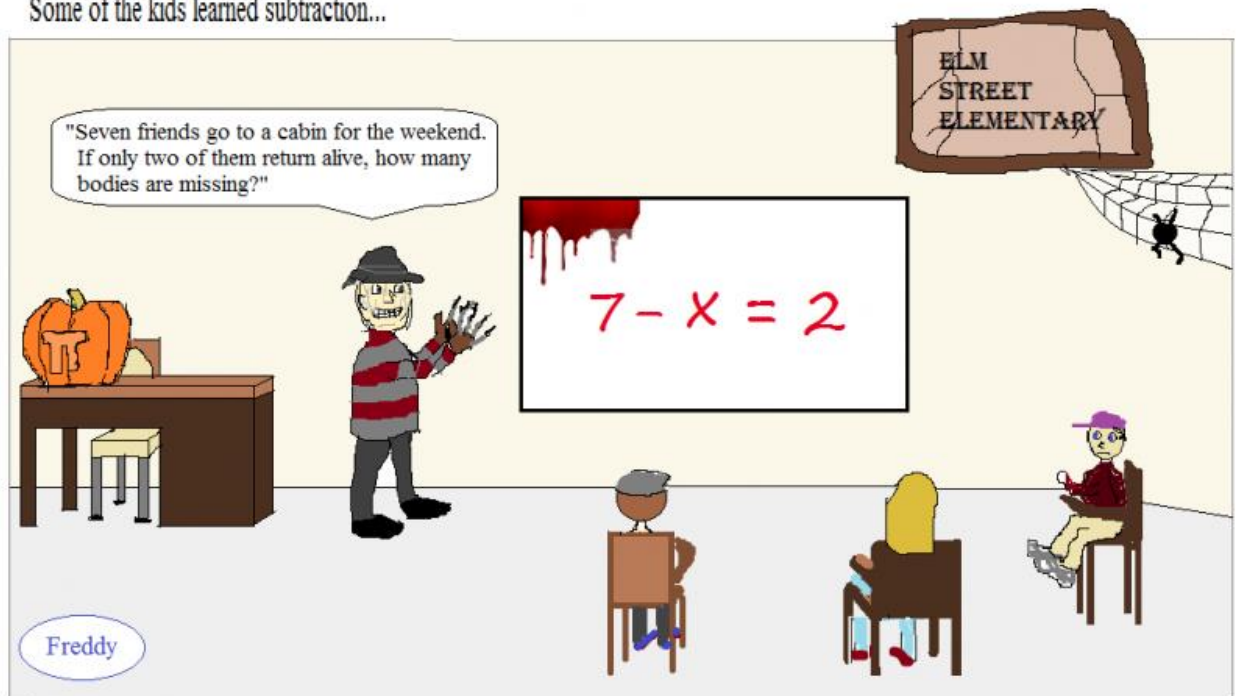
Problem Solving Strategies

Graphing in Four Quadrants

Ordered Pairs and Relations

Words, Equations, Tables, and Graphs

Some of the kids learned subtraction...



But, most of Mr. Krueger's math class had nightmares....

LanceAF #110
Halloween/2013
mathplane.com

Name: _____

Team: _____ Math Period: _____ Teacher: _____

Lesson 2 Homework Practice

Words and Expressions

Write a numerical expression for each verbal phrase.

- thirty-one increased by fourteen
- the difference of sixteen and nine
- the sum of seven, four, and eighteen
- three times forty
- the quotient of eighty-one and three
- four more than the product of seven and eight
- the cost of three slices of pizza at \$2 each
- the number of days in six weeks

Evaluate each expression.

- $4 + 2 \cdot 8$
- $30 - 12 \cdot 2$
- $6(6 \div 2) \cdot 9$
- $6(6) \div 2 \cdot 9$
- $6(6) \div (2 \cdot 9)$
- $6(6 \div 2 \cdot 9)$
- $12 - 2 \cdot 5 + 3$
- $(4 + 5) \cdot (4 + 5)$
- $100 \div (16 + 9) \cdot 6$
- $25 + 30 \div 6 \cdot 5$
- $16 - 49 \div 7 \cdot 2$
- $(2 \cdot 11 + 1) - (3 \cdot 6 + 5)$
- $\frac{4(10 + 2)}{2(24 \div 3)}$
- $2 + 4 \cdot 6 - 3 \cdot 5 + 6 \cdot 2$
- $(8 + 4) \cdot (6 - 3)$
- $\frac{2(6 + 4)}{2(8 - 6)}$
- $4(8 + 2 \cdot 5 - 6)$
- $2 \cdot 2(105 \div 15 - 6)$
- $14 \div 2 \cdot 5 + 3$
- $4(4 + 5) \div 3(10 - 7)$
- Alicia rented bowling shoes for \$3 and played 4 games at \$2 each. Write and evaluate an expression for the total cost of bowling.
- Adult tickets for a movie cost \$6 and children's tickets cost \$3. If two adults and three children go to the movies, how much will they pay?

Lesson 3 Homework Practice

Variables and Expressions

Translate each phrase into an algebraic expression.

- six times a number minus eleven
- the product of eight hundred and a number
- the quotient of thirty and the product of ten times a number
- five times the sum of three and some number
- half the distance to the school

Evaluate each expression if $x = 12$, $y = 20$, and $z = 4$.

- | | | |
|-------------------------|---------------------------------|---------------------|
| 6. $x + y + z$ | 7. $4x - y$ | 8. $3x + 2y$ |
| 9. $y - 3z$ | 10. $x + y \div z$ | 11. $yz + x$ |
| 12. $(y - x) + (y - z)$ | 13. $\frac{y}{z} + \frac{x}{z}$ | 14. $\frac{5x}{3y}$ |

Evaluate each expression if $a = 3$, $b = 6$, $c = 5$, and $d = 9$.

- | | | |
|----------------------|-----------------------------|---------------------------------|
| 15. $a + b + c + d$ | 16. $\frac{(a + b + c)}{2}$ | 17. $ab + bc$ |
| 18. $6d - c \cdot c$ | 19. $3(a + b + c)$ | 20. $\frac{100}{5c}$ |
| 21. abc | 22. $10(6c - 3d)$ | 23. $\frac{2(a + b)}{6(b - c)}$ |

24. In order to encourage recycling, the city is offering five cents for every pound of newspapers collected, twenty-five cents per pound for cans, and ten cents per pound for glass bottles or jars.

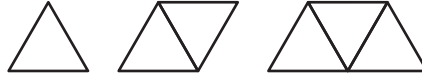
- Write an expression for the total amount earned from recycling.
- If Chen brings in ten pounds of newspapers, eight pounds of cans, and two pounds of glass, how much will he receive?

Lesson 5 Homework Practice

Problem-Solving Strategies

Use a strategy to solve each problem.

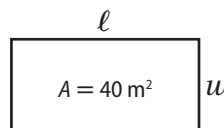
1. Find the perimeters of the next two figures in the pattern if the length of each side of the triangles is 4 cm.



2. A number is squared, and then three is added to its square. The result is 228. What is the number?
3. Taylor has 85 cents in dimes and nickels in her pocket. The number of dimes is four more than the number of nickels. How many of each coin does she have?
4. The list shows the dinner prices at the Carlton Cafe. Organize the data in a table using intervals: \$5.00–\$9.99, \$10.00–\$14.99, \$15.00–\$19.99, \$20.00–\$24.99, and \$25 and up. What is the most common interval of dinner prices?

\$17.99	\$12.99	\$7.50	\$9.99	\$11.25
\$14.00	\$26.00	\$22.00	\$12.50	\$13.00
\$17.49	\$12.00	\$13.50	\$8.25	\$9.00
\$12.98	\$21.00	\$7.98	\$8.75	\$6.50
\$10.00	\$11.50	\$14.75	\$28.50	\$16.00

5. What are the next two numbers in the pattern listed below?
4, 20, 100, 500, ...
6. In the rectangle shown below, the length ℓ is longer than its width w . List all the possible whole number dimensions for the rectangle, and name the dimensions that give the smallest perimeter.

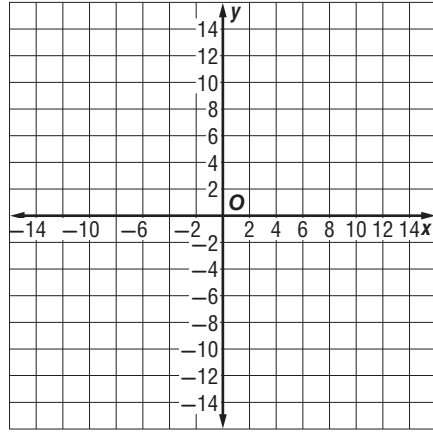


Lesson 6 Homework Practice

Graphing in Four Quadrants

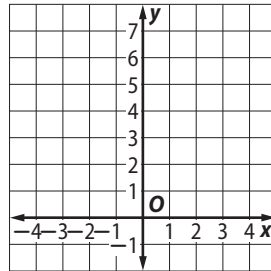
Graph and label each point on the coordinate plane. Name the quadrant in which each point is located.

- 1. $A(8, 6)$
- 2. $B(-8, 6)$
- 3. $C(-4, -11)$
- 4. $D(3, -6)$
- 5. $E(9, 0)$
- 6. $F(-4, 1)$
- 7. $G(-10, -10)$
- 8. $H(0, -8)$
- 9. $I(6, -2)$
- 10. $J(2, 13)$

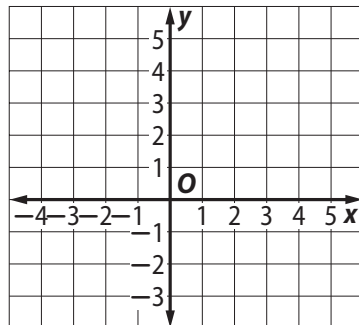


11. Make a table of values and graph six sets of ordered pairs for the equation $y = 5 - x$. Describe the graph.

$y = 5 - x$		
x	y	(x, y)



12. On the coordinate plane, draw a rectangle $ABCD$ with vertices at $A(1, 4)$, $B(5, 4)$, $C(5, 1)$, and $D(1, 1)$. Then graph and describe the new rectangle formed when you subtract 3 from each coordinate of the vertices in rectangle $ABCD$.

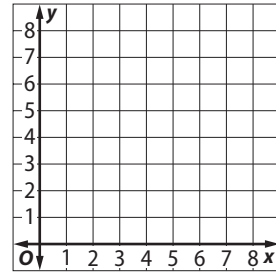


Lesson 6 Homework Practice

Ordered Pairs and Relations

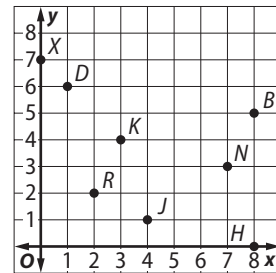
Graph each ordered pair on the coordinate plane.

- | | |
|--------------|--------------|
| 1. $Q(4, 2)$ | 2. $V(3, 7)$ |
| 3. $T(0, 3)$ | 4. $B(8, 6)$ |
| 5. $R(5, 0)$ | 6. $L(4, 4)$ |



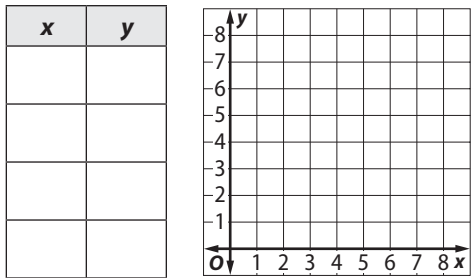
Write the ordered pair that names each point.

- | | |
|---------|---------|
| 7. J | 8. X |
| 9. R | 10. B |
| 11. K | 12. H |
| 13. D | 14. N |

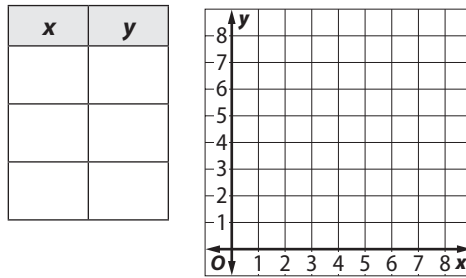


Express each relation as a table and as a graph. Then determine the domain and range.

15. $\{(3, 5), (1, 3), (5, 1), (2, 4)\}$

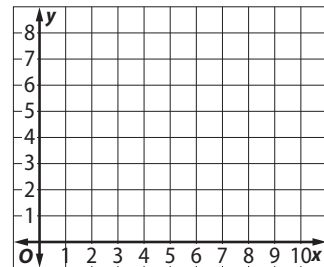


16. $\{(0, 2), (4, 6), (3, 7)\}$



17. Graph $(2, 1)$, $(2, 4)$, and $(5, 1)$ on the coordinate system.

- Connect the points with line segments. What figure is formed?
- Multiply each number in the set of ordered pairs by 2. Graph and connect the new ordered pairs. What figure is formed?
- Compare the two figures you drew. Write a sentence that tells how the figures are the same and how they are different.



Lesson 7 Homework Practice

Words, Equations, Tables, and Graphs

Copy and complete each table. Then state the domain and range of the relation.

1. Each copy of a book costs \$18 and shipping is \$9 per order.

b		c
2		
3		
4		
5		

2. The number of girls at a camp is 17 less than twice the number of boys.

b		g
40		
58		
82		
100		

3. Tom's height is 10 inches more than one third of his older sister's height.

s		t
66		
57		
51		
42		

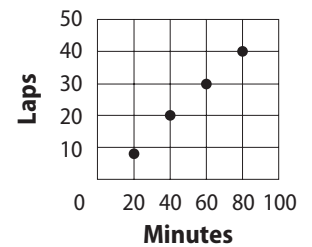
4. The charge for a hotel room is \$75 per night plus a \$15 booking fee.

n		c
2		
4		
8		
14		

5. Carly walked laps in a charity walk-a-thon. The graph shows the number of laps walked over 80 minutes.

- a. Make a table showing the input, minutes, and the output, laps walked.

x				
y				



- a. Can you write one equation that can be used to find the laps, l , based on the minutes, m ? Explain.

- c. State the domain and range of the relation.