

## Algebra I Problem Set 1

Use set notation to designate each of the following sets of numbers.

1. Natural
2. Integers
3. Whole
4. List 4 examples of Rational Numbers

Tell whether each of the following statements is true or false. If the statement is false, rewrite it so that it becomes a true statement.

5. The positive odd numbers are a subset of the whole numbers.
6. Positive multiples of 4 are a subset of the positive even numbers.
7. Positive multiples of 5 are a subset of the positive odd numbers.
8. The whole numbers are a subset of the rational numbers.

9.  $W \subset \mathbb{R}$

10.  $Q \subset N$

11.  $\mathbb{R} \subset J$

12.  $J \subset \mathbb{R}$

13.  $N \subset W$

14.  $N \subset \mathbb{R}$

Given sets A and B, which statements are true?  $A = \{3, 6, 9, 12\}$  and  $B = \{0, 5, 10, 15\}$

- 15a)  $9 \in A$       b)  $10 \in A$       c)  $4 \in A$       d)  $5 \in B$       e)  $15 \in B$

Simplify each of the following expressions that involve absolute value.

16.  $|7|$  and  $|-7|$

17.  $|-5|$  and  $|5|$

18.  $|26|$  and  $|-26|$

19.  $|0|$  and  $|9-9|$

20.  $|17.6|$  and  $|-17.6|$

21.  $\left|2\frac{1}{3}\right|$  and  $\left|-2\frac{1}{3}\right|$

22.  $|4+8|$

23.  $|9+7|$

24.  $|23+19|$

25.  $|3+5+7|$

26.  $|6+2+14|$

27.  $|11+27+36|$

28.  $|12-7|$

29.  $|24-17|$

30.  $|83-38|$

## Algebra I Problem Set 2

Use set notation to designate each of the following sets of numbers.

1. Integers
2. Positive multiples of 3

Tell whether each of the following statements is true or false. If the statement is false, rewrite it so that it becomes a true statement.

3. Positive multiples of 2 are a subset of the positive multiples of 4.

4.  $J \subset W$

5.  $Q \subset N$

6.  $N \subset \mathbb{R}$

Simplify each of the following expressions:

7.  $14 - 8$

8.  $-8 + 7$

9.  $|-7 + 5|$

10.  $-2 + 15$

11.  $-6 - 9$

12.  $|-14 - 7|$

13.  $-2 + 7 - 6$

14.  $4 - 8 + 9$

15.  $|-5 - 10 + 6|$

16.  $9 - 1 - 6 - 8$

17.  $-5 + 8 - 7 - 2 - 2$

18.  $|6 + 4 + 2 - 15 - 7|$

Solve each equation:

19.  $b + 5 = 20$

20.  $c - 7 = 10$

21.  $d + 4 = -15$

22.  $f - 3 = -11$

23.  $g + 1 = 14$

24.  $h - 5 = -25$

25.  $j + 10 = 3$

26.  $k - 6 = 1$

27.  $m + 9 = -5$

28.  $8 + n = 14$

29.  $-2 + p = -14$

30.  $7 + w = -16$

## Algebra I Problem Set 3

Use set notation to designate each of the following set of numbers:

1. Positive multiples of both 2 and 3 between 1 and 31

2. Whole numbers

3. Integers

4. Counting Numbers

Simplify each of the following expressions:

5.  $\frac{2}{25} + \frac{3}{5}$

6.  $\frac{6}{7} - \frac{3}{14}$

7.  $\frac{3}{4} - \frac{5}{16}$

8.  $\left| \frac{1}{2} + \frac{3}{5} \right|$

9.  $\frac{2}{3} - \frac{4}{5}$

10.  $\frac{4}{5} + \frac{1}{3}$

11.  $-\frac{1}{6} + \frac{1}{4}$

12.  $\left| -\frac{7}{10} + \frac{3}{7} \right|$

13.  $\frac{1}{6} + \frac{4}{15}$

14.  $\frac{2}{9} - \frac{1}{12}$

15.  $\frac{3}{5} - \frac{2}{3}$

16.  $\left| \frac{1}{5} - \frac{4}{7} \right|$

17.  $-\frac{1}{3} - \frac{1}{4}$

18.  $-\frac{1}{7} + \frac{3}{4}$

19.  $-\frac{1}{2} - \frac{1}{3}$

20.  $\left| \frac{1}{5} - \frac{1}{2} \right|$

21.  $-\frac{7}{8} + \frac{4}{5}$

Solve each equation:

22.  $d + \frac{1}{2} = \frac{3}{4}$

23.  $g - \frac{1}{2} = \frac{2}{5}$

24.  $h + \frac{2}{3} = \frac{5}{6}$

25.  $k - \frac{1}{4} = \frac{3}{8}$

26.  $m + \frac{3}{4} = \frac{1}{3}$

27.  $x - \frac{6}{7} = -\frac{1}{3}$

28] If  $AB = \frac{1}{7}$  and  $BC = \frac{3}{5}$ , find the length of  $AC$ .

29] If  $AC = \frac{6}{11}$  and  $BC = \frac{1}{3}$ , find the length of  $AB$ .

30] If  $AB = \frac{3}{8}$  and  $AC = \frac{7}{10}$ , find the length of  $BC$ .



## Algebra I Problem Set 4

1. Use set notation to designate the set of whole numbers.

Simplify each expression:

2.  $4\frac{3}{8} - 1\frac{1}{3}$

3.  $3\frac{1}{4} + 2\frac{3}{7}$

4.  $7\frac{4}{5} - 3\frac{1}{3}$

5.  $8\frac{2}{3} + 2\frac{1}{6}$

6.  $9\frac{5}{6} - 5\frac{3}{4}$

7.  $9\frac{1}{7} + 5\frac{2}{3}$

8.  $10\frac{3}{8} - 4\frac{1}{4}$

9.  $3\frac{2}{3} + 3\frac{3}{5}$

10.  $5\frac{2}{7} - 3\frac{2}{3}$

11.  $2\frac{3}{4} + 5\frac{4}{5}$

12.  $8\frac{1}{8} - 4\frac{3}{5}$

Solve each equation:

13.  $x - 1\frac{1}{8} = 4\frac{2}{3}$

14.  $w + 2\frac{3}{4} = 5\frac{4}{11}$

15.  $d - 6\frac{3}{4} = 1\frac{3}{5}$

16.  $m + 1\frac{1}{2} = 5\frac{1}{5}$

17.  $g - \frac{1}{4} = \frac{1}{3}$

18.  $b + \frac{5}{6} = \frac{1}{2}$

19.  $k - \frac{2}{3} = -\frac{2}{5}$

20.  $c + \frac{2}{5} = -\frac{1}{3}$

Simplify each expression:

21.  $-8 + 4 - 7$

22.  $-1 - 2 - 3$

23.  $|3 + 9 - 2 - 6|$

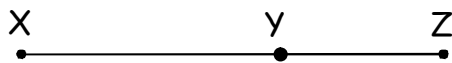
24.  $-3 + 9 + 4 + 7$

25.  $0 - 3 - 5 - 1$

26.  $2 + 5 + 6 - 10$

27.  $|-5 + 7 - 2 - 15|$

28.  $1 + 4 - 6 + 1$

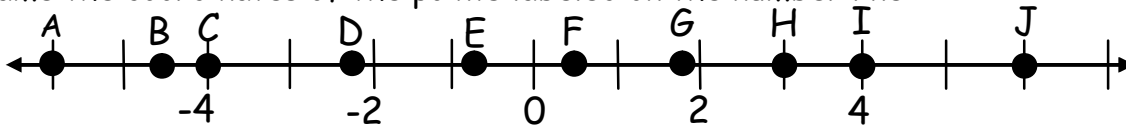


29. Find the length of XZ if  $XY = 3\frac{4}{7}$  and  $YZ = 1\frac{1}{2}$

30. Find the length of YZ if  $XY = 4\frac{1}{2}$  and  $XZ = 8\frac{1}{3}$

# Algebra I Problem Set 5

1. Name the coordinates of the points labeled on the number line:



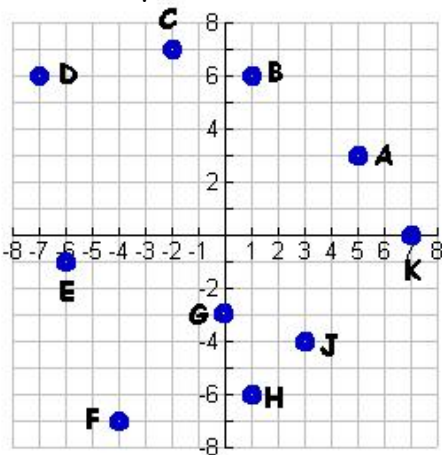
2. Graph and label the following points on a number line:

- |          |                    |                   |                   |                    |
|----------|--------------------|-------------------|-------------------|--------------------|
| A) -5    | B) 7               | C) 6.25           | D) -3.5           | E) -1              |
| F) -2.75 | G) $-2\frac{1}{4}$ | H) $1\frac{7}{8}$ | I) $4\frac{2}{3}$ | J) $-6\frac{1}{2}$ |

Graph the following points on a number line and find the length of segments XY, YZ, and XZ.

- |                          |                            |
|--------------------------|----------------------------|
| 3. X = -8, Y = -2, Z = 7 | 4. X = -10, Y = -1, Z = 14 |
| 5. X = -6, Y = 4, Z = 10 | 6. X = -1, Y = 1, Z = 4    |

7. Give the coordinates of each ordered pair:



8. Plot and label each ordered pairs on a rectangular coordinate system. Name the quadrant or axis of each point.

- |             |             |
|-------------|-------------|
| A) (0,7)    | B) (-6,0)   |
| C) (1, 5)   | D) (-3, 9)  |
| E) (10, -3) | F) (-4, -7) |
| G) (4, 0)   | H) (0, -3)  |
| I) (-1, -8) | J) (-2, 5)  |
| K) (7, -2)  | L) (8, 6)   |

Graph the ordered pairs. Connect them in order to make a shape. Then find the perimeter of that shape.

- |  |  |
|--|--|
| 9. (1, 7), (-4, 7), (-4, -2), (1, -2)  | 10. (3, 6), (-2, 6), (-2, 1), (3, 1)       |
| 11. (-3, 4), (5, 4), (5, -4), (-3, -4) | 12. (-2, -7), (-8, -7), (-8, -2), (-2, -2) |

Simplify each expression:

- |                                   |                                    |                                   |                                   |
|-----------------------------------|------------------------------------|-----------------------------------|-----------------------------------|
| 13. $7\frac{3}{8} + 1\frac{1}{9}$ | 14. $-5\frac{1}{2} + 8\frac{1}{4}$ | 15. $9\frac{3}{4} + 3\frac{1}{6}$ | 16. $5\frac{1}{4} - 9\frac{4}{5}$ |
|-----------------------------------|------------------------------------|-----------------------------------|-----------------------------------|

Solve each equation:

- |                                       |                                       |                                     |                                      |
|---------------------------------------|---------------------------------------|-------------------------------------|--------------------------------------|
| 17. $x - 3\frac{2}{7} = 1\frac{1}{3}$ | 18. $w + 4\frac{1}{3} = 5\frac{4}{5}$ | 19. $g - \frac{5}{6} = \frac{1}{4}$ | 20. $b + \frac{3}{8} = -\frac{1}{3}$ |
|---------------------------------------|---------------------------------------|-------------------------------------|--------------------------------------|

Simplify each expression:

21.  $|-3 + 5 - 10 + 1|$

22.  $-8 - 2 - 1 + 6 - 5 - 3$

23.  $|5 + 9 - 6 - 7 - 3 + 10|$

24.  $-1 - 6 + 7 + 3$

25.  $-12 + 14 - 15 - 18$

26.  $-100 + 200 - 500 - 400$

27. Designate the set of integers.

28. Designate the set of natural numbers.

Tell whether each of the following statements is true or false. If the statement is false, rewrite it so that it becomes a true statement.

29. Positive multiples of 3 are a subset of the positive multiples of 9.

30. The states that border Colorado are a subset of the states that begin with the letter A.

## Algebra I Problem Set 6

Simplify each expression:

1.  $6.058 + 27.67$

2.  $-23.526 - 9.89$

3.  $7.863 + 32.28$

4.  $2.6 + 3.7 + 12.92$

5.  $231.6 + 67.56 + 8.132$

6.  $-1236.5 - 13.864$

7.  $48.2 - 29.5$

8.  $7.43 - 16.26$

9.  $9.012 - 3.67$

10.  $8.014 - 0.47$

11.  $800.62 - 75.86$

12.  $9.375 - 12.052$

13. Graph each of the following on a number line:

a)  $-3.5$

b)  $5.2$

c)  $-1.8$

d)  $1.2$

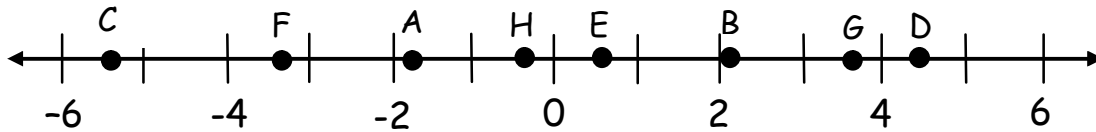
e)  $0.4$

f)  $-0.6$

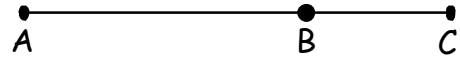
g)  $3.4$

h)  $-2.9$

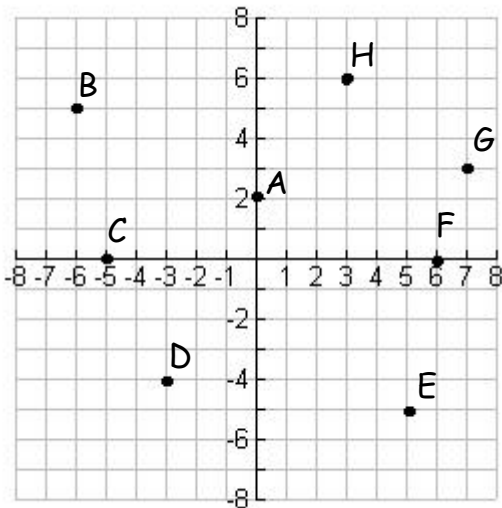
14. Use a decimal number to name the coordinate of each point on the number line:



15. Find the length of AB if  $AC = 8.17$  and  $BC = 3.49$  (dimensions are inches).



16. Name the coordinates of each point on the coordinate axes.



17. Graph the following four points on a set of coordinate axes. Connect the four points to make a square. Find the perimeter and the area of the square (dimensions are feet).  
 $(3, 2), (-2, 2), (-2, -3), (3, -3)$

18. Graph the following four points on a set of coordinate axes. Connect the four points to make a rectangle. Find the perimeter and the area of the rectangle (dimensions are meters).  
 $(6, 1), (-3, 1), (-3, -6), (6, -6)$

Solve each equation:

19.  $x - 2.3 = 4.6$

20.  $y + 1.5 = 3.7$

21.  $z - 6.57 = -8.4$

22.  $6.9 + a = 2.17$

23.  $-9.31 + b = 6.4$

24.  $-1.4 + c = 5.2$

25.  $2\frac{1}{3} + t = 5\frac{2}{7}$

26.  $x - 3\frac{2}{3} = 4\frac{1}{5}$

27.  $s - \frac{3}{4} = -\frac{7}{8}$

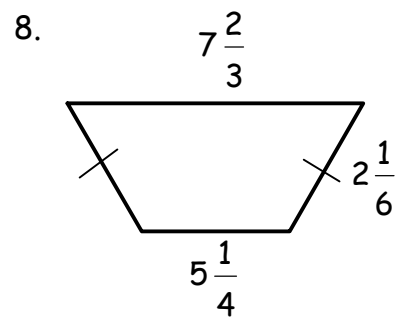
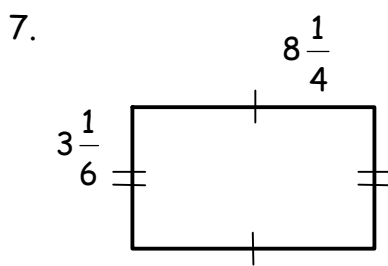
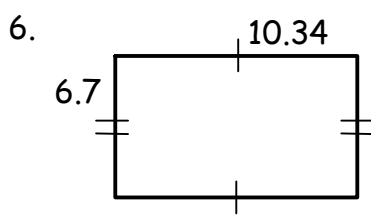
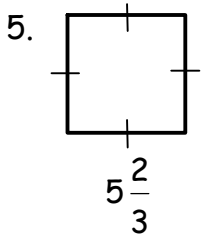
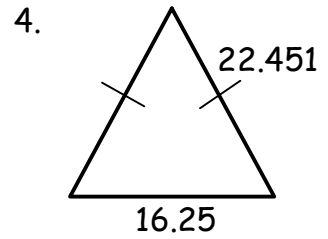
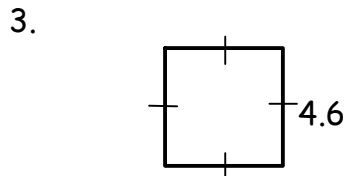
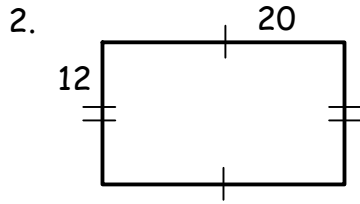
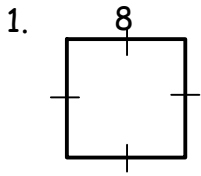
28.  $k + \frac{4}{5} = \frac{1}{2}$

29.  $p + 7 = 13$

30.  $v - 6 = 1$

# Algebra I Problem Set 7

Find the perimeter of each shape. All dimensions are in inches.

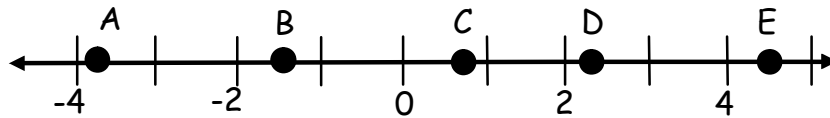


Graph the ordered pairs. Connect them in order to make a shape. Then find the perimeter and the area of that shape. Units are centimeters.

9.  $(-5, 2), (-5, 6), (1, 6), (1, 2)$

10.  $(-7, 1), (-7, -5), (-1, -5), (-1, 1)$

11. Name the coordinate of each point on the number line as a fraction.



12. Graph and label the following points on a number line.

- A)  $-5.25$       B)  $-2\frac{3}{4}$       C)  $1.3$       D)  $4\frac{1}{5}$       E)  $0.8$

Simplify each expression:

13.  $1\frac{1}{6} + 9\frac{2}{15}$

14.  $12\frac{5}{6} - 4\frac{1}{2}$

15.  $23.0067 + 3.24$

16.  $2.34 - 1.275$

Solve each equation:

17.  $x - 9 = 15$

18.  $h + 5 = -3$

19.  $m - 6 = -12$

20.  $k + 20 = 15$

21.  $x - 1\frac{1}{2} = 4\frac{1}{3}$

22.  $w + 2\frac{3}{8} = 9\frac{5}{6}$

23.  $g - 2.1 = 4.65$

24.  $b + 4.65 = 9.8$

Simplify each expression:

25.  $-10 - 4 + 6 + 8$

26.  $-40 + 15 - 15 - 20$

27.  $|-2 + 2 - 5 - 4|$

28. Designate the set of positive even numbers.

29. True or False: The positive even numbers are a subset of the natural numbers.

30. Given sets  $A$  and  $B$ , which statements are true?  $A = \{ 0, 4, 8, 12 \}$  and  $B = \{ 1, 2, 3, 4 \}$

a)  $5 \in A$       b)  $2 \in A$       c)  $3 \in A$       d)  $3 \in B$       e)  $1 \in B$

## Algebra I      Problem Set 8

Simplify:

1a)  $2 \cdot 7$

2a)  $5(9)$

3a)  $6 \cdot 8$

4a)  $(-3)(-4)$

b)  $2(-7)$

b)  $5(-9)$

b)  $-6(-8)$

b)  $-3 \cdot 4$

5a)  $\frac{56}{7}$

6a)  $\frac{-54}{-6}$

7a)  $\frac{-35}{7}$

8a)  $\frac{48}{-4}$

b)  $\frac{-56}{8}$

b)  $\frac{54}{-9}$

b)  $\frac{35}{5}$

b)  $\frac{-48}{-12}$

9a)  $-3(2)(4)(-2)$

10a)  $-3(-2)(-6)$

11a)  $\frac{6(7)}{-3}$

12a)  $\frac{48}{-2(-4)}$

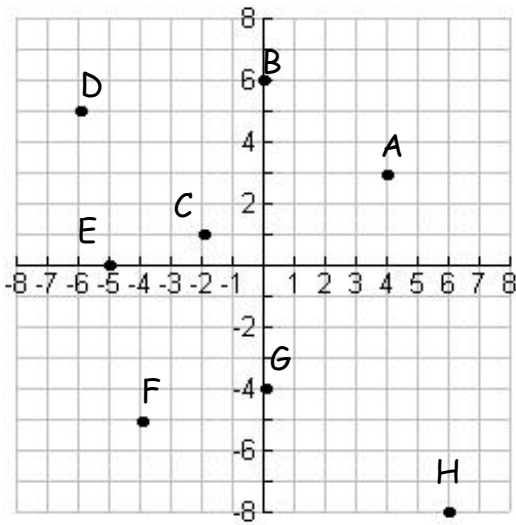
b)  $2(-3)(-5)$

b)  $2(-5)(4)(2)$

b)  $\frac{-5(8)}{-10}$

b)  $\frac{-45}{-3(5)}$

13. Name the coordinates of each point on the coordinate axes.



Solve each equation:

14.  $3x = 12$

15.  $-6y = 30$

16.  $-7z = -56$

17.  $8a = 4$

18.  $15b = -3$

19.  $-12c = -4$

20.  $s + 6.4 = 9.1$

21.  $t - 6.82 = -4.15$

22.  $v + 3\frac{2}{9} = 1\frac{1}{6}$

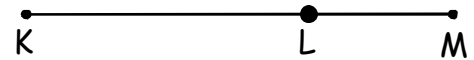
23.  $w - \frac{7}{8} = \frac{3}{4}$

24.  $x + 5\frac{3}{4} = 3\frac{1}{5}$

25.  $y + 9 = 23$

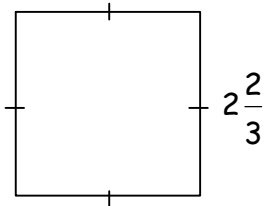
26. If  $KL = 2\frac{3}{5}$  and  $LM = 4\frac{3}{8}$ , find the length of  $KM$ .

Dimensions are in feet.

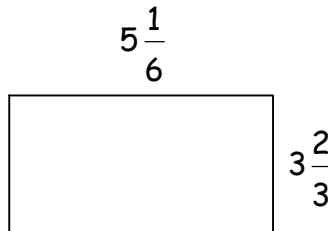


Find the perimeter of each of the following figures. Dimensions are in inches.

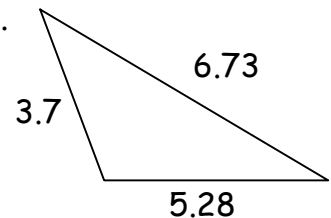
27.



28.



29.



30. Graph the following four points on a set of coordinate axes. Connect the four points to make a rectangle. Find the perimeter and the area of the rectangle. Dimensions are yards.  
 $(2, 9)$ ,  $(-4, 9)$ ,  $(-4, -1)$ ,  $(2, -1)$

# Algebra I Problem Set 9

Simplify:

1.  $\frac{3}{8} \cdot \frac{2}{5}$

2.  $\frac{3}{8} \div \frac{2}{5}$

3.  $\frac{5}{7} \cdot \frac{6}{25}$

4.  $\frac{5}{7} \div \frac{6}{25}$

5.  $\frac{1}{2} \cdot \frac{7}{9}$

6.  $\frac{1}{2} \div \frac{7}{9}$

7.  $1\frac{1}{2} \cdot 3\frac{1}{2}$

8.  $1\frac{1}{2} \div 3\frac{1}{2}$

9.  $4\frac{1}{5} \cdot \frac{5}{6}$

10.  $4\frac{1}{5} \div \frac{5}{6}$

11.  $7\frac{2}{3} \cdot 2\frac{1}{4}$

12.  $7\frac{2}{3} \div 2\frac{1}{4}$

13.  $8\frac{1}{2} \cdot 2\frac{3}{4}$

14.  $8\frac{1}{2} \div 2\frac{3}{4}$

15a)  $-3(-8)$

b)  $\frac{-24}{-4}$

16a)  $7(-5)$

b)  $\frac{40}{-8}$

17a)  $-4(6)$

b)  $\frac{-72}{8}$

Solve each equation:

18.  $x + 15 = -15$

19.  $y - 7 = -1$

20.  $z + \frac{2}{3} = \frac{1}{5}$

21.  $w - 1\frac{1}{5} = 3\frac{1}{4}$

22.  $a + 6.4 = 10.28$

23.  $b - 3.7 = .61$

24.  $-4m = -8$

25.  $8c = -48$

26.  $\frac{3}{4}d = 7$

27.  $\frac{1}{2}f = \frac{5}{7}$

28.  $\frac{2}{3}g = 12$

29.  $\frac{1}{4}h = \frac{3}{8}$

30.  $1\frac{1}{2}k = 3\frac{1}{4}$

# Algebra I Problem Set 10

Simplify:

1.  $2 + 3 \cdot 5$

2.  $8 - 12 \div 2$

3.  $2 \cdot 4 - 5$

4.  $3 \cdot 8 - 4 \cdot 2$

5.  $\frac{9 \cdot 2 - 3}{-3 + 4 \cdot 2}$

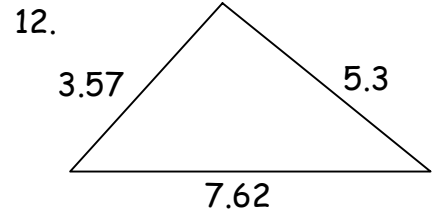
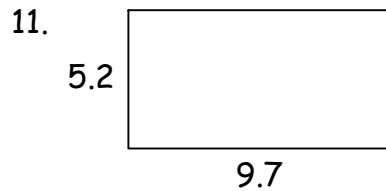
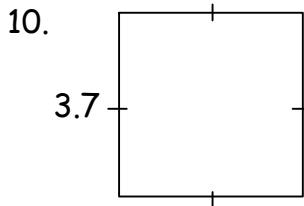
6.  $\frac{-4(8)}{-4 + 5(4)}$

7.  $2 + 3 - 4 \cdot 2 - 3 + 5$

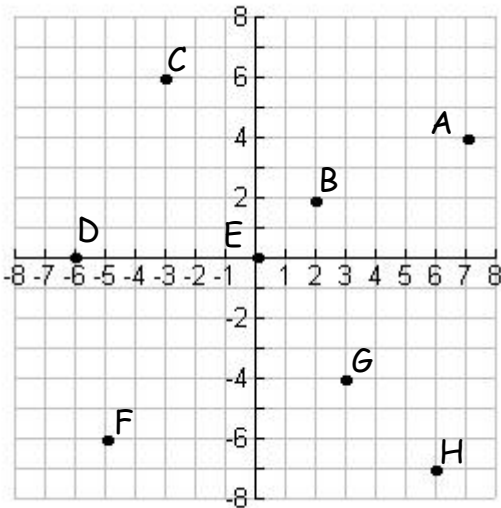
8.  $3 \cdot 2 - 4 \cdot 3 - 3 + 2$

9.  $8 \div 2 + 2 - 5 - 3(-4)$

Find the perimeter of each of the following figures. Dimensions are in centimeters.

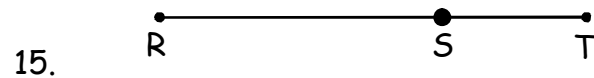


13. Name the coordinates of each point on the coordinate axes.



14. Graph the following four points on a set of coordinate axes. Connect the four points to make a rectangle. Find the perimeter and the area of the rectangle. Dimensions are inches.

$(-2, 3), (-7, 3), (-7, -4), (-2, -4)$



If  $RT = 8\frac{1}{3}$  and  $ST = 3\frac{2}{5}$ , find the length of RS if units are in centimeters.

Solve each equation:

16.  $2\frac{1}{3}x = 5$

17.  $\frac{3}{5}y = \frac{1}{2}$

18.  $\frac{2}{7}z = 3\frac{1}{3}$

19.  $\frac{4}{5}a = 3$

20.  $2\frac{2}{5}b = 6$

21.  $3\frac{2}{3}c = 5\frac{1}{4}$

22.  $3r = 21$

23.  $\frac{s}{5} = 7$

24.  $t + 3.15 = -8.2$

25.  $x - 5.2 = 6.12$

26.  $y - 3\frac{3}{7} = 2\frac{1}{3}$

27.  $4\frac{3}{4} + z = 3\frac{1}{3}$

28.  $x + \frac{2}{3} = \frac{3}{4}$

29.  $y - \frac{5}{8} = \frac{3}{4}$

30.  $x + 4 = -7$