

Name: _____
Date: Key
Period: _____

Algebra 1 Chapter 2 Part A Study Guide

Translate each sentence into an equation.

1. The sum of three times a number and four is the same as five times that number.

$$3x + 4 = 5x$$

2. ^{One} ~~On~~ fourth of m minus six is equal to two ^{times} ~~time~~ the sum of m and 9

$$\frac{1}{4}m - 6 = 2 \cdot (m + 9)$$

3. The product of five and w is the same as w to the third power.

$$5w = w^3$$

4. Andrew has 50 red, green, and blue marbles. He has six more red marble than blue marble and four fewer green marbles than blue marbles. Write and solve an equation to determine how many blue marbles Andrew has.

$x =$ blue marbles $T = 50$

$x + 6 =$ red marbles

$x - 4 =$ green marbles

$$x + x + 6 + x - 4 = 50$$

$$\begin{array}{r} 3x + 2 = 50 \\ -2 \quad -2 \end{array}$$

$$\rightarrow \frac{3x}{3} = \frac{48}{3}$$

$x = 16$ blue marbles

Andrew has 16 blue marbles

Solve each equation

5. $p+8=13$

~~-8 -8~~

$p=5$

6. $2x+5=13$

~~-5 -5~~

$\frac{2x}{2} = \frac{8}{2}$

$x=4$

7. $-26=b-3$

~~+3 +3~~

$-23=b$
OR
 $b=-23$

8. $-21=7-4y$

~~-7 -7~~
 $\frac{-28}{-4} = \frac{-4y}{-4}$

$7=y$ or $y=7$

9. $\frac{t}{6}=3 \cdot 6$

$t=18$

10. $\frac{m}{6}-3=8$

~~+3 +3~~

~~$\frac{m}{6} = 11 \cdot 6$~~

$m=66$

11. $\frac{3}{5}a = \frac{1}{4}$

~~$\frac{5}{3} \cdot \frac{3}{5} a = \frac{1}{4} \cdot \frac{5}{3}$~~

$a = \frac{5}{12}$

12. $-4 = \frac{d+3}{5}$

~~$5 \cdot -4 = \frac{d+3}{5} \cdot 5$~~

$-20 = d+3$
~~-3 -3~~

$-23 = d$ or $d = -23$

13. The average length of a yellow banded angelfish is 12 inches. This 4.8 times as long as an average common goldfish.

a. Write an equation you could use to find the length of the average common goldfish.

$x = \text{length of goldfish}$

$$\boxed{4.8x = 12}$$

b. What is the length of an average common goldfish?

$$\frac{4.8x}{4.8} = \frac{12}{4.8}$$

$$\boxed{x = 2.5 \text{ inches}}$$

The average goldfish is about 2.5 inches

Write an equation and solve each problem

14. Three less than three fourths of a number is negative 9. Find the number

$$\begin{array}{r} \frac{3}{4}x - 3 = -9 \\ +3 \quad +3 \\ \hline \frac{3}{4}x = -6 \end{array}$$

$$\begin{array}{r} \frac{4}{3} \cdot \frac{3}{4} x = -6 \cdot \frac{4}{3} \\ x = \frac{-24}{3} \\ \boxed{x = -8} \end{array}$$

15. Thirty is twelve added to six times a number. What is the number?

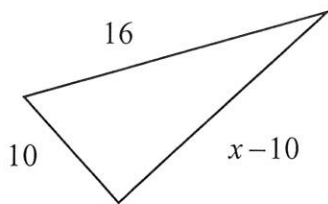
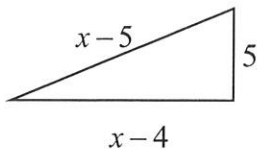
$$\begin{array}{r} 30 = 6x + 12 \\ -12 \quad -12 \\ \hline 18 = 6x \\ \frac{18}{6} = \frac{6x}{6} \\ \boxed{x = 3} \end{array}$$

16. Find four consecutive integers with a sum of 106.

$$\begin{array}{r} \overset{1st}{n} + \overset{2nd}{n+1} + \overset{3rd}{n+2} + \overset{4th}{n+3} = 106 \\ 4n + 6 = 106 \\ -6 \quad -6 \\ \hline 4n = 100 \\ \frac{4n}{4} = \frac{100}{4} \quad n = 25 \end{array}$$

$\boxed{25, 26, 27, 28}$

20. Find the value of x so that the triangles have the same perimeter.



add all sides

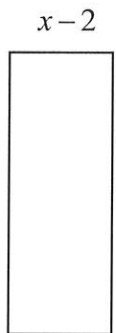
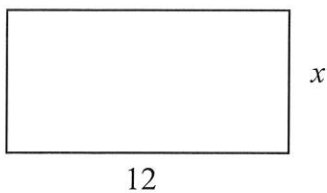
$$x-5 + x-4 + 5 = 10 + 16 + x-10$$

$$\begin{array}{r} 2x - 4 = x + 16 \\ -x \qquad -x \end{array}$$

$$\begin{array}{r} x - 4 = 16 \\ +4 \qquad +4 \end{array}$$

$$\boxed{x = 20}$$

21. Find the value of x so that the rectangles have the same area.



$$16(x-2)$$

$$12x$$

$$12x = 16(x-2)$$

$$\begin{array}{r} 12x = 16x - 32 \\ -16x \quad -16x \end{array}$$

$$\begin{array}{r} -4x = -32 \\ \underline{-4} \quad \underline{-4} \end{array}$$

$$\boxed{x = 8}$$

Evaluate each expression if $x = -4$, $y = 7$, and $z = 9$.

22. $|3x - 2| + 2y$

$$|3 \cdot -4 - 2| + 2 \cdot 7$$

$$|-12 - 2| + 14$$

$$|-14| + 14$$

$$14 + 14 = \boxed{28}$$

23. $|-4y + 2z| - 7z$

$$|-4 \cdot 7 + 2 \cdot 9| - 7 \cdot 9$$

$$|-28 + 18| - 63$$

$$|-10| - 63$$

$$10 - 63 = \boxed{53}$$

Solve each equation

24. $|6m - 3| = 9$

Case 1

$$\begin{array}{r} 6m - 3 = 9 \\ +3 \quad +3 \\ \hline \end{array}$$

$$\frac{6m}{6} = \frac{12}{6}$$

$$m = 2$$

Case 2

$$\begin{array}{r} 6m - 3 = -9 \\ +3 \quad +3 \\ \hline \end{array}$$

$$\frac{6m}{6} = \frac{-6}{6}$$

$$m = -1$$

25. $|2x + 5| - 2 = 29$
 $+2 \quad +2$

$$|2x + 5| = 31$$

Case 1

$$\begin{array}{r} 2x + 5 = 31 \\ -5 \quad -5 \\ \hline \end{array}$$

$$\frac{2x}{2} = \frac{26}{2}$$

$$x = 13$$

Case 2

$$\begin{array}{r} 2x + 5 = -31 \\ -5 \quad -5 \\ \hline \end{array}$$

$$\frac{2x}{2} = \frac{-36}{2}$$

$$x = -18$$