

**LINEAR EQUATIONS – EXAM REVIEW #2****TRANSLATION**

1. Which of the given algebraic expressions is the same as the following verbal expression? "Two added to three times a number  $m$  is the same as 18"
- $2 + 3m = 18$
  - $2 = 3m + 18$
  - $2m + 3 = 18$
  - $(2 + 3)m = 18$
2. Which of the given algebraic expressions is the same as the following verbal expression? "Seven less than the sum of  $p$  and  $t$  is as much as 6."
- $7 - p + t = 6$
  - $7 - pt = 6$
  - $p + t - 7 = 6$
  - $pt - 7 = 6$
3. Which of the following is not a sentence that describes the given equation?  $g + 10 = 3g$
- $g$  plus ten equals three times  $g$
  - the sum of  $g$  and ten is three times  $g$
  - Ten more than  $g$  equals the product of three and  $g$
  - the product of  $g$  and ten is the same as the sum of three and  $g$

**SOLVING SINGLE- AND MULTI-STEP EQUATIONS**

Solve each equation. Check your solution.

4.  $y - 7 = 8$

$$y = 15$$

5.  $98 = b + 34$

$$64 = b$$

6.  $12z = 108$

$$z = 9$$

7.  $\frac{a}{16} = 9 \cdot 16$

$$a = 144$$

8.  $5x + 3 = 23$

$$5x = 20$$

$$x = 4$$

9.  $\frac{n}{3} - 8 = -2$

$$3 \cdot \frac{n}{3} = 6 \cdot 3$$

$$n = 18$$

10.  $6 + 5c = -29$

$$5c = -35$$

$$c = -7$$

11.  $\frac{b+1}{3} = 2 \cdot 3$

$$b+1 = 6$$

$$b = 5$$

12.  $7a - 3 = 3 - 2a$

$$7a + 2a - 3 = 3$$

$$9a = 6$$

$$a = \frac{2}{3}$$

13.  $8q + 12 = 3 + 2q$

$$8q + 12 = 3 + 6q$$

$$2q + 12 = 3$$

$$2q = -9$$

$$q = -1.5$$

## ABSOLUTE VALUE

Solve, showing all work. (HINT: don't forget to split your equation into two cases, one positive and one negative!)

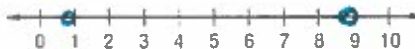
14.  $|t+6| = 4$

$$\begin{array}{l} t+6 = 4 \\ -6 \quad -6 \\ \hline t = -2 \end{array} \qquad \begin{array}{l} t+6 = -4 \\ -6 \quad -6 \\ \hline t = -10 \end{array}$$



15.  $|k-5| = 4$

$$\begin{array}{l} k-5 = 4 \\ +5 \quad +5 \\ \hline k = 9 \end{array} \qquad \begin{array}{l} k-5 = -4 \\ +5 \quad +5 \\ \hline k = 1 \end{array}$$



Write an absolute value equation for each of the given solution sets.  
(Remember your template:  $|x - \text{middle}| = \text{distance to center}$ )

16.  $|x+3| = 2$

17.  $|x-1| = 3$

## PROPORTIONS

18. Multiple Choice Which of the following pairs of ratios are equivalent?

a.  $\frac{5}{9}, \frac{7}{11}$   $5 \cdot 11 = 9 \cdot 7$   
 $55 \neq 63$

b.  $\frac{7}{16}, \frac{42}{90}$   $7 \cdot 90 = 16 \cdot 42$   
 $630 \neq 672$

c.  $\frac{13}{19}, \frac{26}{38}$   $13 \cdot 38 = 19 \cdot 26$   
 $494 = 494 \checkmark$

d.  $\frac{12}{17}, \frac{50}{85}$   $12 \cdot 85 = 17 \cdot 50$   
 $1020 \neq 850$

Solve the proportions for the given variable.

19.  $\frac{5}{b} = \frac{3}{9}$

$$\begin{array}{l} 3b = 5 \cdot 9 \\ 3b = 45 \\ \frac{3b}{3} = \frac{45}{3} \\ \hline b = 15 \end{array}$$

20.  $\frac{9}{g} = \frac{15}{10}$

$$\begin{array}{l} 9 \cdot 10 = 15g \\ 90 = 15g \\ \frac{90}{15} = \frac{15g}{15} \\ \hline g = 6 \end{array}$$

Use proportions to solve.

21. A typist can type 120 words in 100 seconds. At that rate, how many seconds would it take her to type 258 words?

$$\left\{ \begin{array}{l} \text{words} \\ \text{seconds} \end{array} \right\} \frac{120}{100} = \frac{258}{x} \quad \boxed{x = 215} \text{ seconds}$$

$$25800 = 120x$$

22. A company can buy packages of 500 sheets of paper for \$4. At that rate, how much paper can be bought for \$2000

$$\left\{ \begin{array}{l} \text{paper} \\ \$ \end{array} \right\} \frac{500}{4} = \frac{x}{2000}$$

$$4x = 1,000,000$$

$$x = \boxed{250,000 \text{ sheets}}$$