

1. **Evaluate:** $(x + 4y)$; for $a = -4$ and $b = -5$

$$(-4) + 4(-5) = -4 - 20 = -24$$

Simplify:

2. $12 \div 4 + 3 \times 3 - 4 = 3 + 9 - 4 = 12 - 4 = 8$

3. $(-8) + (-3) = -8 - 3 = -11$

4. $\frac{24}{-6} = -4$

5. **Evaluate the expression** $|2x| - 15$; for $x = -6$

$$|2x| - 15 = |2(-6)| - 15 = |-12| - 15 = 12 - 15 = -3$$

For numbers 6-10, solve the equation.

6. $3(4a + 2) - 8a = 26 \Rightarrow 12a + 6 - 8a = 26 \Rightarrow 4a + 6 = 26 \Rightarrow 4a = 20 \Rightarrow a = 5$

7. Solve by clearing all fractions first:

$$\frac{1}{4}x + \frac{1}{3}x = \frac{7}{12} \Rightarrow 12\left(\frac{1}{4}x + \frac{1}{3}x\right) = 12\left(\frac{7}{12}\right) \Rightarrow 3x + 4x = 7 \Rightarrow 7x = 7 \Rightarrow x = 1$$

8. $5y + 2y - 3 = 3y - 15 \Rightarrow 7y - 3 = 3y - 15 \Rightarrow 4y - 3 = -15 \Rightarrow 4y = -12 \Rightarrow y = -3$

9. $|x + 3| + 3 = 7 \Rightarrow |x + 3| = 4 \Rightarrow x + 3 = 4 \Rightarrow x = 1$ or $x + 3 = -4 \Rightarrow x = -7$

10. $\frac{7}{4} = \frac{19}{x} \Rightarrow 7x = 76 \Rightarrow x = \frac{76}{7} = 10\frac{6}{7}$

Solve and graph on a number line:

11. $2z + 4 + 3z < 24 \Rightarrow 5z + 4 < 24 \Rightarrow 5z < 20 \Rightarrow z < 4$ open circle on 4, arrow going to the left

12. **Solve for x:** $4x - 8 \leq -16 \Rightarrow 4x \leq -8 \Rightarrow x \leq -2$

13. Determine if the point (3, -2) is a solution of the equation
 $3x - 3y = 15 \Rightarrow 3(3) - 3(-2) = 15 \Rightarrow 9 + 6 = 15 \Rightarrow 15 = 15$
Yes, (3, -2) is a solution.

Graph the following

14. $y = \frac{2}{3}x - 3$

15. $3x - 5y = 15$

16. $x = -4$

Graph #14 by plotting the Y-intercept (0, -3) or -3 on y-axis and then from that point go up 2 and over 3 to get the next point and then connect them.

Graph #15 by using the intercept or cover-up method. The x-int is 5 and the y-int is -3. Plot 5 on the x-axis (5, 0) and -3 on the y-axis (0, -3) and draw a line through the points.

Graph #16 is a vertical line at $x = -4$.

17. Find the slope of the lines containing the following points: (5, 3); (3, -1)

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{3 - (-1)}{5 - (3)} = \frac{3 + 1}{2} = \frac{4}{2} = 2$$

18. Write the equation of the line that goes through the points (5, 3) and (3, -1).

Slope is 2 (from question 17). $y - y_1 = m(x - x_1) \Rightarrow y - 3 = 2(x - 5)$ or $y + 1 = 2(x - 3)$

19. What is the slope of the line parallel to $y = 5x - 7$.

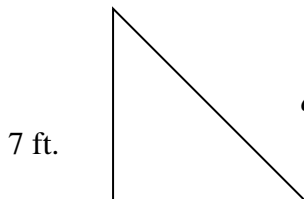
Slope of this line is 5. Therefore, the slope of a line parallel to this line is also 5.

Find the percent of change to the nearest tenth of a percent.

20. 17 ft to 22 ft $\% \text{ of change} = \frac{\text{difference}}{\text{original}} \times 100 = \frac{22 - 17}{17} \times 100 = \frac{5}{17} \times 100 = 29.4\%$

Find the missing side to the nearest tenth.

21.



$$c^2 = a^2 + b^2 \Rightarrow c^2 = (7)^2 + (4)^2 = 49 + 16 = 65 \Rightarrow c = \sqrt{65} = 8.06$$

4 ft.

Veritas Algebra I
Mid-Term Practice Test

Name: _____
Date: _____

Solve the system using one of the 3 methods: Graphing, substitution OR elimination.

$$\begin{aligned} 3x + 4y = 10 &\Rightarrow 3x + 4y = 10 \Rightarrow 3x + 4y = 10 \\ 4x - 2y = 6 &\Rightarrow 2(4x - 2y = 6) \Rightarrow \underline{8x - 4y = 12} \\ 22. & \\ & 11x = 22 \Rightarrow x = 2 \\ 3(2) + 4y = 10 &\Rightarrow 6 + 4y = 10 \Rightarrow 4y = 4 \Rightarrow y = 1 \quad \text{solution is } (2,1) \end{aligned}$$

For #23-25, write an equation/inequality to model the situation and then solve. (No guess and check.)

23. The sum of three consecutive even integers is 78. What are the **three** numbers? (You must show your equation to get credit).

$$x + (x + 2) + (x + 4) = 78 \Rightarrow 3x + 6 = 78 \Rightarrow 3x = 72 \Rightarrow x = 24$$

The 3 integers are 24, 26, 28

24. A freight elevator can safely hold no more than 3500 pounds. An elevator operator must haul 32-pound boxes to another floor using the elevator. If the operator weighs 225 pounds, how many boxes can he safely remove without exceeding the weight limit for the elevator? (Write an inequality and solve).

Let x = number of 32-pound boxes.
 $32x + 225 \leq 3500 \Rightarrow 32x \leq 3275 \Rightarrow x \leq 102.3$
He can safely carry 102 boxes at the most.

25. A company charges \$8.75 for each book you buy plus a total of \$8.50 for shipping.
a. Write a function rule for the cost in terms of number of books you buy.
b. What is your cost if you buy 8 books?

Let b = number of books you buy.
 $f(x) = 8.75b + 8.50$ the cost for 8 books is $f(8)$
 $f(8) = 8.75(8) + 8.50 \Rightarrow 70 + 8.5 = \78.50