

Name _____ Mike Huff Elementary Algebra Test 2

Show all work on the test for partial credit.

(4 points)

1. Evaluate the expression: $\left(\frac{1}{3} - \frac{2}{12}\right)^2 - \frac{3}{4} \cdot \left(\frac{2}{3}\right)^2$

$$= \left(\frac{1}{3} - \frac{1}{6}\right)^2 - \frac{3}{4} \cdot \frac{4}{9}$$

$$= \left(\frac{1}{6}\right)^2 - \frac{12}{36}$$

$$= \frac{1}{36} - \frac{12}{36} = -\frac{11}{36}$$

(4 points)

2. Evaluate the expression: $-2[5 - (3 - 2^2)^2] - (3 - 4)^3$

$$= -2[5 - (3 - 4)^2] - (-1)^3$$

$$= -2[5 - 1] + 1$$

$$= -2(4) + 1$$

$$= -8 + 1$$

$$= -7$$

(4 points)

3. Evaluate the expression $-x^2 - 3x - 1$ for $x = -\frac{1}{2}$

$$-\left(-\frac{1}{2}\right)^2 - 3\left(-\frac{1}{2}\right) - 1$$

$$= -\frac{1}{4} + \frac{3}{2} - 1$$

$$= -\frac{1}{4} + \frac{6}{4} - \frac{4}{4}$$

$$= \frac{1}{4}$$

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4. Evaluate the expression $(x^2 - 2)(x - 2)$ for $x = -3$

$$\begin{aligned} & [(-3)^2 - 2][(-3) - 2] \\ & = (9 - 2)(-5) \\ & = 7(-5) \\ & = -35 \end{aligned}$$

(4 points)

5. Distribute and Combine Like Terms: $-3(3 - 2x) - 4(-x - 1) - (x + 5)$

$$\begin{aligned} & = -9 + 6x + 4x + 4 - x - 5 \\ & = 9x - 10 \end{aligned}$$

(4 points)

6. Distribute and Combine Like Terms: $-\frac{1}{3}(6 - 9x) - \frac{1}{4}(8 - 4x)$

$$\begin{aligned} & = -2 + 3x - 2 + x \\ & = 4x - 4 \end{aligned}$$

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7. Solve for x : $2(2x-1) - 5(x-2) = 4(x-2)$

$$\cancel{4x} - 2 - 5x + 10 = \cancel{4x} - 8$$

$$-5x + 8 = -8$$

$$-5x = -16$$

$$x = \frac{16}{5}$$

(4 points)

8. Solve for x : $\frac{2}{3}\left(\frac{9}{8} - 3x\right) - \frac{5}{3} = \frac{1}{3}$

$$24\left(\frac{18}{24} - \frac{6}{3}x - \frac{5}{3} = \frac{1}{3}\right)$$

$$18 - 48x - 40 = 8$$

$$-48x - 22 = 8$$

$$-48x = 30$$

$$x = \frac{30}{-48}$$

$$x = -\frac{5}{8}$$

(4 points)

9. Solve for m : $y = mx + b$

$$x = \frac{y-b}{m}$$

(4 points)

10. Given $A = P(1 + rt)$, find A when $t = 5$, $r = 0.05$, and $P = 1000$.

$$A = 1000(1 + 0.05(5))$$

$$= 1000(1.25)$$

$$= 1250.$$

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11. Translate to a mathematical expression, use x to represent the number.

a) Four less than three times a number.

$$\frac{3x - 4}{\text{-----}}$$

b) The difference between a number and seven.

$$\frac{x - 7}{\text{-----}}$$

c) Five times the sum of a number and seven.

$$\frac{5(x + 7)}{\text{-----}}$$

d) Two more than four times a number.

$$\frac{4x + 2}{\text{-----}}$$

(5 points)

12. After a 32% discount, a new car stereo was selling for \$170.00. What was the original price of the car stereo?

$$x - .32x = 170$$

$$.68x = 170$$

$$x = \frac{170}{.68}$$

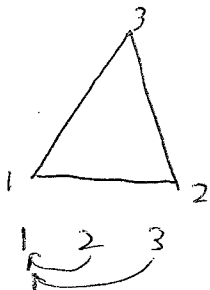
$$= \$250$$

$x = \text{original price}$

sale price	discount
170	.32x

(5 points)

13. The second angle of a triangle is three times as large as the first. The third angle is 30° more than the first angle. What is the measure of each angle?



$$\text{Let } x = m \angle 1$$

$$3x = m \angle 2$$

$$x + 30 = m \angle 3$$

$$x + 3x + x + 30 = 180$$

$$5x = 150$$

$$x = 30^\circ$$

$$3x = 90^\circ$$

$$x + 30 = 60^\circ$$

(4 points)

14. The weekly profit, P , of a DVD rental store is given by the formula $1.7n - 150$, where n is the number of DVDs rented weekly.

a) What is the weekly profit if 325 DVDs are rented?

$$1.7(325) - 150$$

b) How many discs were rented if the weekly profit is \$1210.00?

$$1210 = 1.7n - 150$$

$$1.7n = 1360$$

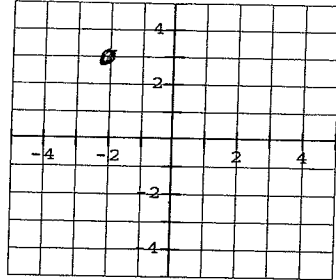
$$n = \frac{1360}{1.7}$$

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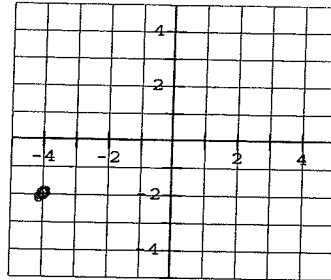
15. Plot the following points and identify the quadrant in which they lie.

a) $(-2, 3)$



Quadrant II

b) $(-4, -2)$



Quadrant III

(6 points)

16. Determine if the ordered pair is a solution of the equation.

a) $(4, -3)$ $y = -2x + 5$

$$-3 \stackrel{?}{=} -2(4) + 5$$

$$-3 \stackrel{?}{=} -8 + 5$$

$$-3 = -3 \checkmark \quad \text{yes}$$

b) $(\frac{1}{2}, -\frac{3}{2})$ $y = -3x + 3$

$$-\frac{3}{2} \stackrel{?}{=} -3(\frac{1}{2}) + 3$$

$$-\frac{3}{2} = \frac{3}{2} \quad \text{no}$$

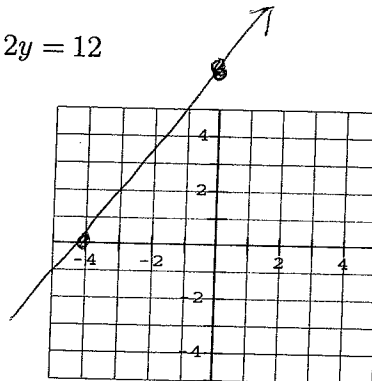
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17. Find the x and y intercepts and graph: $-3x + 2y = 12$

x -intercept $(-4, 0)$

y -intercept $(0, 6)$

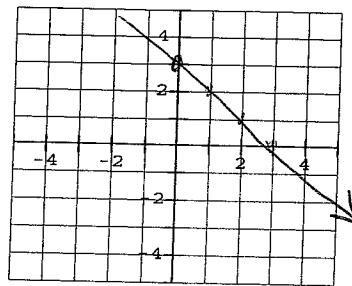


(12 points)

18. Graphing by plotting points. Sketch a graph of the following equations by making a table of values and plotting the points.

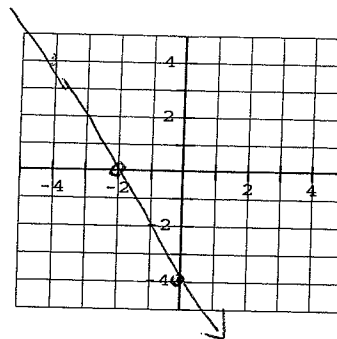
a) $y = -x + 3$

x	y
0	3
3	0



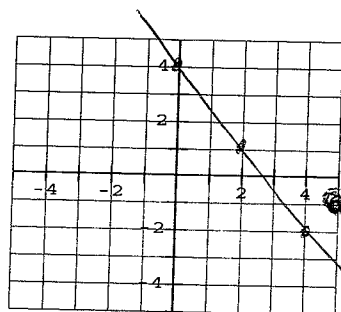
b) $6x + 3y = -12$

x	y
0	-4
-2	0



c) $y = -\frac{3}{2}x + 4$

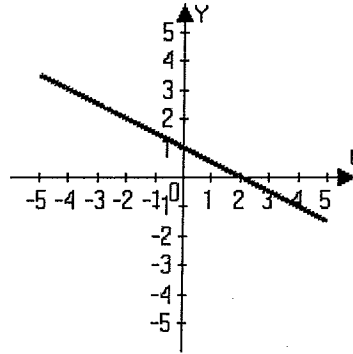
x	y
0	4
2	1



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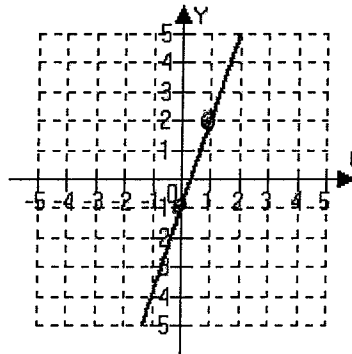
19. Find the slope of the line whose graph is given below:



$$m = \frac{-1}{2}$$

(4 points)

20. Find the slope-intercept equation of the line given below:



The equation is $y = \underline{3x - 1}$

(4 points)

21. Find the equation of the line that passes through the points (4,-2) and (2,2).

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

$$y - y_1 = m(x - x_1)$$

$$y = -2x + 8 - 2$$

$$y - (-2) = -2(x - 4)$$

$$\boxed{y + 2 = -2(x - 4)}$$

or \Rightarrow

$$\boxed{y = -2x + 6}$$

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22. Find an equation of the line parallel to the line $y = 2x - 5$ that passes through the point $(-1, 1)$.

$$m = 2$$

$$y - y_1 = m(x - x_1)$$

$$y - 1 = 2(x + 1)$$

$$y = 2x + 2 + 1$$

$$y = 2x + 3$$

23. Simplify:

a) $x^5 \cdot x^2 = x^7$

b) $\frac{x^5}{x^2} = x^3$

c) $\frac{x^7 y^5}{x^5 y^4} = x^2 y$

d) $(x^5)^3 = x^{15}$

24. Add the following polynomials:

$$(-4x^3 + 3x^2 + 2x - 1) + (2x^3 - 2x^2 - 7x + 15)$$

$$\begin{array}{r} -4x^3 + 3x^2 + 2x - 1 \\ + 2x^3 - 2x^2 - 7x + 15 \\ \hline \end{array}$$

$$-2x^3 + x^2 - 5x + 14$$

25. Subtract the following polynomials:

$$(-3x^3 + 2x - 1) - (x^3 + 5x^2 - 6x + 5)$$

$$= -3x^3 + 2x - 1 - x^3 - 5x^2 + 6x - 5$$

$$= -4x^3 - 5x^2 + 8x - 6$$

26. For the polynomial : $-4x^3 + 3x^2 + 2x - 1$. Find the following:

a) The leading term $-4x^3$

b) The leading coefficient -4

c) The degree of the polynomial 3^{rd}