

# TERM 1 REVIEW for Final

Name: \_\_\_\_\_ Period: \_\_\_\_\_

Show your work and work in pencil. **DUE THE DAY OF TERM FINAL THURS., OCT 12<sup>TH</sup> / FRI., OCT 13<sup>TH</sup>.**

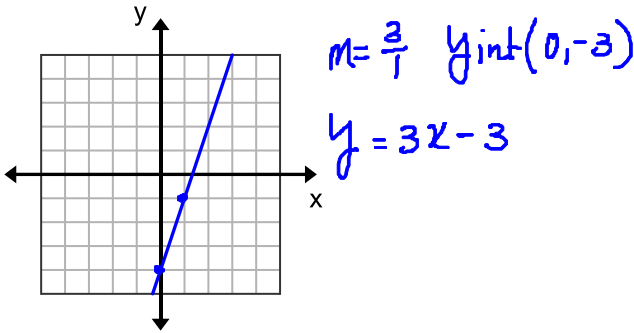
1. Find the equation of the line with slope of 5 and x-intercept -8.

$x_{int}(-8, 0) \quad m=5$   
 $y = mx + b$   
 $0 = 5(-8) + b$   
 $0 = -40 + b$   
 $40 = b$   
 $y = 5x + 40$

3. Find the equation of the line passing through (0, -3) with a slope of  $\frac{2}{5}$ .

$y = \frac{2}{5}x - 3$

5. Write the equation of the line graphed below.



7. Explain how you know when two lines are parallel if given only their equations.

The slopes (m) will be the same.

9. If the slope of line A is  $\frac{3}{8}$ , what is the slope of a line that is perpendicular to line A?

$m = -\frac{8}{3}$

11. Translate the following into an equation and solve. *Three times a number then minus seven is the same as five times a number added to four*

$3n - 7 = 5n + 4$   
 $-3n - 4 \quad -3n - 4$   
 $-11 = 2n$   
 $-\frac{11}{2} = n$

2. Find the equation of the line passing through (-2, -3) with slope of 2.

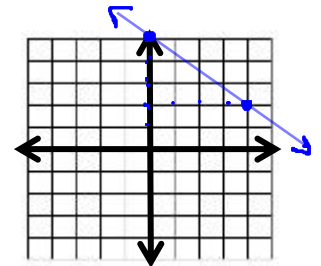
$-3 = 2(-2) + b$   
 $-3 = -4 + b$   
 $+4 \quad +4$   
 $1 = b$   
 $y = 2x + 1$

4. Find the equation of the line passing through points (2, -5) and (-2, 3).

$3 = -2(-2) + b$   
 $3 = -4 + b$   
 $7 = b$   
 $y = -2x + 7$

$\begin{array}{c|c} x & y \\ \hline 2 & -5 \\ -2 & 3 \end{array}$   
 $m = \frac{-8}{-4} = -\frac{2}{1}$

6. Graph the line of  $y = -\frac{3}{4}x + 5$



8. Find an equation for the line that passes through (-5, 3) and is parallel to  $y = 4x - 2$ .

$m = 4$   
 $3 = 4(-5) + b$   
 $3 = -20 + b$   
 $+20 \quad +20$   
 $23 = b$   
 $y = 4x + 23$

10. Translate the following into an equation and solve. *Twice a number increased by 13 totals three times the number less 4.*

$2n + 13 = 3n - 4$   
 $-2n + 4 \quad -2n + 4$   
 $17 = n$

12. You scored a 78, 92, and an 84 on the quizzes. You need to earn an 81% average with the next quiz to make the honor role. Write the equation and find the lowest score of the next quiz and still make the honor role.

$78 + 92 + 84 + q = 81$   
 $\frac{254 + q}{4} = 81$   
 $254 + q = 324$   
 $-254 \quad -254$   
 $q = 70$

13. Braden is making bracelets to raise money for cheer tour to California. He receives a donation for \$25 and spends \$31 on supplies. He will sell each bracelet for \$5.25.

- a. Define your variables.  $b = \# \text{ of bracelets}$ ,  $t = \text{total amt of money raised}$   
 b. Write an equation to show the amount of money Braden can earn by selling bracelets.  
 $25 - 31 + 5.25b = t$        $-6 + 5.25b = t$   
 c. If he sells 3-dozen bracelets, how much money will he make?  $\$183$

$$-6 + 5.25(36) = t$$

$$t = 183 \quad \$183$$

14. Solve for x:  $2(x + 20) + y = 6(x + 4) - 2y$

$$\begin{aligned} 2x + 40 + y &= 6x + 24 - 2y \\ -6x - 40 - y &= -6x - 40 - 4y \\ \hline -4x &= -16 - 3y \\ x &= 4 + \frac{3}{4}y \end{aligned}$$

15. Solve for h:  $(2h^2 + r) = 5h + 3(b + h^2)$

$$\begin{aligned} 2h^2 + r &= 5h + 3b + 3h^2 \\ -5h - 3h^2 - r &= -5h - 3b - r \\ \hline -5h - h^2 &= 3b - r \\ -h^2 - 5h &= 3b - r \\ \text{Can not be solved.} \end{aligned}$$

16. Solve for a:  $3 + ax - 5 = x$

$$\begin{aligned} ax - 2 &= x \\ +2 \quad +2 & \\ \hline \frac{ax}{x} &= \frac{x+2}{x} \\ a &= 1 + \frac{2}{x} \end{aligned}$$

17. Solve for x:  $Ax + By = c$

$$\begin{aligned} \frac{Ax}{A} &= \frac{c - By}{A} \\ x &= \frac{c - By}{A} \end{aligned}$$

18. Solve for x:  $y = mx + b$

$$\begin{aligned} \frac{y-b}{m} &= \frac{mx}{m} \\ \frac{y-b}{m} &= x \end{aligned}$$

19. Solve for N:  $T = 60 + \frac{N-19}{3}$

$$\begin{aligned} 3(T-60) &= N-19 \quad (3) \\ 3T-180 &= N-19 \\ +19 \quad +19 & \\ \hline 3T-161 &= N \end{aligned}$$

20. Solve for s and explain your steps:

$2 - s^2 = -2s^2 + 50$  Given

$-2 + 2s^2 = -2s^2 + 50 - 2$  Reflexive w/APE

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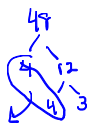
$\sqrt{5^2} = \sqrt{48}$  Square Root Both Sides

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$S = \pm\sqrt{48}$  Simplifying

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$S = \pm 4\sqrt{3}$



21. Solve for x and explain your steps:

$2x - 2y = -4(x + 2) + 9$  Given

$2x - 2y = -4x - 8 + 9$  DPOMDA

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$2x - 2y = -4x + 1$  Reflexive w/APE

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$+4x + 2y \quad +4x \quad +2y$  Reflexive w/DPE

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$\frac{6x}{6} = \frac{1+2y}{6}$

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$x = \frac{1}{6} + \frac{1}{3}y$

22. Simplify the following roots. Give exact answers. No decimals. No calculators.

- a.  $\sqrt{52} = \pm 2\sqrt{13}$  (Diagram: 52 = 4 \* 13)
- b.  $\sqrt{160} = \pm 4\sqrt{10}$  (Diagram: 160 = 16 \* 10)
- c.  $\sqrt{500} = \pm 5\sqrt{20} = \pm 10\sqrt{5}$  (Diagram: 500 = 100 \* 5)
- d.  $\sqrt{24} = \pm 2\sqrt{6}$  (Diagram: 24 = 4 \* 6)
- e.  $\sqrt[3]{40} = \sqrt[3]{8 * 5} = 2\sqrt[3]{5}$  (Diagram: 40 = 8 \* 5)

23. Solve the following absolute value equation.

- a.  $(\frac{3}{1})\frac{1}{3}|x + 3| = 5(\frac{3}{1})$   
 $|x + 3| = 15$   
 $x + 3 = 15 \quad x + 3 = -15$   
 $x = 12 \quad \text{or} \quad x = -18$
- b.  $|2h - 2| - 6 = 10$   
 $|2h - 2| = 16$   
 $2h - 2 = 16 \quad 2h - 2 = -16$   
 $2h = 18 \quad 2h = -14$   
 $h = 9 \quad \text{or} \quad h = -7$
- c.  $4|8 + 2m| + 3 = 7$   
 $4|8 + 2m| = 4$   
 $|8 + 2m| = 1$   
 $8 + 2m = 1 \quad 8 + 2m = -1$   
 $2m = -7 \quad 2m = -9$   
 $m = -\frac{7}{2} \quad \text{or} \quad m = -\frac{9}{2}$

24. Solve the following.

a.  $\frac{2\sqrt{2x-6}}{2} = \frac{4}{2}$   
 $(\sqrt{2x-6})^2 = (2)^2$   
 $2x-6 = 4$   
 $\quad +6 \quad +6$   
 $2x = 10$   
 $x = 5$

b.  $\sqrt{k-4} + 3 = 12$   
 $\quad \quad \quad -3 \quad -3$   
 $(\sqrt{k-4})^2 = (9)^2$   
 $k-4 = 81$   
 $k = 85$

c.  $6 + \frac{1}{2}\sqrt{7+2m} = 1$   
 $\quad \quad \quad -6 \quad -6$   
 $(\frac{1}{2}) \cdot \frac{1}{2} \sqrt{7+2m} = -5(\frac{2}{1})$   
 $(\sqrt{7+2m})^2 = (10)^2$   
 $7+2m = 100$   
 $2m = 93$   
 $m = \frac{93}{2}$

25. Solve the inequality for a:  $8r - (5a + 4) \geq -31$

$$\begin{aligned} 8r - 5a - 4 &\geq -31 \\ \quad \quad +4 \quad \quad +4 \\ 8r - 5a &\geq -27 \\ -8r &\geq -8r - 27 \\ \quad \quad -5a &\geq -8r - 27 \\ \quad \quad \quad -5 &\geq \frac{-8r-27}{-5} \\ a &\geq \frac{8}{5}r + \frac{27}{5} \end{aligned}$$

26. Solve the equation:  $2(2x^2 + 5) = 3(x^2 + 3) + 4$

$$\begin{aligned} 4x^2 + 10 &= 3x^2 + 9 + 4 \\ 4x^2 + 10 &= 3x^2 + 13 \\ -3x^2 - 10 &= -3x^2 - 10 \\ x &= 3 \end{aligned}$$

27. Matt decides to track the depth of snow towards the end of the season. It was 33 inches deep when he first measured it. Each week the snow melts and decreased by 4.25 inches.

a. Define your variables.  $y = \text{depth of the snow in inches}$   
 $x = \text{\# of weeks}$

b. Write an equation to show the depth of snow as it melts each week.

$$y = 33 - 4.25x$$

28. Four times a number is fewer than twice a number and six.

a. Write an inequality that represents this sentence.

$$\begin{aligned} 4n &< 2n + 6 \\ -2n \quad -2n \\ 2n &< 6 \end{aligned}$$

b. Solve.

$$n < 3$$

29. The product of a six and number is greater than 18 plus two and the number.

a. Write an inequality that represents this sentence.

$$\begin{aligned} 6n &> 18 + 2 + n \\ 6n &> 20 + n \\ 5n &> 20 \end{aligned}$$

b. Solve.

$$n > 4$$

30 Adam starts a new job with a base salary of at least \$23,500 a year. He can earn an additional \$52 on each item he sales.

a. Define your variables.  $y = \text{total earnings}$   
 $x = \text{\# of items sold}$

b. Write an inequality represents Adam's income in one year.

$$52x + 23,500 \geq y$$

c. What would be his salary if he sold 120 items?

$$\begin{aligned} 52(120) + 23,500 &\geq y \\ 29,740 &\geq y \\ \text{At least } &\$29,740 \end{aligned}$$

31. For Marina's quinceanera, her dad opens a bank account with \$220. Her mother puts in an additional \$150. She wants to put money each month to buy a car before she graduates from high school. She figures that she needs to deposit *at least* \$125 a month for the car she wants.
- a. Write the inequality that shows the amount of money in her savings at any time.

$$y \geq 220 + 150 + 125x$$

$$y \geq 370 + 125x$$

- b. How many months will she need to save if she wants \$1000 in her account?

$$1000 = 370 + 125x$$

$$\frac{-370 \quad -370}{630 = 125x} \quad x = 5.04 \quad \text{So, 6 months}$$

Solve the following linear inequalities for  $y$ . State slope,  $y$ -intercept and  $x$ -intercept.

32.  $6(2x - y) > 3y + 12$

$$12x - 6y > 3y + 12$$

$$\frac{-12x \quad -3y}{-9y} = \frac{-3y - 12x}{-9}$$

$$\frac{-9y}{-9} > \frac{12 - 12x}{-9}$$

$$y > -\frac{4}{3} + \frac{4}{3}x$$

$$0 > -\frac{4}{3} + \frac{4}{3}x$$

$$\left(\frac{3}{4}\right) \frac{4}{3} > \frac{4}{3}x \left(\frac{3}{4}\right)$$

$$1 > x$$

33.  $3x + 2y < 3y - x + 9$

$$\frac{-3x \quad -3y \quad -3y \quad -3x}{-4y} = \frac{-3x - 3y - 3x - 9}{-4}$$

$$-4y < -4 - 4x$$

$$y > 4 + 4x$$

$$0 > 4 + 4x$$

$$-\frac{4}{4} > \frac{4x}{4}$$

$$-1 > x$$

Slope  $\frac{4}{3}$

Slope  $4$

Y-intercept:  $(0, -\frac{4}{3})$  X-intercept:  $(1, 0)$

Y-intercept:  $(0, 4)$  X-intercept:  $(-1, 0)$

34. The Math club is taking a trip to Lagoon. We are going to rent buses that will hold no more than 50 people on each bus. We calculate that *at least* 629 students will attend.

- a. Write an inequality to represent the number of buses needed to make the trip.

$$\frac{50b}{50} \geq \frac{629}{50}$$

- b. Solve and find the number of busses we need to reserve.

$$b \geq 12.58$$

At least 13 buses.

35. The store at which Andy shops at is having a sale. Roast beef is \$4 each pound and shrimp is \$10 a pound.

- a. Define your variables.

$$r = \# \text{ of lbs of roast beef}$$

$$s = \# \text{ of lbs of shrimp}$$

- b. Write an equation to describe difference possible combinations of roast beef and shrimp that he can buy for \$96.

$$4r + 10s = 96$$

- c. Which is the greatest amount of shrimp he can buy?

$$r = 0 \quad 4(0) + 10s = 96 \quad s = 9.6 \text{ lbs.}$$

36. The Smith family bought 4 sandwiches and 3 salads. They spent \$24.

- a. Define your variables.

$$w = \text{cost of one sandwich}$$

$$l = \text{cost of one salad}$$

- b. Write an equation

$$4w + 3l = 24$$

- c. If each sandwich costs \$3.75, how much did each salad cost?

$$4(3.75) + 3l = 24 \quad \rightarrow \quad 3l = 9 \quad \text{Cost of each salad: } \$3$$

$$15 + 3l = 24 \quad \rightarrow \quad l = 3$$