

Name: _____ Date: _____ Period: _____

Unit 1B Review

Solve the following equations

$$\begin{array}{r} 1. v - 12 = -9 \\ +12 \quad +12 \\ \hline \end{array}$$

$v = 3$

$$\begin{array}{r} 2. 22 = -11k \\ -11 \quad -11 \\ \hline \end{array}$$

$-2 = k$

$$\begin{array}{r} 3. b - 7 = -1 \\ +7 \quad +7 \\ \hline \end{array}$$

$b = 6$

$$\begin{array}{r} 4. \frac{x}{5} = -9 \quad (5) \\ \cdot 5 \quad \cdot 5 \\ \hline \end{array}$$

$x = -45$

$$\begin{array}{r} 5. -10 = x + 20 \\ -20 \quad -20 \\ \hline \end{array}$$

$-30 = x$

$$\begin{array}{r} 6. \frac{1}{4}b = 12 \quad (\frac{4}{1}) \\ \cdot 4 \quad \cdot 4 \\ \hline \end{array}$$

$b = 48$

Write an equation and solve the following word problems

7. Last week Julian ran 30 miles more than Ben. Julia ran 45 miles. How many miles did Ben run?

$$J = B + 30 \quad J = 45$$

$$\begin{array}{r} 45 = B + 30 \\ -30 \quad -30 \\ \hline \end{array}$$

$15 = B$

Ben ran 15 miles

8. Last Friday Adam had \$22.33. Over the weekend he received some money for chores. He now has \$32. How much money did he receive?

$$\begin{array}{r} 22.33 + R = 32 \\ -22.33 \quad -22.33 \\ \hline \end{array}$$

$R = 9.67$

Adam received \$9.67

9. Amanda and her sister found \$52.78 while cleaning out the garage. If they split the money evenly, how much will Amanda have?

$$2A = 52.78$$

$$\frac{2A}{2} = \frac{52.78}{2}$$

$$A = \$26.39$$

Solve the following two-step equations.

$$10. \quad 6 = \frac{a}{4} + 2$$

$$\begin{array}{r} -2 \quad -2 \\ \hline \end{array}$$

$$(4) \quad 4 = \frac{a}{4} \quad (4)$$

$$\boxed{16 = a}$$

$$11. \quad 9x - 7 = -7$$

$$\begin{array}{r} +7 \quad +7 \\ \hline \end{array}$$

$$\frac{9x}{9} = \frac{0}{9}$$

$$\boxed{x = 0}$$

$$12. \quad \frac{v+9}{2} = 8 \quad (3)$$

$$\begin{array}{r} v+9 = 24 \\ -9 \quad -9 \\ \hline \end{array}$$

$$\boxed{v = 15}$$

$$13. \quad 2(n+5) = -2$$

$$\begin{array}{r} 2n+10 = -2 \\ -10 \quad -10 \\ \hline \end{array}$$

$$\frac{2n}{2} = \frac{-12}{2}$$

$$\boxed{n = -6}$$

$$14. \quad -2 = 2 + \frac{v}{4}$$

$$\begin{array}{r} -2 \quad -2 \\ \hline \end{array}$$

$$(4) \quad -4 = \frac{v}{4} \quad (4)$$

$$\boxed{-16 = v}$$

$$15. \quad 8n + 1 = 31$$

$$\begin{array}{r} -1 \quad -1 \\ \hline \end{array}$$

$$\frac{8n}{8} = \frac{24}{8}$$

$$\boxed{n = 3}$$

$$16. \quad 3(2+x) = 10$$

$$\begin{array}{r} 6+3x = 10 \\ -6 \quad -6 \\ \hline \end{array}$$

$$\frac{3x}{3} = \frac{4}{3}$$

$$\boxed{x = \frac{4}{3}}$$

$$17. \quad \frac{8}{-8} + \frac{b}{-4} = \frac{5}{-8}$$

$$(4) \quad \frac{b}{-4} = -3 \quad (-4)$$

$$\boxed{b = 12}$$

$$18. \quad \frac{v+5}{-5} = -1 \quad (-16)$$

$$\begin{array}{r} v+5 = 16 \\ -5 \quad -5 \\ \hline \end{array}$$

$$\boxed{v = 11}$$

Solve the following multi-step equations. Keep an eye out for no solution and all real numbers.

$$19. \quad -20 = -4x - 6x$$

$$\begin{array}{r} -20 = -10x \\ -10 \quad -10 \\ \hline \end{array}$$

$$\boxed{2 = x}$$

$$20. \quad -8 = x - (2x + 4)$$

$$\begin{array}{r} -8 = x - 2x - 4 \\ -8 = -x - 4 \\ +4 \quad +4 \\ \hline \end{array}$$

$$\frac{-4}{-1} = \frac{x}{-1} \quad \boxed{x = 4}$$

$$21. \quad 2(4x - 3) - 8 = 4 + 2x$$

$$\begin{array}{r} 8x - 6 - 8 = 4 + 2x \\ 8x - 14 = 4 + 2x \\ -2x \quad -2x \\ \hline \end{array}$$

$$\begin{array}{r} 6x - 14 = 4 \\ +14 \quad +14 \\ \hline \end{array}$$

$$\frac{6x}{6} = \frac{18}{6} \quad \boxed{x = 3}$$

$$22. \quad -8 = x - (2x + 4)$$

$$\begin{array}{r} -8 = x - 2x - 4 \\ -8 = -x - 4 \\ +4 \quad +4 \\ \hline \end{array}$$

$$\frac{-4}{-1} = \frac{x}{-1} \quad \boxed{x = 4}$$

Solve the following multi-step equations. Keep an eye out for no solution and all real numbers.

$$21. \begin{array}{r} 4m - 4 = 4m \\ -4m \quad -4m \\ \hline -4 = 0 \end{array}$$

False

No Solution

$$22. \begin{array}{r} 2p + 4 = 2(p + 2) \\ 2p + 4 = 2p + 4 \\ -2p \quad -2p \\ \hline 4 = 4 \end{array}$$

4 = 4

True

All Real Numbers

Write an equation to model each situation. Then solve the equation.

23. A plumber finished three jobs on Tuesday. The first two only cost the owner the \$45 trip fee because they took very little time to complete. For the third job, the plumber charged the trip fee plus 6 times his hourly rate. If the plumber received a total of \$303 for the day, what is the hourly rate?

$$\boxed{45 + 45 + 45 + 6x = 303}$$

$$\begin{array}{r} 135 + 6x = 303 \\ -135 \quad -135 \\ \hline 6x = 168 \\ \frac{6x}{6} = \frac{168}{6} \end{array}$$

$$\boxed{x = \$28}$$

24. Angela ate at the same restaurant four times. Each time she ordered a salad and left a \$5 tip. She spent a total of \$54. Write and solve an equation to find the cost of each salad.

$$4(s + 5) = 54$$

$$\begin{array}{r} 4(s + 5) = 54 \\ 4s + 20 = 54 \\ -20 \quad -20 \\ \hline 4s = 34 \\ \frac{4s}{4} = \frac{34}{4} \end{array}$$

$$\boxed{s = \$8.50}$$

25. Jeremy is looking at two different lawncare companies to weed and mulch his flowerbeds. Greenscape Lawncare offers to charge \$100 for the mulch plus \$12 per hr for the labor. D & J Landscape offers to charge \$23 per hr for the job including the mulch. What is the minimum number of hours the job could be for D & J Landscape to offer the better deal?

$$\boxed{100 + 12x = 23x}$$

$$\begin{array}{r} 100 + 12x = 23x \\ -12x \quad -12x \\ \hline 100 = 11x \\ \frac{100}{11} = \frac{11x}{11} \end{array}$$

$$\boxed{9.09 = x \text{ hours}}$$

Solve the following literal equations for the desired variable.

Solve each equation for y .

26. $y + 5x = 6$

$$\frac{-bx}{-bx} \quad \frac{-5x}{-5x}$$

$$y = -5x + 6$$

27. $\frac{-3y}{-3} = \frac{2x - 8}{-3}$

$$y = \frac{2x - 8}{-3}$$

28. $5y + 10x = 5$

$$\frac{-10x}{-10x} \quad \frac{-10x}{-10x}$$

$$\frac{5y}{5} = \frac{-10x + 5}{5}$$

$$y = -2x + 1$$

Solve each equation for p .

29. $a = \frac{b}{c} + cp$

$$\frac{a - b}{c} = \frac{cp}{c}$$

$$\frac{a - b}{c} = p$$

30. $n = \frac{p - k}{j}$

$$\frac{jn}{+k} = \frac{p - k}{+k}$$

$$jn + k = p$$

31. $i = \frac{prt}{rt}$

$$\frac{i}{rt} = p$$

32. A large box shaped like a rectangular prism needs to be painted.

a. Write a formula for the area A to paint in terms of length l , width w , and height h .

b. Rewrite the formula to find l in terms of A , h , and w .

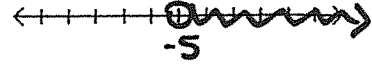
c. If h is 36 in., w is 28 in. and A is 6112 in.², what is the length of the prism?

Solve and Graph the following Inequalities.

33. $x \geq 5$

34. $a \leq 10$

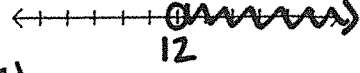
35. $\frac{-2x}{-2} < \frac{10}{-2}$
 $x > -5$



36. $x + 3 \geq 5$
 $\frac{+3}{-3} \quad \frac{-3}{-3}$
 $x \geq 2$

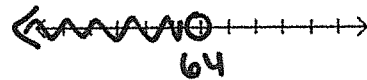
37. $\frac{a}{4} < 10 (4)$
 $a < 40$

38. $-7 + x > 10$
 $\frac{+7}{+2} \quad \frac{+7}{+2}$
 $x > 12$



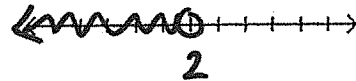
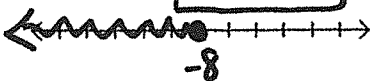
39. $2x - 3 \geq 5$
 $\frac{+3}{+3} \quad \frac{+3}{+3}$
 $\frac{2x}{2} \geq \frac{8}{2}$
 $x \geq 4$

40. $\frac{x-4}{4} < 10 (6)$
 $x - 4 < 60$
 $\frac{+4}{+4} \quad \frac{+4}{+4}$
 $x < 64$



41. $2x - 3 \geq 3x + 5$
 $\frac{+3}{+3} \quad \frac{+3}{+3}$
 $\frac{2x}{-3x} \geq \frac{3x+8}{-3x}$
 $\frac{x}{1} \geq \frac{8}{-1}$
 $x \leq -8$

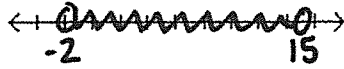
42. $5x - 4 + 3x < 12$
 $\frac{+4}{+4} \quad \frac{+4}{+4}$
 $\frac{8x}{8} < \frac{16}{8}$
 $x < 2$



Solve and graph the following inequalities.

43. $-2 < x < 15$

$x > -2$ and $x < 15$



45. $3 < x - 2 \leq 10$

$$\begin{array}{r} 3 < x - 2 \\ +2 \quad +2 \\ \hline 5 < x \end{array}$$

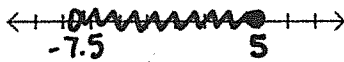
$$\begin{array}{r} x - 2 \leq 10 \\ +2 \quad +2 \\ \hline x \leq 12 \end{array}$$



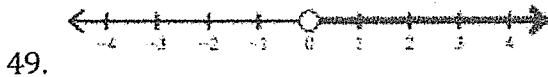
47. $-10 < 2x + 5 \leq 15$

$$\begin{array}{r} -10 < 2x + 5 \\ -5 \quad -5 \\ \hline -15 < 2x \\ \frac{-15}{2} < \frac{2x}{2} \\ \hline -7.5 < x \end{array}$$

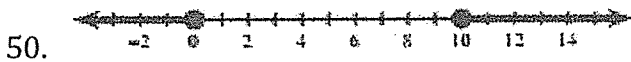
$$\begin{array}{r} 2x + 5 \leq 15 \\ -5 \quad -5 \\ \hline 2x \leq 10 \\ \frac{2x}{2} \leq \frac{10}{2} \\ \hline x \leq 5 \end{array}$$



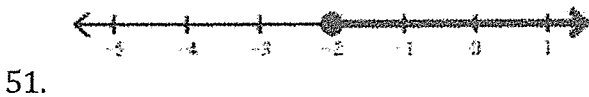
Write the inequality for the following graphs



49. $x > 0$



50. $x \leq 0$ OR $x \geq 10$



51. $x \geq 2$

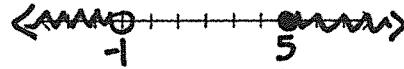


52. $1 \leq x \leq 7$



53. $x \leq 0$

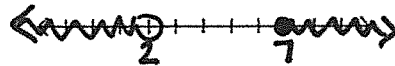
44. $x \geq 5$ or $x < -1$



46. $m - 7 \geq 5$ or $\frac{m}{2} < 1$ (2)

$$\begin{array}{r} m - 7 \geq 5 \\ +7 \quad +7 \\ \hline m \geq 12 \end{array}$$

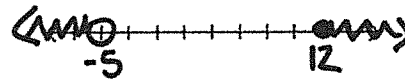
$$\begin{array}{r} \frac{m}{2} < 1 \\ \times 2 \quad \times 2 \\ \hline m < 2 \end{array}$$



48. $5 \leq \frac{x-2}{2}$ or $-\frac{2x}{2} > \frac{10}{-2}$

$$\begin{array}{r} 5 \leq \frac{x-2}{2} \\ \times 2 \quad \times 2 \\ \hline 10 \leq x - 2 \\ +2 \quad +2 \\ \hline 12 \leq x \end{array}$$

$$\begin{array}{r} -\frac{2x}{2} > \frac{10}{-2} \\ \times -2 \quad \times -2 \\ \hline x < -5 \end{array}$$



Check to see if $x = -2$ is a solution to the following inequalities.

54. $-3x \geq 5$

$$-3(-2) \geq 5$$

$$6 \geq 5$$

yes

55. $2x + 10 < -2$

$$2(-2) + 10 < -2$$

$$-4 + 10 < -2$$

$$6 < -2$$

NO

56. $-5 \leq x < 10$

$$-5 \leq -2 < 10$$

yes

Check to see if $x = 5$ is a solution to the following inequalities.

57. $\frac{x+5}{10} < 5$

$$\frac{(5)+5}{10} < 5$$

$$\frac{10}{10} < 5$$

$$1 < 5 \text{ True}$$

yes

58. $2x + 5 < -10x - 3$

$$2(5) + 5 < -10(5) - 3$$

$$10 + 5 < -50 - 3$$

$$15 < -53 \text{ False}$$

NO

59. $x > 4 \text{ or } x \leq -10$

$$5 > 4$$

True

$$5 \leq -10$$

False

yes

Circle the error in the following problems and then explain what should happen to get to the correct answer.

60.

$$-8n + 4 \geq 20$$

$$-8n + 4 \geq 20$$

$$-8n + 4 \geq 20$$

$$-4 \quad -4$$

$$-8n \geq 16$$

$$\frac{-8n}{-8} \geq \frac{16}{-8}$$

$$n \geq -2$$

you should flip
the inequality sign
when dividing by
a negative

61.

$$-2x + 6 = 10$$

$$-2x \quad 10$$

$$\textcircled{-2} + 6 = \frac{10}{-2}$$

$$x + 6 = -5$$

$$-6 \quad -6$$

$$x = -11$$

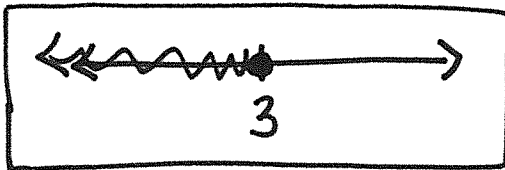
you should add
or subtract before
dividing

Write, solve, and graph the inequalities for the following word problems.

62. A student had \$45 when she went to the mall. She spent \$9 on a pair of earrings. Then she wants to buy some CDs that cost \$12 each. Write and solve an inequality to determine how many CDs she can buy.

$$9 + 12c \leq 45$$

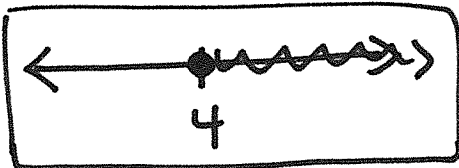
$$\begin{array}{r} 9 + 12c \leq 45 \\ -9 \quad -9 \\ \hline 12c \leq 36 \\ \frac{12c}{12} \leq \frac{36}{12} \\ c \leq 3 \end{array}$$



63. A friend needs at least \$125 to go on the class trip. He has saved \$45. He makes \$20 for each lawn he mows. Write and solve an inequality to determine how many lawns he needs to mow to go on the trip.

$$45 + 20m \geq 125$$

$$\begin{array}{r} 45 + 20m \geq 125 \\ -45 \quad -45 \\ \hline 20m \geq 80 \\ \frac{20m}{20} \geq \frac{80}{20} \end{array}$$



$$m \geq 4$$

64. You have earned 85, 92, 95, and 88 on tests this grading period. You have one last test and want an average of at least 90. Write and solve an inequality to determine what scores you can earn to achieve your goal.

$$\frac{85 + 92 + 95 + 88 + x}{5} \geq 90$$

$$\begin{array}{r} (5) \frac{360 + x}{5} \geq 90 (5) \\ \frac{360 + x}{5} \geq 90 \\ -360 \quad -360 \\ \hline x \geq 90 \end{array}$$

