

Name: _____

Entering High School Algebra 1 (Optional) Packet

This packet is completely optional. Your 9th grade teacher will not check for completion. This is for you to use for review and prepare for Algebra!

Working with Rational Numbers: Simplify each expression

1) $\frac{13}{7} - \left(-\frac{2}{7}\right)$

2) $\left(-\frac{1}{2}\right) - \left(-\frac{2}{7}\right)$

3) $\left(-\frac{1}{2}\right)\left(-\frac{5}{8}\right)$

4) $\left(-\frac{39}{7}\right)\left(-\frac{1}{2}\right)$

5) $\left(-\frac{1}{2}\right) \div 7$

6) $\frac{7}{4} \div (-1)$

7) $\frac{5}{2} \div \frac{10}{4}$

8) $\frac{1}{6} + \left(-\frac{3}{4}\right)$

9) $5^2 - (12 \div 2 \times 3) \div 9 + 15$

10) $\frac{(18-9)^0 + 15}{3 \bullet 12 - 6 \bullet 4}$

11) $4[3^3 - 5(8 - 6)] \div 2 + 11$

12) $(18 - 6) \div (3^2 - 3)$

13) $45 \div 5 + 50 \div 10$

14) $(8 - 5)^2 + (9 - (-3))^2$

15) $5 - 3 + 12 - (-9)$

16) $\frac{-4}{\left(\frac{3}{4}\right)}$

17) $|(-2)(4)| - |(-5)(-1)|$

18) $-4 + -9 - 3(-6)$

19) $2\frac{1}{3} - \frac{7}{9}$

20) $\left(\frac{2}{3}\right) \div \left(1\frac{5}{9}\right)$

Evaluating Expressions

21) $7b - 2a$, when $a = -3$ and $b = 4$

22) $3x^2 + 5x + 1$, when $x = -2$

23) $\frac{2r}{t} + 7$, when $r = 12$ and $t = 3$

24) $(3x)^2 - 7y^2$, when $x = 3$ and $y = -2$

Solving Equations: Solve the equation & inequalities.

25) $\frac{1}{4}d + 2 = 3$

26) $22 - 6x \leq -63 - x$

27) $5(g - 7) + 2[g - 3(g - 5)] = 0$

28) $1 - \frac{3}{4}(v + 2) = -5$

$$29) \frac{2a}{7} = -\frac{2}{3}$$

$$30) 7x + 6 \leq 14(x - 4)$$

$$31) 2x - 7 = 1$$

$$32) \frac{3x+2}{5} = 4$$

$$33) -5(x - 4) = 45$$

$$34) 2(x + 9) + 3(x - 2) = 16(x + 3)$$

Classification of Real Numbers

35) Explain the difference between a rational and an irrational number.

36) Classify the following numbers as rational or irrational.

a) $\frac{1}{2}$

b) 8

c) $\sqrt{6}$

d) $-3\sqrt{16}$

e) π

Properties of Exponents

37) $d^7 \cdot d^9$

38) $-5x^2 \cdot 3x^{-3}$

39) $(-ch^6)^4$

40) $\frac{(2xy^{-3})^2}{9x^3y^{-3}}$

41) $\frac{4^{17}}{4^{14}}$

42) $\left(\frac{-4t^6}{t^3r^8}\right)^3$

Simplifying Expressions

43) $(d^2 - d + 5) - (-d^2 + d + 5)$

44) $(3p^2 - 2p + 3) - (p^2 - 7p + 7)$

45) $(x^3 - 3x^2y + 4xy^2 + y^3) - (7x^3 - 9x^2y + xy^2 + y^3)$

Systems of Equations: Solve each system using the most appropriate method.

46) $x = 5$

$2x + 3y = 1$

47) $y = 2x + 1$

$4x - y = 5$

48) $4x + 2y = 11$

$3x - 2y = 3$

Slope: Determine the slope for each.

49) $(5, 1) \text{ \& } (2, 7)$

50) $(3, -9) \text{ \& } (2, -9)$

51) $(-1, 7) \text{ \& } (1, 5)$

52) $(2, 2)$ & $(6, 8)$

53) $(-34, -41)$ & $(-26, 42)$

54) $(-7, 8)$ & $(-4, -3)$

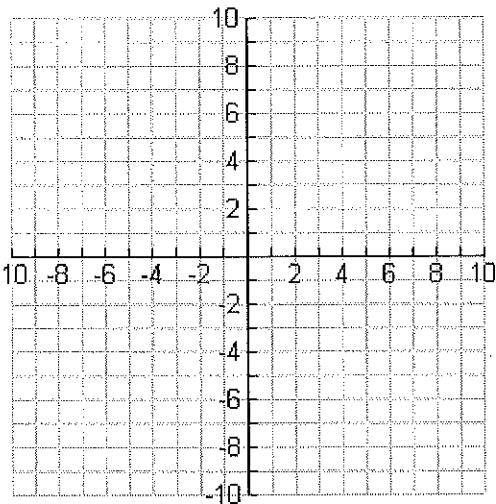
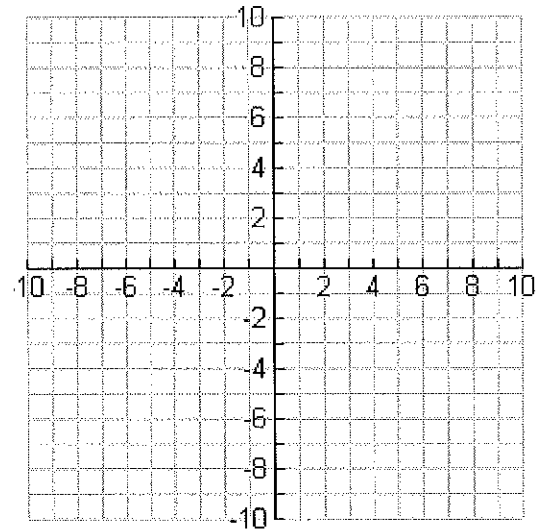
55) $y = \frac{3}{4}x - 4$

56) $3x + 4y = -12$

57) $2x - 5y = 8$

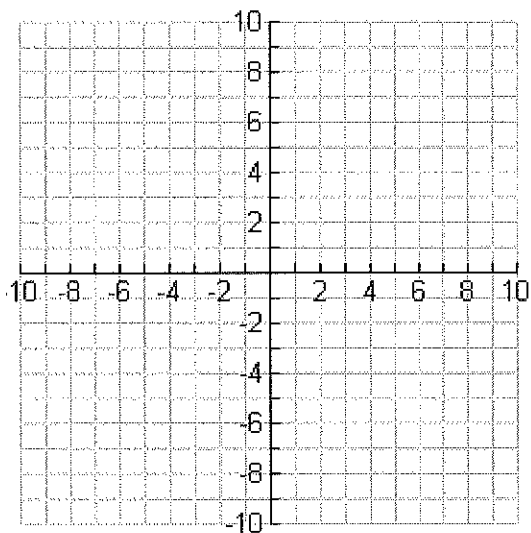
Graphing: Graph each equation

58) A line that passes through the point $(0, 3)$, that is parallel to the line $y = -2x - 2$

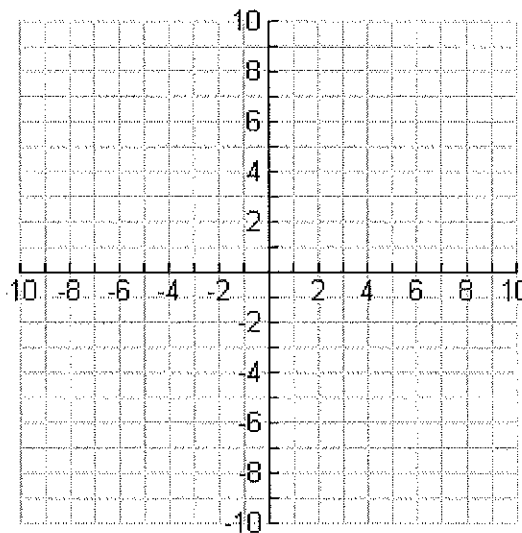


59) A line passes through the point $(4, 0)$, parallel to $y + \frac{1}{2}x = 3$

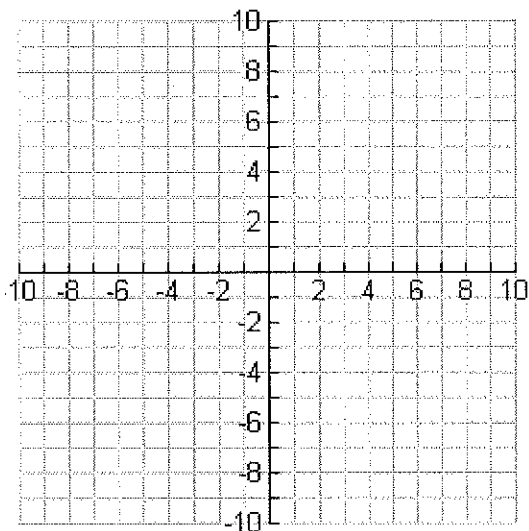
60) $y = \frac{2}{3}x - 3$



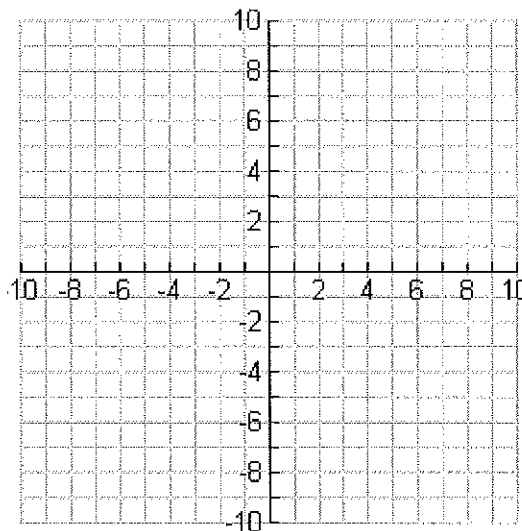
61) $4x - 3y = 6$



62) $x = 3$



63) $y = -2$



Writing Equations of Lines

Slope-Intercept Form: $y = mx + b$ *Standard Form:* $Ax + By = C$

Point-Slope Form: $(y - y_1) = m(x - x_1)$

64) Rewrite $3y = 2x - 7$ in slope-intercept form. Identify the slope and y-intercept.

67) A line that contains the points (-1, 2) & (5, 6)

Point-Slope Form: _____

Slope-Intercept Form: _____

Standard Form: _____

68) a line passing through (-2, -4), parallel to $2x + 4y = 3$

Point-Slope Form: _____

Slope-Intercept Form: _____

Standard Form: _____

Translating Expressions and Equations Set up an algebraic expression or equation to represent each verbal expression. **DO NOT SOLVE.**

Example: 18 less than the quotient of a number and 3. \rightarrow let $n =$ a number ; $\frac{n}{3} - 18$

69) The sum of six times a number and 25 70) 7 less than fifteen times a number

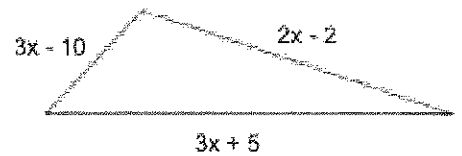
72) Four times the square of a number increased by five times the same number

73) The sum of a number and 23 is 78.

Finding the Missing Dimensions

74) The sides of a rectangle are a number and 4 less than that same number. The perimeter is 56 meters. Find the value of each side length.

75) Find the length of each side of the triangle if the perimeter is 33 cm.



76) The foot of a ladder is placed 6 feet from a wall. If the top of the ladder rests 8 feet up on the wall, how long is the ladder?

77) The diagonal of a rectangle is 25 in. The width is 15 in. What is the length?

78) The length of a rectangle is 3 inches more than the width. Find the length and width if the perimeter of the rectangle is 98 in.

79) A ladder is leaning against the side of a 10m house. If the base of the ladder is 3m away from the house, how tall is the ladder? Leave your answer as a radical

80) In any triangle the sum of the measures of the angles is 180 degrees. In Triangle ABC, $\angle A$ is twice as large as $\angle B$. $\angle B$ is 4 degrees larger than $\angle C$. Find the measure of each angle.

Miscellaneous Word Problems Write an equation to model each word problem.

81) Joelle had \$24 to spend on seven pencils. After buying them she had \$10. How much did each pencil cost?

Example:

Let x = cost per pencil

$$7x + 10 = 24$$

$$\frac{7x}{7} = \frac{14}{7}$$

$$x = 2$$

Check:

$$\text{Does } 7(2) + 10 = 24?$$

$$14 + 10 = 24$$

$$24 = 24 \checkmark$$

Each pencil cost 2 dollars.

82) Sarah already has 45 stamps in her collection, and she gets 7 new stamps each month. How long will it take before she has 129 stamps in her collection?

83) Lynn took a cab from her office to the airport. She had to pay a flat fee of \$2.05 plus \$0.90 per mile. The total cost was \$5.65. How many miles was the taxi trip?

84) Luke has \$5 more than Sam. Together they have \$73. How much money does each have?

85) The sum of 38 and twice a number is 124. Find the number.

86) Four times a number increased by 25, is 13 less than 6 times the number. Find the number.

87) 15% of what number is 12? (Set up a proportion). 88) 123 is what percent of 410?

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Working with Rational Numbers: Simplify each expression

1) $\frac{13}{7} + (\frac{2}{7}) = \frac{15}{7}$
 2) $(-\frac{1}{2}) + (\frac{2}{7}) = -\frac{7}{14} + \frac{4}{14} = -\frac{3}{14}$
 3) $(-\frac{1}{2})(-\frac{5}{8}) = \frac{5}{16}$
 4) $(-\frac{39}{7})(-\frac{1}{2}) = \frac{39}{14}$

5) $(-\frac{1}{2}) + 7 = -\frac{1}{2} + \frac{14}{2} = \frac{13}{2}$
 6) $\frac{7}{4} \div (-1) = -\frac{7}{4}$
 7) $\frac{5}{2} + \frac{10}{4} = \frac{5}{2} + \frac{5}{2} = \frac{10}{2} = 5$
 8) $\frac{1}{6} + (-\frac{3}{4}) = \frac{2}{12} - \frac{9}{12} = -\frac{7}{12}$

9) $5^2 - (12 \div 2 \times 3) + 9 + 15 = 25 - (6 \cdot 3) + 9 + 15 = 25 - 18 + 9 + 15 = 23 + 15 = 38$
 10) $\frac{(18-9)^0 + 15}{3 \cdot 12 - 6 \cdot 4} = \frac{1 + 15}{36 - 24} = \frac{16}{12} = \frac{4}{3}$
 11) $4[3^2 - 5(8-6)] \div 2 + 11 = 4[27 - 5(2)] \div 2 + 11 = 4[27 - 10] \div 2 + 11 = 4(17) \div 2 + 11 = 68 \div 2 + 11 = 34 + 11 = 45$
 12) $(18-6) \div (3^2-3) = 12 \div (9-3) = 12 \div 3 = 4$
 13) $\frac{45 \div 5 + 50 \div 10}{9 + 5} = \frac{9 + 5}{14} = \frac{14}{14} = 1$
 14) $(8-5)^2 + (9 + (13))^2 = (3)^2 + (22)^2 = 9 + 484 = 493$

29) $2a = 14 \Rightarrow a = \frac{14}{2} = 7$
 30) $7x + 6 \leq 14(x-4) \Rightarrow 7x + 6 \leq 14x - 56 \Rightarrow -7x + 62 \leq -56 \Rightarrow -7x \leq -118 \Rightarrow x \geq 17$

31) $2x - 7 = 1 \Rightarrow 2x = 8 \Rightarrow x = 4$
 32) $\frac{3x+2}{3} = \frac{4}{3} \Rightarrow 3x+2 = 4 \Rightarrow 3x = 2 \Rightarrow x = \frac{2}{3}$

33) $-5(x-4) = 45 \Rightarrow -5x + 20 = 45 \Rightarrow -5x = 25 \Rightarrow x = -5$
 34) $2(x+9) + 3(x-2) = 16(x+3) \Rightarrow 2x+18+3x-6 = 16x+48 \Rightarrow 5x+12 = 16x+48 \Rightarrow -11x = 36 \Rightarrow x = -\frac{36}{11}$

Classification of Real Numbers

- 35) Explain the difference between a rational and an irrational number.
 Rational #s can be written as a fraction.
 Irrational #s cannot be written as a fraction (non-terminating, non-repeating decimals)
- 36) Classify the following numbers as rational or irrational.
 a) $\frac{1}{2}$ Rational
 b) 8 Rational
 c) $\sqrt{8}$ Irrational
 d) $-3\sqrt{18}$ Irrational
 e) π Irrational

15) $5 - 3 + 12 + (-9) = 2 + 12 + (-9) = 14 + (-9) = 5$
 16) $\frac{4}{\frac{3}{4}} = 4 \div \frac{3}{4} = 4 \cdot \frac{4}{3} = \frac{16}{3}$
 17) $|(-2)(4)| - |(-5)(-1)| = | -8 | - | 5 | = 8 - 5 = 3$
 18) $-4 + 9 - 3(-6) = -4 + 9 + 18 = 13$
 19) $2\frac{1}{3} - \frac{7}{9} = \frac{2}{3} + \frac{1}{3} - \frac{7}{9} = \frac{2}{3} + \frac{1}{3} - \frac{7}{9} = \frac{4}{3} - \frac{7}{9} = \frac{12}{9} - \frac{7}{9} = \frac{5}{9}$
 20) $(\frac{2}{3}) + (\frac{5}{9}) = \frac{4}{6} + \frac{5}{9} = \frac{4}{3} + \frac{5}{9} = \frac{12}{9} + \frac{5}{9} = \frac{17}{9}$

Evaluating Expressions

21) $7b - 2a$, when $a = -3$ and $b = 4$
 $7(4) - 2(-3) = 28 + 6 = 34$
 22) $3x^2 + 5x + 1$, when $x = -2$
 $3(-2)^2 + 5(-2) + 1 = 3(4) - 10 + 1 = 12 - 10 + 1 = 3$
 23) $\frac{r}{t} + 7$, when $r = 12$ and $t = 3$
 $\frac{12}{3} + 7 = 4 + 7 = 11$
 24) $(3x)^2 - 7y^2$, when $x = 3$ and $y = -2$
 $(3 \cdot 3)^2 - 7(-2)^2 = 9^2 - 7(4) = 81 - 28 = 53$

Solving Equations: Solve the equation & inequalities. Include a check.

25) $\frac{4d+2}{-2} = 3 \Rightarrow 4d+2 = -6 \Rightarrow 4d = -8 \Rightarrow d = -2$
 Check: $\frac{4(-2)+2}{-2} = \frac{-8+2}{-2} = \frac{-6}{-2} = 3$
 26) $22 - 6x \leq -63 - x \Rightarrow 22 - 5x \leq -63 \Rightarrow -5x \leq -85 \Rightarrow x \geq 17$
 27) $5(g-7) + 2(g-3(g-5)) = 0 \Rightarrow 5g - 35 + 2(g - 3g + 15) = 0 \Rightarrow 5g - 35 + 2(-2g + 15) = 0 \Rightarrow 5g - 35 - 4g + 30 = 0 \Rightarrow g - 5 = 0 \Rightarrow g = 5$
 28) $1 - \frac{3}{4}(v+2) = -5 \Rightarrow 1 - \frac{3v}{4} - \frac{3}{2} = -5 \Rightarrow -\frac{3v}{4} - \frac{1}{2} = -5 \Rightarrow -\frac{3v}{4} = -\frac{9}{2} \Rightarrow 3v = 18 \Rightarrow v = 6$

Properties of Exponents

37) $d^{10} \cdot d^6 = d^{16}$
 38) $-5x^2 \cdot 3x^{-3} = -15x^{-1} = -\frac{15}{x}$
 39) $(-ch^6)^4 = c^4 h^{24}$
 40) $\frac{(2xy^{-3})^2}{9x^2y^{-3}} = \frac{4x^2y^{-6}}{9x^2y^{-3}} = \frac{4}{9}y^{-3} = \frac{4}{9y^3}$
 41) $\frac{4^7}{4^4} = 4^3 = 64$
 42) $\frac{(-4p^6)^3}{p^2} = \frac{-64p^{18}}{p^2} = -64p^{16}$

Simplifying Expressions

43) $(d^2 - d + 5) - (d^2 + d + 5) = d^2 - d + 5 - d^2 - d - 5 = -2d$
 44) $(3p^2 - 2p + 3) - (p^2 - 7p + 7) = 3p^2 - 2p + 3 - p^2 + 7p - 7 = 2p^2 + 5p - 4$
 45) $(x^3 - 3x^2y + 4xy^2 + y^3) - (7x^3 - 9x^2y + xy^2 + y^3) = x^3 - 3x^2y + 4xy^2 + y^3 - 7x^3 + 9x^2y - xy^2 - y^3 = -6x^3 + 6x^2y + 3xy^2$

Systems of Equations: Solve each system using the most appropriate method.

46) $\begin{cases} 2x + 3y = 1 \\ 2(5) + 3y = 1 \end{cases} \Rightarrow 10 + 3y = 1 \Rightarrow 3y = -9 \Rightarrow y = -3$
 $2x + 3(-3) = 1 \Rightarrow 2x - 9 = 1 \Rightarrow 2x = 10 \Rightarrow x = 5$
 Solution: $(5, -3)$
 47) $\begin{cases} y = 2x + 1 \\ 4x - y = 5 \end{cases} \Rightarrow 4x - (2x + 1) = 5 \Rightarrow 4x - 2x - 1 = 5 \Rightarrow 2x - 1 = 5 \Rightarrow 2x = 6 \Rightarrow x = 3$
 $y = 2(3) + 1 = 7$
 Solution: $(3, 7)$
 48) $\begin{cases} 4x + 2y = 11 \\ 3x - 2y = 3 \end{cases} \Rightarrow 7x = 14 \Rightarrow x = 2$
 $4(2) + 2y = 11 \Rightarrow 8 + 2y = 11 \Rightarrow 2y = 3 \Rightarrow y = \frac{3}{2}$
 Solution: $(2, \frac{3}{2})$

Slope: Determine the slope for each.

49) (5, 1) & (2, 7)

$$\frac{7-1}{2-5} = \frac{6}{-3} = -2$$

50) (3, -9) & (2, -9)

$$\frac{-9+9}{2-3} = \frac{0}{-1} = 0$$

51) (-1, 7) & (1, 5)

$$\frac{5-7}{1-(-1)} = \frac{-2}{2} = -1$$

52) (2, 2) & (6, 8)

$$\frac{8-2}{6-2} = \frac{6}{4} = \frac{3}{2}$$

53) (-34, -41) & (-26, 42)

$$\frac{42+41}{-26+34} = \frac{83}{8}$$

54) (-7, 8) & (-4, -3)

$$\frac{-3-8}{-4-(-7)} = \frac{-11}{3}$$

55) $y = \frac{3}{4}x - 4$

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

56) $3x + 4y = -12$

$$\frac{-3x}{-3x} + \frac{4y}{4} = \frac{-12}{-3x} \Rightarrow y = -\frac{3}{4}x - 3$$

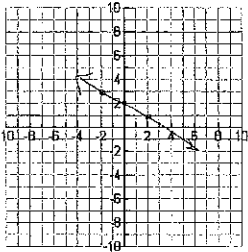
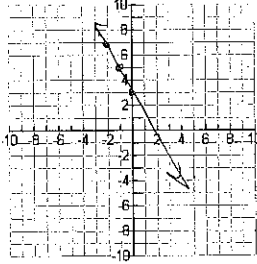
57) $2x - 5y = 8$

$$\frac{-2x}{-2x} - \frac{5y}{5} = \frac{8}{-5} \Rightarrow y = \frac{2}{5}x - \frac{16}{5}$$

Graphing: Graph each equation

58) A line that passes through the point (0, 3) that is parallel to the line $y = -2x - 2$

$m = -2$
 $11m = -2$
 $y_{int} = 3$
 $y = -2x + 3$



59) A line passes through the point (4, 0), parallel to $y + \frac{1}{2}x = 3$

$y + \frac{1}{2}x = 3 \Rightarrow y = -\frac{1}{2}x + 3$
 $m = -\frac{1}{2}$
 $y_{int} = 3$
 $y = -\frac{1}{2}x + 3$
 $0 = -\frac{1}{2}(4) + b$
 $0 = -2 + b$
 $2 = b$

67) A line that contains the points (-1, 2) & (5, 6)

$$\frac{6-2}{5-(-1)} = \frac{4}{6} = \frac{2}{3}$$

Point-Slope Form: $y - 2 = \frac{2}{3}(x + 1)$
Slope-Intercept Form: $y = \frac{2}{3}x + \frac{8}{3}$
Standard Form: $2x - 3y = -8$

68) A line passing through (-2, -4), parallel to $\frac{2x}{2x} + \frac{4y}{-2x} = \frac{3}{-2x}$

$y + 4 = -\frac{1}{2}x - 4$
 $y = -\frac{1}{2}x - 8$
Point-Slope Form: $y + 4 = -\frac{1}{2}(x + 2)$
Slope-Intercept Form: $y = -\frac{1}{2}x - 8$
Standard Form: $x + 2y = -10$

Translating Expressions and Equations Set up an algebraic expression or equation to represent each verbal expression. DO NOT SOLVE.

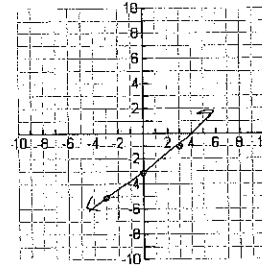
Example: 18 less than the quotient of a number and 3. \rightarrow let $n =$ a number ; $\frac{n}{3} - 18$

69) The sum of six times a number and 25 $6x + 25$
70) 7 less than fifteen times a number $15x - 7$

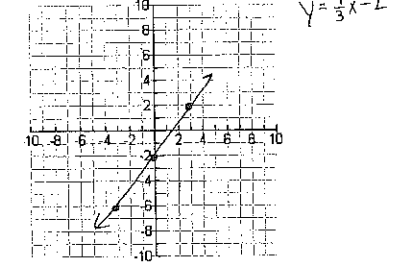
72) Four times the square of a number increased by five times the same number $4x^2 + 5x$

73) The sum of a number and 23 is 78 $x + 23 = 78$

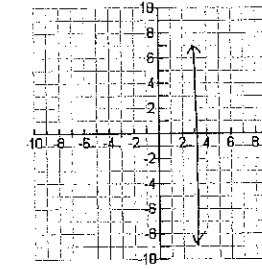
60) $y = \frac{2}{3}x - 3$



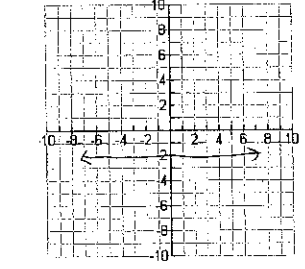
61) $4x - 3y = 6$



62) $x = 3$



63) $y = -2$



Writing Equations of Lines

Slope-Intercept Form: $y = mx + b$ Standard Form: $Ax + By = C$

Point-Slope Form: $(y - y_1) = m(x - x_1)$

64) Rewrite $3y = 2x - 7$ in slope-intercept form. Identify the slope and y-intercept.

$\frac{3y}{3} = \frac{2x}{3} - \frac{7}{3}$
 $y = \frac{2}{3}x - \frac{7}{3}$
 $m = \frac{2}{3}$
 $b = -\frac{7}{3}$

Finding the Missing Dimensions

74) The sides of a rectangle are a number and 4 less than that same number. The perimeter is 56 meters. Find the value of each side length.

$x + x + x - 4 + x - 4 = 56$
 $4x - 8 = 56$
 $4x = 64$
 $x = 16$
Sides: $16m$ and $12m$

75) Find the length of each side of the triangle if the perimeter is 33 cm.

$3x - 10 + 2x - 2 + 3x + 5 = 33$
 $8x - 7 = 33$
 $8x = 40$
 $x = 5$
Sides: 5 , 10 , and 20

76) The foot of a ladder is placed 6 feet from a wall. If the top of the ladder rests 8 feet up on the wall, how long is the ladder?

$6^2 + 8^2 = x^2$
 $36 + 64 = x^2$
 $100 = x^2$
 $x = 10$
Ladder length: $10ft$

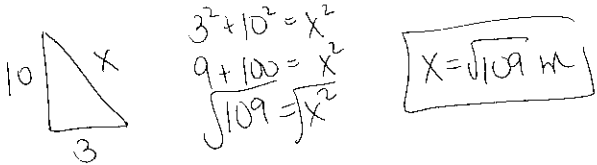
77) The diagonal of a rectangle is 25 in. The width is 15 in. What is the length?

$x^2 + 15^2 = 25^2$
 $x^2 + 225 = 625$
 $x^2 = 400$
 $x = 20$
Length: $20in$

78) The length of a rectangle is 3 inches more than the width. Find the length and width if the perimeter of the rectangle is 98 in.

$x + x + x + 3 + x + 3 = 98$
 $4x + 6 = 98$
 $4x = 92$
 $x = 23$
Dimensions: $23in$ and $26in$

79) A ladder is leaning against the side of a 10m house. If the base of the ladder is 3m away from the house, how tall is the ladder? Leave your answer as a radical



80) In any triangle the sum of the measures of the angles is 180 degrees. In Triangle ABC, $\angle A$ is twice as large as $\angle B$. $\angle B$ is 4 degrees larger than $\angle C$. Find the measure of each angle.

Let $x = \angle C$
 Let $x+4 = \angle B$
 Let $2(x+4) = \angle A$

$$2x+8+x+4+x=180$$

$$4x+12=180$$

$$\begin{array}{r} -12 \\ \hline 4x=168 \end{array} \quad x=42$$

$m\angle C = 42^\circ$
 $m\angle B = 46^\circ$
 $m\angle A = 92^\circ$

Miscellaneous Word Problems. Write an equation to model each word problem.

81) Joelle had \$24 to spend on seven pencils. After buying them she had \$10. How much did each pencil cost?

Example:
 Let $x =$ cost per pencil
 $7x + 10 = 24$

$$\begin{array}{r} 7x = 14 \\ 7 \quad 7 \\ \hline x = 2 \end{array}$$

Check:
 Does $7(2) + 10 = 24$?
 $14 + 10 = 24$
 $24 = 24$ ✓

Each pencil cost 2 dollars.

82) Sarah already has 45 stamps in her collection, and she gets 7 new stamps each month. How long will it take before she has 129 stamps in her collection?

Let $x =$ # of months

$$\begin{array}{r} 45 + 7x = 129 \\ -45 \quad -45 \\ \hline 7x = 84 \\ 7 \quad 7 \\ \hline x = 12 \end{array}$$

12 months

83) Lynn took a cab from her office to the airport. She had to pay a flat fee of \$2.05 plus \$0.90 per mile. The total cost was \$5.65. How many miles was the taxi trip?

Let $x =$ # of miles

$$\begin{array}{r} 2.05 + .90x = 5.65 \\ -2.05 \quad -2.05 \\ \hline .90x = 3.60 \\ .90 \quad .90 \\ \hline x = 4 \end{array}$$

4 miles

84) Luke has \$5 more than Sam. Together they have \$73. How much money does each have?

Let $x =$ Sam's money
 Let $x+5 =$ Luke's money

$$\begin{array}{r} x + x + 5 = 73 \\ 2x + 5 = 73 \\ -5 \quad -5 \\ \hline 2x = 68 \\ 2 \quad 2 \\ \hline x = 34 \end{array}$$

$\text{Sam} = \$34$
 $\text{Luke} = \$39$

85) The sum of 38 and twice a number is 124. Find the number.

Let $x =$ a #

$$\begin{array}{r} 38 + 2x = 124 \\ -38 \quad -38 \\ \hline 2x = 86 \\ 2 \quad 2 \\ \hline x = 43 \end{array}$$

43

86) Four times a number increased by 25, is 13 less than 6 times the number. Find the number.

Let $x =$ a #

$$\begin{array}{r} 4x + 25 = 6x - 13 \\ -4x \quad -4x \\ \hline 25 = 2x - 13 \\ +13 \quad +13 \\ \hline 38 = 2x \\ 38 = 2x \end{array}$$

$$\begin{array}{r} 38 = 2x \\ 2 \quad 2 \\ \hline 19 = x \end{array}$$

19

87) 15% of what number is 12? (Set up a proportion).

$$\frac{15}{100} = \frac{12}{x}$$

$$\frac{15x}{15} = \frac{1200}{15}$$

$$x = 80$$

80

88) 123 is what percent of 410?

$$123 = x \cdot \frac{410}{410}$$

$$\frac{123}{410} = x$$

$$.30487... = x$$

$$x \approx 30.5\%$$