

①  $0 > -7$

Math 04/014/ Alder's Step

~~05-28-18~~  
~~05-30-18~~  
DONE  
DONE

②  $|-14| =$

$(14) =$

$14 =$

③  $2x - y$ ,  $x = 4$ ,  $y = -7$

$2(4) - (-7) =$

$8 + 7 =$

$15 =$

④  $-3^2 =$

$-(3)(3) =$

$-(9) =$

$-9 =$

⑤

$\frac{6}{0} =$

undefined

①

6

$$(-14)^2 =$$

$$(-14)(-14) =$$

$$(196) =$$

$$196 =$$

$$\begin{array}{r} 14 \\ \times 14 \\ \hline 56 \\ 14 \phantom{0} \\ \hline 196 \end{array}$$

2.

7

$$(-4)^3 =$$

$$(-4)(-4)(-4) =$$

$$16(-4) =$$

$$-64 =$$

8.

$$(-10) + 6 \div 2 =$$

$$(-10) + 3 =$$

$$-10 + 3 =$$

$$-7 =$$

9.

$$3 + 7 \cdot 8 - 13 =$$

$$3 + 56 - 13 =$$

$$59 - 13 =$$

$$46 =$$

10.

$$\begin{aligned} 9(-4) - (-13) &= \\ -36 + 13 &= \\ -23 &= \end{aligned}$$

3

11.

$$\begin{aligned} |15 - 51| \div 3 &= \\ |-36| \div 3 &= \\ (36) \div 3 &= \\ 12 &= \end{aligned}$$

12.

$$\begin{aligned} (-15 - 19) \div 17 - 22 &= \\ (-34) \div 17 - 22 &= \\ -2 - 22 &= \\ -24 &= \end{aligned}$$

13.

$$\begin{aligned} 9(-14) \div [4(-9) - 5(-7)] &= \\ 9(-14) \div [-36 + 35] &= \\ 9(-14) \div [-1] &= \\ -126 \div [-1] &= \\ 126 &= \end{aligned}$$

(14)  $2x - 5y - 4z$ ;  $x = -2, y = 2, z = -1$

$$2(-2) - 5(2) - 4(-1) =$$

$$-4 - 10 + 4 =$$

$$-14 + 4 =$$

$$\underline{-10 =}$$

(4.)

(15)  $x^2 - y$ ,  $x = -5, y = 6$

$$(-5)^2 - (6) =$$

$$(-5)(-5) - (6) =$$

$$(25) - (6) =$$

$$25 - 6 =$$

$$\underline{19 =}$$

(16) Solve

$$d - 10 = -6$$

$$d - \cancel{10} + \cancel{10} = -6 + 10$$

$$\underline{d = 4}$$

17.  $-4z = 52$

$$\frac{-4z}{-4} = \frac{52}{-4}$$

$$z = -13$$

51

18.  $\frac{n}{4} = -5$

$$\frac{n}{4} = \frac{-5}{1}$$

$$\cancel{\frac{4}{1}} \left( \cancel{\frac{n}{4}} \right) = \frac{4}{1} \left( \frac{-5}{1} \right)$$

$$n = \frac{-20}{1}$$

$$n = -20$$

19.

$$-10x = 0$$

$$\frac{-10x}{-10} = \frac{0}{-10}$$

$$x = 0$$

20.

$$\frac{x}{-4} = -6$$

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

$$\frac{-4}{1} \left( \frac{1x}{-4} \right) = \frac{-4}{1} \left( \frac{-6}{1} \right)$$

$$x = \frac{24}{1}$$

$$x = 24$$

6.

21.

$$4(a-7) =$$

$$4a - 28 =$$

22.

$$-2(6x+5) =$$

$$-12x - 10 =$$

23.

$$16y - 23y =$$

$$-7y =$$

24.

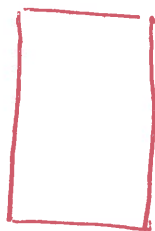
$$6y - 3(y-3) + 6 =$$

$$6y - 3y + 9 + 6 =$$

$$3y + 15 =$$

25. find area

8 inches



5y inches

$$A = L \cdot W$$

$$A = (5y)(8)$$

$$A = 40y \text{ square inches}$$

7

26.  $P = 2L + 2W$ ,  $L = 17$  feet,  $W = 11$  feet

$$P = 2(17) + 2(11)$$

$$P = 34 + 22$$

$$P = 56 \text{ feet}$$

27.  $7W - 18W = 55$

$$-11W = 55$$

$$\frac{-11W}{-11} = \frac{55}{-11}$$

$$W = -5$$

28.  $30 = t + 4t$

$$30 = 1t + 4t$$

$$30 = 5t$$

$$\frac{30}{5} = \frac{5t}{5}$$

$$6 = t$$

29.  $-2x - 2x = 39 - 3$

$$-4x = 36$$

$$\frac{-4x}{-4} = \frac{36}{-4}$$

$$x = -9$$

8.

30.

$$2(2x - 4) = 5x$$

$$4x - 8 = 5x$$

$$4x - 8 + 8 = 5x + 8$$

$$4x = 5x + 8$$

$$4x - 5x = 5x + 8 - 5x$$

$$-1x = 8$$

$$\frac{-1x}{-1} = \frac{8}{-1}$$

$$x = -8$$

31.

$$43y = 6(7y - 2)$$

$$43y = 42y - 12$$

$$43y - 42y = 42y - 12 - 42y$$

$$1y = -12$$

$$y = -12$$



32.  $3(y-3) = y-9$

$$3y - 9 = y - 9$$

$$3y - \cancel{9} + \cancel{9} = y - \cancel{9} + \cancel{9}$$

$$3y = y$$

$$3y = 1y$$

$$3y - 1y = 1y - 1y$$

$$2y = 0$$

$$\frac{2y}{2} = \frac{0}{2}$$

$$y = 0$$

33.  $-\frac{2}{5} \cdot \frac{3}{4} =$

$$\frac{-1(\cancel{2})}{(5)} \cdot \frac{(3)}{(\cancel{2})(2)} =$$

$$\frac{-3}{10} =$$

9

34

$$\frac{8}{9} \div \frac{5}{18} =$$

Primes 2, 3, 5, 7...

$$\frac{8}{9} \cdot \frac{18}{5} =$$

$$\begin{array}{r} 2 \overline{) 8} \\ 2 \overline{) 4} \\ 2 \overline{) 2} \\ 1 \end{array} \quad \begin{array}{r} 2 \overline{) 18} \\ 3 \overline{) 9} \\ 3 \overline{) 3} \\ 1 \end{array} \quad \begin{array}{r} 3 \overline{) 9} \\ 3 \overline{) 3} \\ 1 \end{array}$$

$$\frac{(2)(2)(2)}{(3)(3)} \cdot \frac{(2)(3)(3)}{(5)} =$$

$$\frac{(2)(2)(2)}{(3)(3)} \cdot \frac{(2)(\cancel{3})(\cancel{3})}{(5)} =$$

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

35

$$\frac{3}{20} + \frac{13}{20} =$$

$$\frac{(3) + (13)}{20} =$$

$$\frac{3 + 13}{20} =$$

$$\frac{16}{20} =$$

$$\frac{(2)(4)(2)(2)}{(2)(2)(5)} =$$

$$\frac{4}{5} =$$

Primes 2, 3, 5, 7, ...

$$\begin{array}{r} 2 \overline{) 16} \\ 2 \overline{) 8} \\ 2 \overline{) 4} \\ 2 \overline{) 2} \\ 1 \end{array} \quad \begin{array}{r} 2 \overline{) 20} \\ 2 \overline{) 10} \\ 5 \overline{) 5} \\ 1 \end{array}$$

10

36

$$\frac{1}{2} + \frac{1}{8}$$

$$LCD = 8$$

$$\frac{1}{2} \left( \frac{4}{4} \right) + \frac{1}{8} =$$

$$\frac{4}{8} + \frac{1}{8} =$$

$$\frac{(4) + (1)}{8} =$$

$$\frac{4+1}{8} =$$

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

37

$$\frac{1}{6} - \frac{4}{9} =$$

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

$$\frac{3}{18} - \frac{8}{18} =$$

$$\frac{(3) - (8)}{18} =$$

$$\frac{3-8}{18} =$$

$$\frac{-5}{18} =$$

Primer

$$2 \overline{) 8}$$

$$2 \overline{) 4}$$

$$2 \overline{) 2}$$

$$1$$

$$2 = 2$$

$$8 = (2 \cdot 2 \cdot 2)$$

$$LCD = 2 \cdot 2 \cdot 2$$

$$= 8$$

Primer 2, 3, 5, 7, ...

$$2 \overline{) 6}$$

$$3 \overline{) 3}$$

$$1$$

$$6 = (2 \cdot 3)$$

$$9 = (3 \cdot 3)$$

$$LCD = 2 \cdot 3 \cdot 3$$

$$= 18$$

$$3 \overline{) 9}$$

$$3 \overline{) 3}$$

$$1$$

38.

$$\frac{\frac{5}{8}}{\frac{5}{7}} =$$

(12)

$$\frac{5}{8} \cdot \frac{7}{5} =$$

$$\frac{\cancel{5}}{8} \cdot \frac{7}{\cancel{5}} =$$

$$\frac{7}{8} =$$

39.

$$-14 = \frac{2}{11}x$$

$$\frac{-14}{1} = \frac{2x}{11}$$

$$\frac{11}{2} \left( \frac{-14}{1} \right) = \frac{11}{2} \left( \frac{2x}{11} \right)$$

$$\frac{11}{2} \left( \frac{(-1)(\cancel{2})(7)}{1} \right) = x$$

$$\frac{-77}{1} = x$$

$$-77 = x$$

$$\textcircled{40} \quad \frac{m}{6} + 3 = \frac{m}{5} + 4$$

$$\frac{m}{6} + \frac{3}{1} = \frac{m}{5} + \frac{4}{1}$$

$$\frac{m}{6}(30) + \frac{3}{1}(30) = \frac{m}{5}(30) + \frac{4}{1}(30)$$

$$m(5) + 3(30) = m(6) + 4(30)$$

$$5m + 90 = 6m + 120$$

$$5m + 90 - 90 = 6m + 120 - 90$$

$$5m = 6m + 30$$

$$5m - 6m = 6m + 30 - 6m$$

$$-1m = 30$$

$$\frac{-1m}{-1} = \frac{30}{-1}$$

$$\textcircled{m = -30}$$

$$\textcircled{41} \quad -7.958 \times 1000 =$$

$$\textcircled{-7958. =}$$

move decimal right  
3 times

$$\textcircled{LCV = 30}$$

Primes 2, 3, 5, 7

$$\begin{array}{r} 2 \overline{) 6} \\ 3 \end{array}$$

$$\begin{array}{r} 5 \overline{) 5} \\ 1 \end{array}$$

$$\textcircled{13.}$$

$$6 = 2 \cdot 3$$

$$5 = 5$$

$$\textcircled{LCV = 2 \cdot 3 \cdot 5 = 30}$$

$$\textcircled{42} \quad \frac{33.695}{100} =$$

$$\textcircled{0.33695} = \text{Move decimal left 2 times}$$

14.

$$\textcircled{43} \quad 3.9x - 56 = 1.5x + 4$$

$$3.9x - \cancel{56} + \cancel{56} = 1.5x + 4 + 56$$

$$3.9x = 1.5x + 60$$

$$3.9x - 1.5x = \cancel{1.5x} + 60 - \cancel{1.5x}$$

$$2.4x = 60$$

$$\frac{2.4x}{2.4} = \frac{60}{2.4}$$

$$\textcircled{x = 25}$$

$$\textcircled{44} \quad \frac{6}{7} = \frac{x}{21}$$

$$6(21) = 7(x) \text{ cross mult}$$

$$126 = 7x$$

$$\frac{126}{7} = \frac{7x}{7}$$

$$\textcircled{18 = x}$$

45.  $\frac{16}{112} = \frac{24}{x}$

$16(x) = 112(24)$  cross mult

$16x = 2688$

$\frac{\cancel{16}x}{\cancel{16}} = \frac{2688}{16}$

$x = 168$

15

46. Write the percent as a decimal

$78.9\%$

$0.789 =$

47. Write the decimal as a percent

$0.29 =$

$29\% =$

48. Write  $\frac{4}{5}$  the fraction as a percent

$\frac{4}{5} = \frac{x}{100}$

$4(100) = 5(x)$

$400 = 5x$

$\frac{400}{5} = \frac{5x}{5}$

OR  $80 = x$

$80\% = x$

49. 30% written as a decimal

0.30

16.

30% written as a fraction (simplified)

$$\frac{30}{100} =$$

$$\frac{(2)(3)(5)}{(2)(2)(5)(5)} =$$

$$\frac{\cancel{(2)}(\cancel{3})(\cancel{5})}{(\cancel{2})(2)(\cancel{5})(5)} =$$

$$\frac{3}{10} =$$

Primes 2, 3, 5, 7

$$\begin{array}{r} 2 \overline{) 30} \\ 3 \overline{) 15} \\ 5 \overline{) 5} \\ 1 \end{array}$$

$$\begin{array}{r} 2 \overline{) 100} \\ 2 \overline{) 50} \\ 5 \overline{) 25} \\ 5 \overline{) 5} \\ 1 \end{array}$$

50.  $A = P - PD$      $P = \$960$ ,  $D = 20\% = .20$

$$A = \$960 - \$960(.20)$$

$$A = \$960 - 192 \leftarrow \text{Discount}$$

$$A = \$768$$

← Sale Price



51.

$$A = P + PRT$$

$$P = \$50,000 \quad R = 15.5\% = .155$$

$$T = 4$$

$$A = \$50,000 + \$50,000 (.155)(4)$$

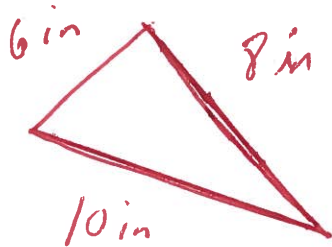
$$A = \$50,000 + \$31,000$$

$$A = \$50,000 + \$31,000 \leftarrow \text{Interest Paid}$$

$$A = \$81,000 \leftarrow \text{Total Amount Paid}$$

17.

52. find Perimeter



$$P = S_1 + S_2 + S_3$$

$$P = (6) + (8) + (10)$$

$$P = 6 + 8 + 10$$

$$P = 14 + 10$$

$$P = 24 \text{ inches}$$

53 find area

$$A = \pi r^2$$

$$A = \pi (1.5)^2$$

$$A = \pi (1.5)(1.5)$$

$$A = \pi (2.25)$$

$$A = 2.25 \pi \text{ Square inches}$$

OR

$$A = \pi r^2$$

$$\pi = 3.14$$

$$r = 1.5$$

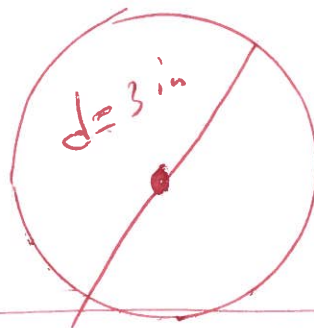
$$A = 3.14 (1.5)^2$$

$$A = 3.14 (1.5)(1.5)$$

$$A = 3.14 (2.25)$$

$$A = 7.065 \text{ Square inches}$$

Approx



1.5

$$r = \frac{1}{2} d = \frac{1}{2} (3) = \frac{3}{2} = 1.5$$

54  $2(x+9) + 6 = 24$

$$2x + 18 + 6 = 24$$

$$2x + 24 = 24$$

$$2x + 24 - 24 = 24 - 24$$

$$2x = 0$$

$$\frac{2x}{2} = \frac{0}{2}$$

$$x = 0$$

55  $3(3x-5) = 9x-15$

$$9x - 15 = 9x - 15$$

$$9x - 15 + 15 = 9x - 15 + 15$$

$$9x = 9x$$

$$9x - 9x = 9x - 9x$$

$$0 = 0$$

The solution is all real numbers

56  $3x + y = 9$

$$y =$$

$$3x + y - 3x = 9 - 3x$$

$$y = 9 - 3x$$

OR

$$y = -3x + 9$$

57  $W = X + Xyz$

$$y =$$

$$W - X = X + Xyz - X$$

$$W - X = Xyz$$

$$\frac{W - X}{Xz} = \frac{Xyz}{Xz}$$

$$\frac{W - X}{Xz} = y$$

19

58

$$3x < -15$$

$$\frac{3x}{3} < \frac{-15}{3}$$

$$x < -5$$



$$(-\infty, -5)$$

divide by a positive  
do not turn the alligator  
around

20

59

$$-7x \leq 21$$

$$\frac{-7x}{-7} \geq \frac{21}{-7}$$

$$x \geq -3$$



$$[-3, \infty)$$

divide by a Negative  
and turn the alligator  
around

60.

$$-6x + 4 \geq 4(3 - x)$$

$$-6x + 4 \geq 12 - 4x$$

$$-6x + \cancel{4} - \cancel{4} \geq 12 - 4x - 4$$

$$-6x \geq -4x + 8$$

$$-6x + 4x \geq -\cancel{4}x + 8 + \cancel{4}x$$

$$-2x \geq 8$$

$$\frac{-2x}{-2} \leq \frac{8}{-2}$$

divide by a negative  
and turn the elligator  
around

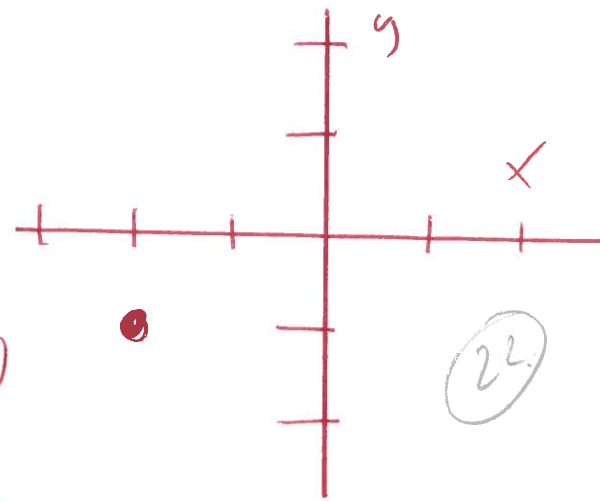
$$x \leq -4$$



$$(-\infty, -4]$$

61.  $(-2, -1)$  graph point

$(-2, -1)$



62.  $y = -4x + 6$  graph

$$y = -4(0) + 6$$

$$y = 0 + 6$$

$$y = 6$$

$$y = -4(1) + 6$$

$$y = -4 + 6$$

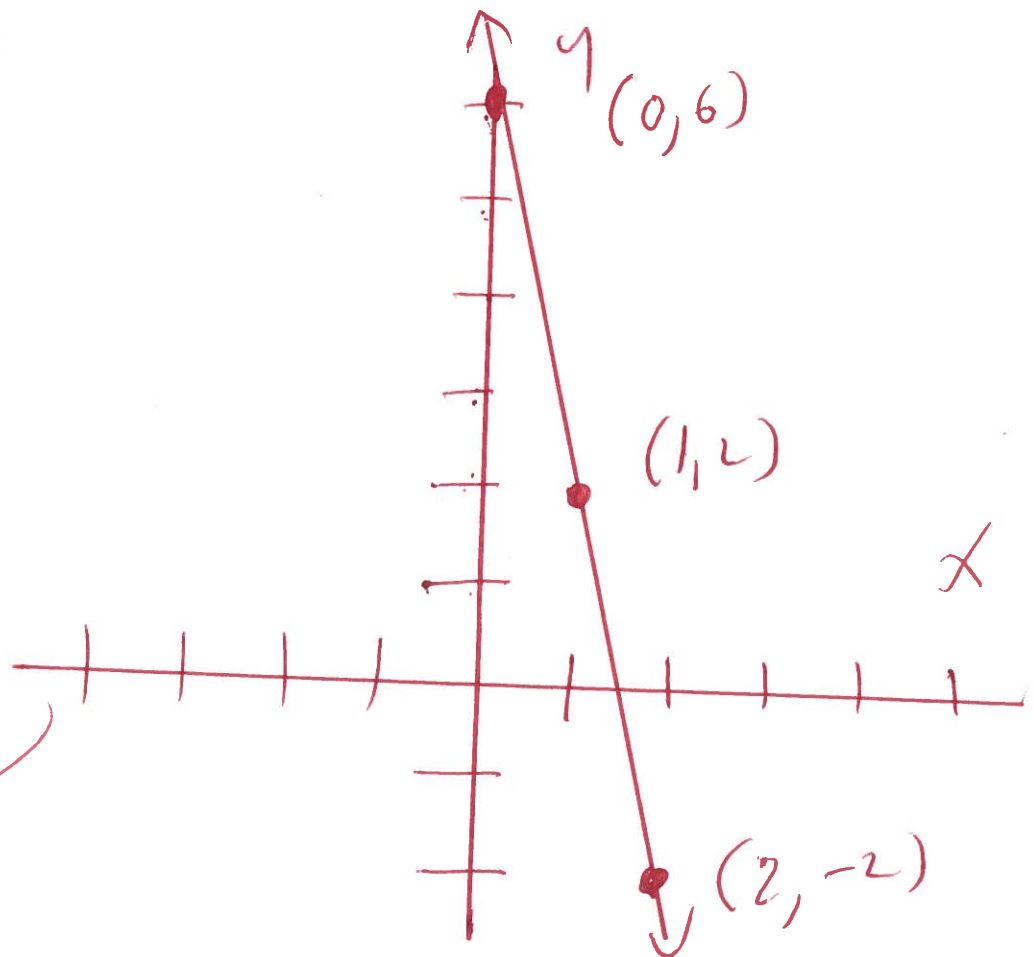
$$y = 2$$

$$y = -4(2) + 6$$

$$y = -8 + 6$$

$$y = -2$$

x	y
0	6
1	2
2	-2





63)  $y = -6$  graph

X	y
0	-6
1	-6

23.



64)  $y = -\frac{1}{2}x - 2$  graph

$$y = -\frac{1}{2}(0) - 2$$

$$y = 0 - 2$$

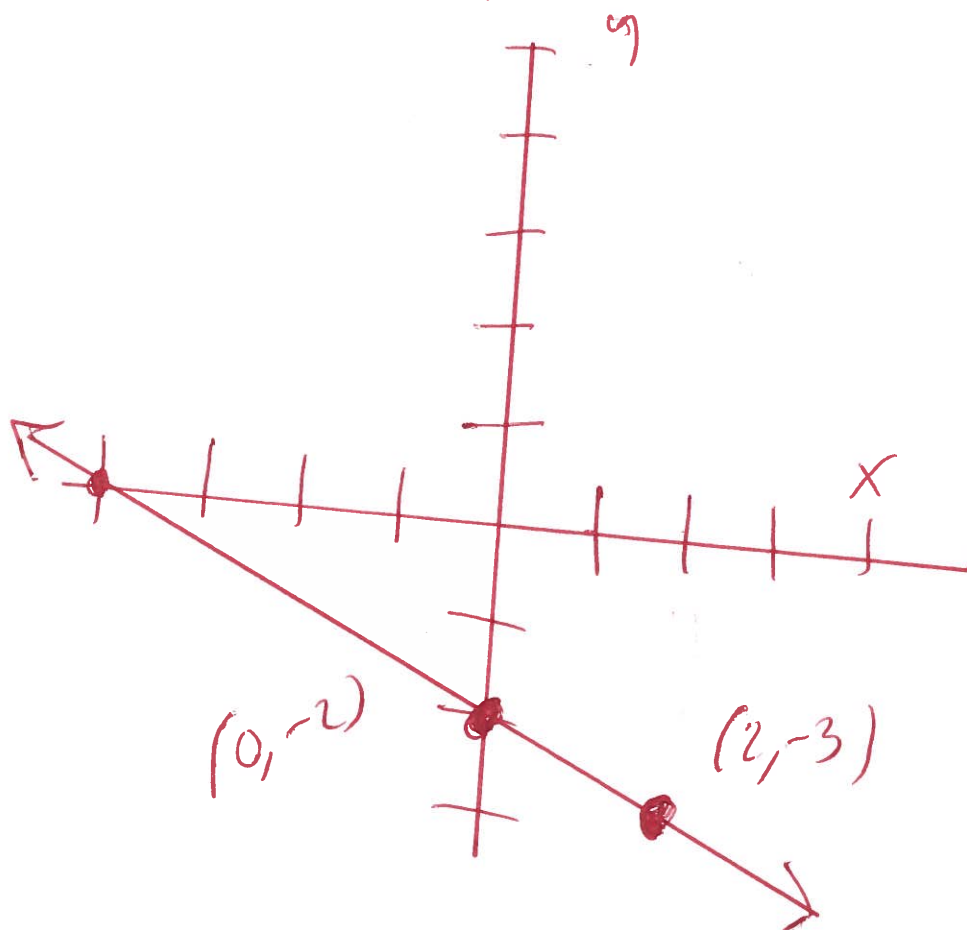
$$y = -2$$

X	y
0	-2
2	-3

$$y = -\frac{1}{2}(2) - 2$$

$$y = -1 - 2$$

$$y = -3$$



65.  $9x - 3y = 9$  graph find  $x$  and  $y$ -intercepts  
find  $x$ -intercept let  $y = 0$

$$9x - 3(0) = 9$$

$$9x - 0 = 9$$

$$9x = 9$$

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

$x$ -intercept

$$x = 1$$

$$(1, 0)$$

find  $y$ -intercept let  $x = 0$

$$9x - 3y = 9$$

$$9(0) - 3y = 9$$

$$0 - 3y = 9$$

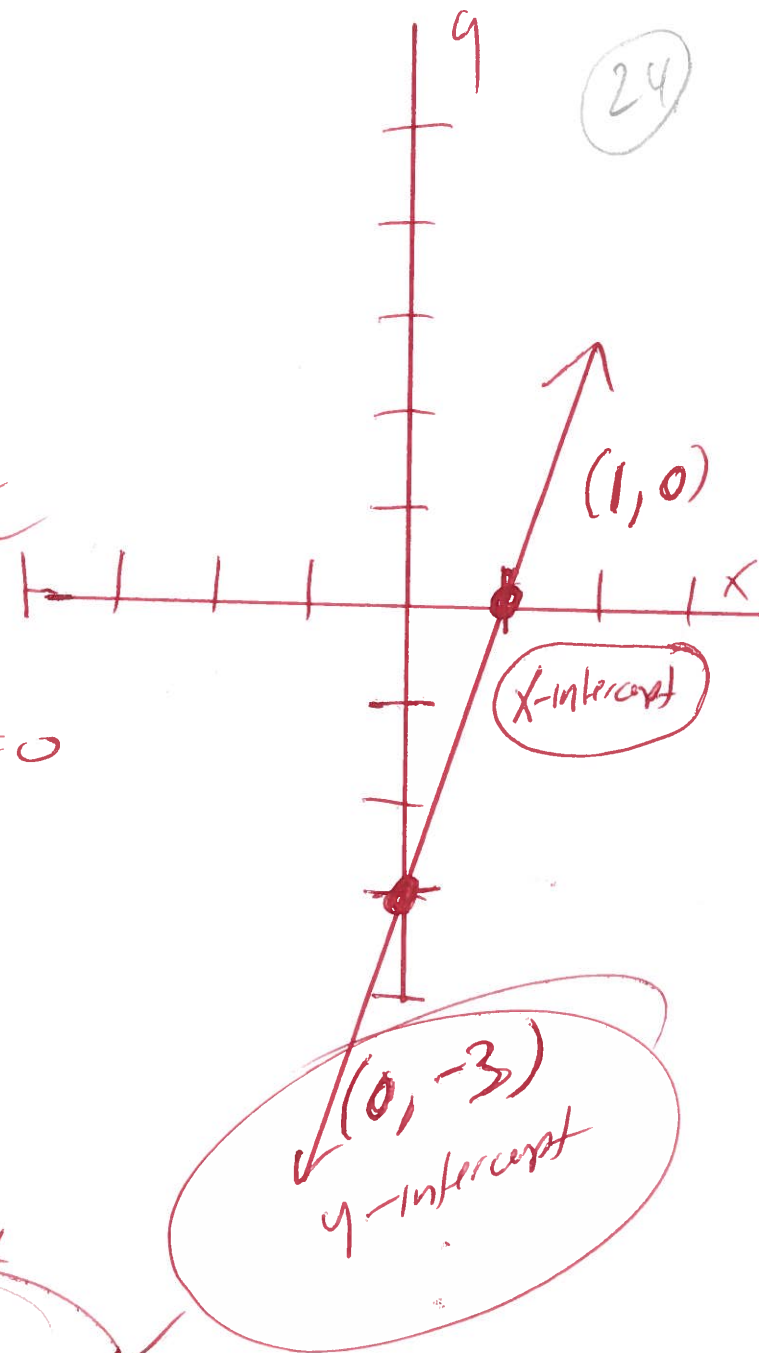
$$-3y = 9$$

$$\frac{-3y}{-3} = \frac{9}{-3}$$

$y$ -intercept

$$y = -3$$

$$(0, -3)$$





66.  $(-8, -1)$  and  $(-9, -9)$  find slope  
 $x_1 \quad y_1 \quad x_2 \quad y_2$

$$m = \frac{y_1 - y_2}{x_1 - x_2}$$

$$m = \frac{(-1) - (-9)}{(-8) - (-9)}$$

$$m = \frac{-1 + 9}{-8 + 9}$$

$$m = \frac{8}{1}$$

$$m = 8$$

25

67.  $(3, -5)$  and  $(7, -6)$  find slope  
 $x_1 \quad y_1 \quad x_2 \quad y_2$

$$m = \frac{y_1 - y_2}{x_1 - x_2}$$

$$m = \frac{(-5) - (-6)}{(3) - (7)}$$

$$m = \frac{-5 + 6}{3 - 7}$$

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

68. Find Slope

$$y = 5x - 2$$

$$\text{Slope} = m = 5$$

$$y\text{-intercept} = -2$$

Formula

$$y = mx + b$$

$$\text{Slope} = m$$

$$y\text{-intercept} = b$$

69.  $6x + y = 3$  Find Slope

$$\cancel{6}x + y - \cancel{6}x = 3 - 6x$$

$$y = 3 - 6x$$

$$y = -6x + 3$$

$$\text{Slope} = m = -6$$

$$y\text{-intercept} = 3$$

Formula

$$y = mx + b$$

$$\text{Slope} = m$$

$$y\text{-intercept} = b$$

70.  $6x - 5y = 30$  Find Slope

$$\cancel{6}x - 5y - \cancel{6}x = 30 - 6x$$

$$-5y = 30 - 6x$$

$$\frac{-5y}{-5} = \frac{30}{-5} - \frac{6x}{-5}$$

$$y = -6 + \frac{6}{5}x$$

$$y = \frac{6}{5}x - 6$$

$$\text{Slope} = m = \frac{6}{5}$$

$$y\text{-intercept} = -6$$

Formula

$$y = mx + b$$

$$\text{Slope} = m$$

$$y\text{-intercept} = b$$

71) find equation of the line  
slope =  $m = 5$  point =  $(-7, 12)$   
 $x_1$   $y_1$

27.

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

$$y - (12) = 5(x - (-7))$$

$$y - 12 = 5(x + 7)$$

$$y - 12 = 5x + 35$$

$$y - 12 + 12 = 5x + 35 + 12$$

$$y = 5x + 47$$

72)  $x^2 - 3x + 1$  eval  $x = -1$

$$(-1)^2 - 3(-1) + 1 =$$

$$(-1)(-1) - 3(-1) + 1 =$$

$$(1) - 3(-1) + 1 =$$

$$1 + 3 + 1 =$$

$$4 + 1 =$$

$$5 =$$

73

$$3x - y = 7$$

$$x + 4y = 11$$

Is  $(3, 2)$  a solution

x y

$$3(3) - (2) = 7$$

$$9 - 2 = 7$$

$$7 = 7$$

yes

$$(3) + 4(2) = 11$$

$$3 + 8 = 11$$

$$11 = 11$$

yes

28

$(3, 2)$  is a solution

YES

Is  $(4, 5)$  a solution

x y

$$3(4) - (5) = 7$$

$$12 - 5 = 7$$

$$7 = 7$$

yes

NO

$(4, 5)$  is NOT  
a  
solution

$$(4) + 4(5) = 11$$

$$4 + 20 = 11$$

$$24 \neq 11$$

NO

74

$$x + y = 8$$

$$x = 3y$$

---

$$(3y) + y = 8$$

$$3y + 1y = 8$$

$$4y = 8$$

$$\frac{4y}{4} = \frac{8}{4}$$

$$y = 2$$

Subst

$$x = 3y$$

$$x = 3(2)$$

$$x = 6$$

$$(x, y) = (6, 2)$$

29

$$\textcircled{75} \quad y = 2x + 1$$

$$4y - 6x = 10$$

$$4(2x + 1) - 6x = 10$$

$$8x + 4 - 6x = 10$$

$$2x + 4 = 10$$

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

$$2x = 6$$

$$\frac{2x}{2} = \frac{6}{2}$$

$$\textcircled{x = 3}$$

$$y = 2x + 1$$

$$y = 2(3) + 1$$

$$y = 6 + 1$$

$$\textcircled{y = 7}$$

$$\textcircled{(x, y) = (3, 7)}$$

30

76.

$$4x + y = 10$$

$$3x - y = 4$$

---

$$7x + 0 = 14$$

$$7x = 14$$

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

$$x = 2$$

$$4x + y = 10$$

$$4(2) + y = 10$$

$$8 + y = 10$$

$$\cancel{8} + y - \cancel{8} = 10 - 8$$

$$y = 2$$

$$(x, y) = (2, 2)$$

31



77

$$x + 3y = 6$$

$$2x + 4y = 6$$

$$\begin{pmatrix} x + 3y = 6 \\ 2x + 4y = 6 \end{pmatrix} \begin{pmatrix} -4 \\ 3 \end{pmatrix} \text{mult}$$

$$-4x - 12y = -24$$

$$6x + 12y = 18$$

$$2x + 0 = -6$$

$$2x = -6$$

$$\frac{2x}{2} = \frac{-6}{2}$$

$$x = -3$$

Subst

$$x + 3y = 6$$

$$(-3) + 3y = 6$$

$$-3 + 3y = 6$$

$$\cancel{-3} + 3y + \cancel{3} = 6 + 3$$

$$3y = 9$$

$$\frac{3y}{3} = \frac{9}{3}$$

$$y = 3$$

$$(x, y) = (-3, 3)$$

32



78.  $5x - 5y = 10$

$$-2x + 4y = 6$$

$$\begin{pmatrix} 5x - 5y = 10 \\ -2x + 4y = 6 \end{pmatrix} \begin{pmatrix} 4 \\ 5 \end{pmatrix}$$

$$20x - 20y = 40$$

$$-10x + 20y = 30$$

$$10x + 0 = 70$$

$$10x = 70$$

$$\frac{10x}{10} = \frac{70}{10}$$

$$x = 7$$

Subst

$$5x - 5y = 10$$

$$5(7) - 5y = 10$$

$$35 - 5y = 10$$

$$35 - 5y - 35 = 10 - 35$$

$$-5y = -25$$

$$\frac{-5y}{-5} = \frac{-25}{-5}$$

$$y = 5$$

$$(x, y) = (7, 5)$$

79.  $(-2y^3z^2)(8y^1z^7) =$   
 $-2y^3z^2 \cdot 8y^1z^7 =$   
 $-16y^{3+1}z^{2+7} =$   
 $-16y^4z^9 =$

34.

80.  $(2z^{11})(-5z^8)(z^2) =$   
 $(2z^{11})(-5z^8)(1z^2) =$   
 $-10z^{11+8+2} =$   
 $-10z^{21} =$

81.  $(z^2)^5 =$   
 $z^{(2)(5)} =$

$z^{10} =$

82.

$$(5c^5)^2 =$$

$$(5^1 c^5)^2 =$$

$$5^{1(2)} c^{5(2)} =$$

$$5^2 c^{10} =$$

$$(5)(5) c^{10} =$$

$$25 c^{10} =$$

351

83.

$$(-8a^5b^3c)^2 =$$

$$((-8)^1 a^5 b^3 c^1)^2 =$$

$$(-8)^{1(2)} a^{5(2)} b^{3(2)} c^{1(2)} =$$

$$(-8)^2 a^{10} b^6 c^2 =$$

$$(-8)(-8) a^{10} b^6 c^2 =$$

$$64 a^{10} b^6 c^2 =$$

84.  $\left( \frac{5x^2^3}{y^2} \right)^3$

$\left( \frac{5^1 x^1 z^3}{y^2} \right)^3$

$\frac{5^{1(3)} x^{1(3)} z^{3(3)}}{y^{2(3)}}$

$\frac{5^3 x^3 z^9}{y^6}$

$\frac{(5)(5)(5) x^3 z^9}{y^6}$

$\frac{125 x^3 z^9}{y^6}$

36

85.

$$b^3 b^4 b^5 =$$

$$b^{3+4+5} =$$

$$b^{12} =$$

37

86

$$\frac{2x^3 y^2 z}{x y z} =$$

$$\frac{2x^3 y^2 z^1}{x^1 y^1 z^1} =$$

$$\frac{2x^{3-1} y^{2-1}}{1}$$

$$2x^2 y^1 =$$

$$2x^2 y =$$

87.  $P(x) = x^2 + x + 3$      $P(6)$

$$P(6) = (6)^2 + (6) + 3$$

$$P(6) = (6)(6) + (6) + 3$$

$$P(6) = 36 + 6 + 3$$

$$P(6) = 42 + 3$$

$$P(6) = 45$$

38

88.  $Q(x) = 7x^2 - 1$     find  $Q(-10)$

$$Q(-10) = 7(-10)^2 - 1$$

$$Q(-10) = 7(-10)(-10) - 1$$

$$Q(-10) = 7(100) - 1$$

$$Q(-10) = 700 - 1$$

$$Q(-10) = 699$$

89.  $3a^2 - 2ab + 3b^2 - 9a^2 - 4ab + 6b^2 =$   
 $-6a^2 - 6ab + 9b^2$

90

$$(2y^2 + 2y - 8) - (-7y + 7)$$

$$2y^2 + 2y - 8 + 7y - 7 =$$

$$2y^2 + 9y - 15 =$$

39

91

$$(-5y^2 - 5y) + (7y^2 + y - 8) =$$

$$-5y^2 - 5y + 7y^2 + y - 8 =$$

$$2y^2 - 4y - 8 =$$

92

$$(x+6)(x^3 - 3x + 2) =$$

$$x^4 - 3x^2 + 2x + 6x^3 - 18x + 12 =$$

$$x^4 + 6x^3 - 3x^2 - 16x + 12 =$$

93

$$-3x(x^2 + 6x - 2) =$$

$$-3x^3 - 18x^2 + 6x =$$

(94)

$$(3x+6)(9x^2+4x-3)$$

$$27x^3 + 12x^2 - 9x + 54x^2 + 36x - 18 =$$

$$27x^3 + 66x^2 + 27x - 18 =$$

(40)

(95) find area

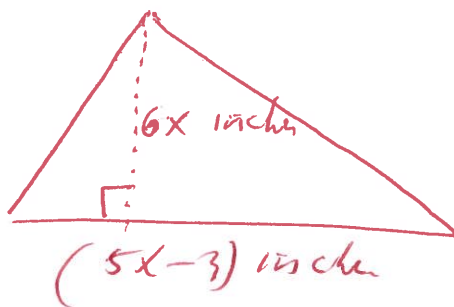
$$A = \frac{1}{2}BH$$

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

$$A = \frac{1}{2}(30x^2 - 18x)$$

$$A = \frac{1}{2}(30x^2) - \frac{1}{2}(18x)$$

$$A = (15x^2 - 9x) \text{ square inch}$$



(96)

$$6(y-6)(4y-1) =$$

$$6(4y^2 - 1y - 24y + 6) =$$

$$6(4y^2 - 25y + 6) =$$

$$24y^2 - 150y + 36 =$$



97

$$(a-7)(a+7)$$

$$a^2 + 7a - 7a - 49$$

$$a^2 - 49$$

41

98

$$(2a-5b)^2 =$$

$$(2a-5b)(2a-5b) =$$

$$4a^2 - 10ab - 10ab + 25b^2 =$$

$$4a^2 - 20ab + 25b^2 =$$

99

$$2^{-3} =$$

$$\frac{1}{2^3} \text{ rewrite}$$

$$\frac{1}{(2)(2)(2)} =$$

$$\frac{1}{8} =$$

100

$$\left(\frac{1}{4}\right)^{-3} =$$

$$\left(\frac{1^1}{4^1}\right)^{-3} =$$

$$\frac{1^{1(-3)}}{4^{1(-3)}} =$$

$$\frac{1^{-3}}{4^{-3}} =$$

$$\frac{4^3}{1^3} = \text{rewrite}$$

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

$$\frac{64}{1} =$$

$$64 =$$

46

101.  $\frac{V^{-5}}{V^{-7}} =$

$\frac{V^7}{V^5} = \text{rewrite}$

$V^{7-5} =$

$V^2 =$

43

102.  $(-3x^4y^{-4})(4x^{-1}y^2) =$

$-12x^{4-1}y^{-4+2} =$

$-12x^3y^{-2} =$

$\frac{-12x^3}{y^2} =$

Rewrite

103.  $(a^{-6}b^4)^{-4} =$

$a^{-6(-4)}b^{4(-4)} =$

$a^{24}b^{-16} =$

$\frac{a^{24}}{b^{16}} = \text{rewrite}$

104 Write the number in Scientific Notation

$$52000 =$$

$$5.2 \times 10^4 =$$

44

105 Write the number in Scientific Notation

$$0.00000185 =$$

$$1.85 \times 10^{-6} =$$

106 Find GCF Prime 2, 3, 5, 7, ...

$$8, 28$$

$$GCF = 2 \cdot 2$$

$$= 4$$

$$\begin{array}{r} 2 \overline{) 8} \\ 2 \overline{) 4} \\ 2 \overline{) 2} \\ 1 \end{array}$$

$$\begin{array}{r} 2 \overline{) 28} \\ 2 \overline{) 14} \\ 7 \overline{) 7} \\ 1 \end{array}$$

$$\begin{array}{l} 8 = 2 \cdot 2 \cdot 2 \\ 28 = 2 \cdot 2 \cdot 7 \end{array}$$

107 factor GCF

$$9x + 27 =$$

$$9(x + 3) =$$

(108) factor

$$8xy - 18x^2 =$$

$$8x^1y^1 - 18x^2 =$$

$$2x^1(4y^1 - 9x^1) =$$

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

Prime

$$2 \overline{) 8}$$

$$2 \overline{) 4}$$

$$2 \overline{) 2}$$

$$1$$

$$2 \overline{) 18}$$

$$3 \overline{) 9}$$

$$3 \overline{) 3}$$

$$1$$

$$8 = (2)(2)(2)$$

$$18 = (2)(3)(3)$$

(45)

(109)

factor

$$-18x^6y^7 - 12x^9y^6 =$$

$$6x^6y^6(-3y - 2x^3) =$$

Prime

$$2 \overline{) 18}$$

$$3 \overline{) 9}$$

$$3 \overline{) 3}$$

$$1$$

$$2 \overline{) 12}$$

$$2 \overline{) 6}$$

$$3 \overline{) 3}$$

$$1$$

$$18 = (2)(3)(3)$$

$$12 = (2)(2)(3)$$

$$\text{GCF} = 2 \cdot 3 = 6$$

(110)

factor

$$x^2 - 11x + 28 =$$

$$(x - 4)(x - 7) =$$

$$28: 1$$

$$14: 2$$

$$7: 4$$

possible

111.

Factor

$$x^2 - x - 56$$

$$(x+7)(x-8) =$$

56, 1

28, 2

14, 4

7, 8

Possible

4

112.

Factor

$$196x^2 - 121y^2 =$$

$$(14x)^2 - (11y)^2 =$$

$$(14x+11y)(14x-11y) =$$

Formula

$$a^2 - b^2 =$$

$$(a+b)(a-b) =$$

113.

Solve

$$(x-5)(x+5) = 0$$

$$\text{but } x-5=0 \quad \text{OR} \quad x+5=0$$

$$x-5+5=0+5 \quad \text{OR} \quad x+5-5=0-5$$

$$x=5$$

$$\text{OR} \quad x=-5$$

Solve

114.

$$x(x+9) = 0$$

$$\text{but } x=0 \quad \text{OR} \quad x+9=0$$

$$\text{OR} \quad x+9-x=0-9$$

$$x=-9$$

115

Lösung

$$8x(x-6)=0$$

mit  $8x=0$  oder  $x-6=0$

$$\frac{8x}{8} = \frac{0}{8} \quad \text{OR} \quad x-6+6=0+6$$

$x=0$  oder  $x=6$

41

116

$$(7x+8)(2x-7)=0$$

mit  $7x+8=0$  oder  $2x-7=0$

$$\cancel{7x} + \cancel{8-8} = 0-8 \quad \text{OR} \quad \cancel{2x} - \cancel{7+7} = 0+7$$

$$7x = -8 \quad \text{OR} \quad 2x = 7$$

$$\frac{7x}{7} = \frac{-8}{7} \quad \text{OR} \quad \frac{2x}{2} = \frac{7}{2}$$

$x = -\frac{8}{7}$

oder  $x = \frac{7}{2}$

Lösung

117

$$x^2 - 13x + 30 = 0$$

$$(x-3)(x-10) = 0$$

mit  $x-3=0$  oder  $x-10=0$

$$x-3+3=0+3 \quad \text{OR} \quad x-10+10=0+10$$

$x=3$  oder  $x=10$

30:1  
15:2  
10:3  
6:5

Possible



118

Solve

$$x^2 + 6x - 16 = 0$$

$$(x - 2)(x + 8) = 0$$

$$\text{Let } x - 2 = 0 \quad \text{OR} \quad x + 8 = 0$$

$$x - 2 + 2 = 0 + 2 \quad \text{OR} \quad x + 8 - 8 = 0 - 8$$

$$x = 2$$

$$\text{OR } x = -8$$

16.1

8.2

4.4

Possible

48

119

Solve

$$x^2 - 4x = 0$$

$$x(x - 4) = 0$$

$$\text{Let } x = 0 \quad \text{OR} \quad x - 4 = 0$$

$$x - 4 + 4 = 0 + 4$$

$$x = 4$$

120

$$x^3 - 12x^2 + 20x = 0$$

$$x(x^2 - 12x + 20) = 0$$

$$x(x - 2)(x - 10) = 0$$

$$\text{Let } x = 0 \quad \text{OR} \quad x - 2 = 0$$

$$\text{OR } x - 10 = 0$$

$$x - 2 + 2 = 0 + 2$$

$$\text{OR } x - 10 + 10 = 0 + 10$$

$$x = 2$$

$$\text{OR } x = 10$$

20.1

10.2

4.5

Possible

(121)

$$\frac{x+1}{x^2-8x-9} =$$

$$\frac{(x+1)}{(x+1)(x-9)}$$

$$\frac{1(x+1)}{(x+1)(x-9)} =$$

$$\frac{1}{x-9} =$$

$$\frac{1}{x-9} =$$

9.1  
3.3

possible

49

(122)

$$\frac{x^2-16}{x^2-3x-4} \cdot \frac{x+1}{x} =$$

$$\frac{(x)^2 - (4)^2}{x^2-3x-4} \cdot \frac{x+1}{x} =$$

$$\frac{(x+4)(x-4)}{(x+1)(x-4)} \cdot \frac{(x+1)}{(x)} =$$

$$\frac{(x+4)(x-4)}{(x+1)(x-4)} \cdot \frac{(x+1)}{(x)} =$$

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

123

$$\frac{z^2 + 8z + 12}{z^2 + 7z - 30} \cdot \frac{z^2 + 6z - 27}{z^2 + 4z + 4} =$$

$$\frac{(z+2)(z+6)}{(z-3)(z+10)} \cdot \frac{(z-3)(z+9)}{(z+2)(z+2)} =$$

$$\frac{\cancel{(z+2)}(z+6)}{\cancel{(z-3)}(z+10)} \cdot \frac{\cancel{(z-3)}(z+9)}{\cancel{(z+2)}(z+2)} =$$

$$\frac{(z+6)(z+9)}{(z+10)(z+2)} =$$

Possibly

30.1

15.2

10.3

6.5

27.1

9.3

4.1

2.2

50.

124

$$\frac{7m}{6n} + \frac{5m}{6n} =$$

$$\frac{(7m) + (5m)}{6n} =$$

$$\frac{7m + 5m}{6n} =$$

$$\frac{12m}{6n} =$$

$$\frac{\cancel{(2)}(\cancel{2})(3)m}{\cancel{(2)}(\cancel{3})n} =$$

$$\frac{2m}{n} =$$

125.

$$\frac{z-8}{3} = \frac{z}{7}$$

56

$$7(z-8) = 3(z) \quad \text{cross mult}$$

$$7z - 56 = 3z$$

$$7z - 56 + 56 = 3z + 56$$

$$7z = 3z + 56$$

$$7z - 3z = \cancel{3z} + 56 - \cancel{3z}$$

$$4z = 56$$

$$\frac{4z}{4} = \frac{56}{4}$$

$$z = 14$$

126

$$|2x-1|=3$$

Formula

$$|x|=a$$

$$x=-a \text{ or } x=a$$

Let

$$2x-1 = -3 \quad \text{OR} \quad 2x-1 = 3$$

$$2x - \cancel{1} + \cancel{1} = -3 + 1 \quad \text{OR} \quad 2x - \cancel{1} + \cancel{1} = 3 + 1$$

$$2x = -2 \quad \text{OR} \quad 2x = 4$$

$$\frac{2x}{2} = \frac{-2}{2} \quad \text{OR} \quad \frac{2x}{2} = \frac{4}{2}$$

$$x = -1$$

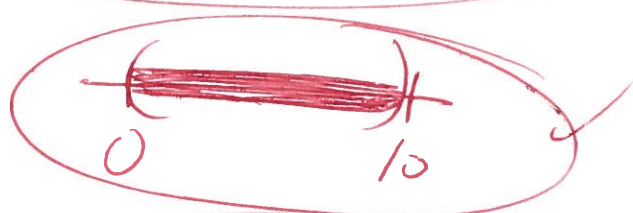
$$\text{OR } x = 2$$

(127)  $|x-5| < 5$

$$-5 < x-5 < 5$$

$$-5 + 5 < x-5 + 5 < 5 + 5$$

$$0 < x < 10 \quad \checkmark$$



$$(0, 10) \quad \checkmark$$

Formula  
 $|x| < a$   
 $-a < x < a$

(52)

(128)  $\sqrt[6]{6x^6} =$

$$4x^{\frac{6}{2}} = \text{divide powers}$$

$$4x^3 =$$

(129)  $\sqrt[3]{512} =$  Primes 2, 3, 5, 7

$$\sqrt[3]{2^9} = \leftarrow$$

$$2^{\frac{9}{3}} = \text{divide power}$$

$$2^3 =$$

$$(2)(2)(2) =$$

$$8 =$$

$$\begin{array}{r} 2 \overline{) 512} \\ \underline{256} \phantom{0} \\ 2 \overline{) 128} \\ \underline{128} \phantom{0} \\ 2 \overline{) 64} \\ \underline{64} \phantom{0} \\ 2 \overline{) 32} \\ \underline{32} \phantom{0} \\ 2 \overline{) 16} \\ \underline{16} \phantom{0} \\ 2 \overline{) 8} \\ \underline{8} \phantom{0} \\ 2 \overline{) 4} \\ \underline{4} \phantom{0} \\ 2 \overline{) 2} \\ \underline{2} \\ 1 \end{array}$$

130  $\sqrt{\frac{9}{64}} =$

$\frac{\sqrt{9}}{\sqrt{64}} =$  rewrite

53

$\frac{3}{8} =$

131  $\left(\frac{16}{625}\right)^{\frac{1}{4}}$

prime 2, 3, 5, 7, ...

$\left(\frac{2^4}{5^4}\right)^{\frac{1}{4}} =$  rewrite

$$\begin{array}{r} 2 \overline{) 16} \\ 2 \overline{) 8} \\ 2 \overline{) 4} \\ 2 \overline{) 2} \\ 1 \end{array}$$

$$\begin{array}{r} 5 \overline{) 625} \\ 5 \overline{) 125} \\ 5 \overline{) 25} \\ 5 \overline{) 5} \\ 1 \end{array}$$

$\frac{2^{\frac{4}{4}}}{5^{\frac{4}{4}}} =$

$\frac{2^1}{5^1} =$

$\frac{2}{5} =$

$\frac{2}{5} =$



132

$$16^{\frac{5}{4}} =$$

Primes 2, 3, 5, 7

$$(2^4)^{\frac{5}{4}} =$$

$$2 \overline{) 16}$$

$$2 \overline{) 8}$$

$$2 \overline{) 4}$$

$$2 \overline{) 2}$$

$$1$$

$$2^{\frac{4}{1}(\frac{5}{4})} =$$

$$2^{\frac{20}{4}} =$$

$$2^5 =$$

$$2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 =$$

$$32 =$$

54

133

$$\sqrt{54}$$

Primes 2, 3, 5, 7, ...

$$\sqrt{9 \cdot 6} =$$

$$2 \overline{) 54}$$

$$3 \overline{) 27}$$

$$\sqrt{9} \sqrt{6} =$$

$$3 \overline{) 9}$$

$$3 \overline{) 3}$$

$$1$$

$$3 \sqrt{6} =$$



134

$$\sqrt{x-14} = 5$$

$$(\sqrt{x-14})^2 = (5)^2$$

$$x-14 = 25$$

$$x-14+14 = 25+14$$

$$x = 39$$

55

135.

$$\sqrt{-49} =$$

$$7i =$$

formulas

$$\sqrt{-1} = i$$

$$\sqrt{-4} = 2i$$

$$\sqrt{-9} = 3i$$

$$\sqrt{-16} = 4i$$

⋮

136

$$\sqrt{-54} = \text{Primes } 2, 3, 5, 7, \dots$$

$$\sqrt{-9 \cdot 6} =$$

$$\sqrt{-9} \sqrt{6} =$$

$$3i\sqrt{6} =$$

$$\begin{array}{r} 2 \overline{) 54} \\ 3 \overline{) 27} \end{array}$$

$$\begin{array}{r} 3 \overline{) 9} \\ 3 \overline{) 3} \end{array}$$

1

137.  $(x+2)^2 = 25$

$$\sqrt{(x+2)^2} = \pm\sqrt{25}$$

$$x+2 = \pm 5$$

Let  $x+2 = -5$  OR  $x+2 = 5$

$$x+x-x = -5-2 \text{ OR } x+x-x = 5-2$$

$x = -7$  OR  $x = 3$

56.

138.  $m^2 + 3m + 2 = 0$

$$(m+1)(m+2) = 0$$

or  $m+1=0$  OR  $m+2=0$

$$m+1-1=0-1 \text{ OR } m+2-2=0-2$$

$m = -1$  OR  $m = -2$

Possible  
2-1

OR use Quadratic formula

$$1m^2 + 3m + 2 = 0$$

$$a=1, b=3, c=2$$

$$m = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$m = \frac{-(3) \pm \sqrt{(3)^2 - 4(1)(2)}}{2(1)}$$

$$m = \frac{-3 \pm \sqrt{9-8}}{2}$$

$$m = \frac{-3 \pm \sqrt{1}}{2}$$

$$m = \frac{-3 \pm 1}{2}$$

$$m = \frac{-3+1}{2} \text{ OR } m = \frac{-3-1}{2}$$

$$m = \frac{-2}{2} \text{ OR } m = \frac{-4}{2}$$

$m = -1$  OR  $m = -2$

$$(139) \quad -3y = 2y^2 - 2$$

$$-3y + 3y = 2y^2 - 2 + 3y$$

$$0 = 2y^2 + 3y - 2$$

$$0 = (2y - 1)(y + 2)$$

$$\text{Let } 2y - 1 = 0 \quad \text{OR} \quad y + 2 = 0$$

$$2y - 1 + 1 = 0 + 1 \quad \text{OR} \quad y + 2 - 2 = 0 - 2$$

$$2y = 1$$

$$\frac{2y}{2} = \frac{1}{2}$$

$$\text{OR} \quad y = -2$$

$$y = \frac{1}{2}$$

Use Quadratic formula

$$2y^2 + 3y - 2 = 0$$

$$a = 2, \quad b = 3, \quad c = -2$$

$$y = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$y = \frac{-(3) \pm \sqrt{(3)^2 - 4(2)(-2)}}{2(2)}$$

$$y = \frac{-3 \pm \sqrt{9 + 16}}{4}$$

$$y = \frac{-3 \pm \sqrt{25}}{4}$$

$$y = \frac{-3 \pm 5}{4}$$

$$y = \frac{-3 + 5}{4} \quad \text{OR} \quad y = \frac{-3 - 5}{4}$$

$$y = \frac{2}{4} \quad \text{OR} \quad y = \frac{-8}{4}$$

$$y = \frac{1}{2} \quad \text{OR} \quad y = -2$$

(2.1) (1.2) possible

(51)

$$y = \frac{1}{2} \quad \text{OR} \quad y = -2$$

140  $x^2 - 4x + 4 = 0$

$$1x^2 - 4x + 4 = 0$$

$$a=1, b=-4, c=4$$

Use Quadratic  
formula

58

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(-4) \pm \sqrt{(-4)^2 - 4(1)(4)}}{2(1)}$$

$$x = \frac{4 \pm \sqrt{16 - 16}}{2}$$

$$x = \frac{4 \pm \sqrt{0}}{2}$$

$$x = \frac{4 \pm 0}{2}$$

$$x = \frac{4+0}{2} \text{ or } x = \frac{4-0}{2}$$

$$x = \frac{4}{2} \text{ or } x = \frac{4}{2}$$

$$x = 2$$

or

$$x = 2$$

or

$$x^2 - 4x + 4 = 0$$

by factoring

$$(x-2)(x-2) = 0$$

$$\text{or } x-2=0 \text{ or } x-2=0$$

$$x-2+2=0+2 \text{ or } x-2+2=0+2$$

$$x=2$$

or

$$x=2$$

4,1  
2,2

Possibly

141.  $x^2 + 6x + 13 = 0$

$$1x^2 + 6x + 13 = 0$$

$$a=1, b=6, c=13$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(6) \pm \sqrt{(6)^2 - 4(1)(13)}}{2(1)}$$

$$x = \frac{-6 \pm \sqrt{36 - 52}}{2}$$

$$x = \frac{-6 \pm \sqrt{-16}}{2}$$

$$x = \frac{-6 \pm 4i}{2}$$

$$x = -3 \pm 2i$$

$$x = -3 - 2i \text{ or}$$

$$x = -3 + 2i$$

Use

Quadratic  
formula

~~Possible  
1, 13~~