

- 1) $-6 - (-10)$
- 2) $-6x + 2x$
- 3) $| -3 - 5 | - 5^2$
- 4) $A = \pi r^2, \pi = 3.14, r = 5$
- 5) $x - 3y, x = -4, y = 4$
- 6) $x^2 + 5x - 1, x = -4$
- 7) $\frac{13}{7}$ write as mixed number
- 8) 28% fraction simplified
- 9) $\frac{2}{3}(15)$
- 10) 0.008754 in scientific notation
- 11) $3 + 2.5^2$
- 12) $2(x+3) - 6x$
- 13) $2x - 3(2y - 5x) - 4y$
- 14) $-2(5-x)$
- 15) $-3(-2x+y-5)$
- 16) $\frac{11}{12} \div \frac{1}{4}$
- 17) $-2 + 2 \cdot 4 - 1$
- 18) $\frac{1}{-2} + \frac{3}{8}$
- 19) $\frac{1}{8} - \frac{1}{4} \div \frac{6}{7}$
- 20) $(6x^2 - 3x + 1) - (-2x^2 - x + 5)$
- 21) $4 \div [6(11-3) - 46]$
- 22) $2 + 8 \div 4 - 3 \cdot 2$
- 23) $2x + 11 = 31$ $x =$
- 24) $\frac{2}{5} = \frac{x}{20}$ $x =$
- 25) $\frac{2}{3}x = 12$ $x =$
- 26) $\frac{x}{3} = 11$ $x =$

- 27) $-7x + 5 = 4(5+x)$
- 28) $-2(2x-1) + 3x = 4$
- 29) $(x-3)(x+3)$
- 30) $(2x-3y)^2$
- 31) $x^3 \cdot x^2 \cdot x$
- 32) $2x^3 \cdot 3y^2 \cdot 4xy^5$
- 33) $(-2xy^5)^2$
- 34) $\frac{28x^{10}y^9}{20x^4y^{11}}$
- 35) $\sqrt{3x+1} = \sqrt{x+11}$
- 36) $(5x)^2$
- 37) $(2xy^5)(-3x^3y^3)$
- 38) $(x^3)^{-3}$
- 39) $d = 2m + 3n$ $n =$
- 40) $(5x+6)(9-x) = 0$ $x =$
- 41) $\sqrt{25x^8}$
- 42) $(125)^{\frac{2}{3}}$
- 43) 2^{-4}
- 44) $y = -6$ graph
- 45) $-2x \leq 8$ graph
- 46) $x^2 + 7x + 12 = 0$ $x =$
- 47) $\sqrt{x+1} = 3$ $x =$
- 48) $(x+1)^2 = 9$ $x =$
- 49) $x =$

$x =$

$x =$

1

$x =$

$x =$

$x =$

$x =$

$x =$

$$\begin{aligned} 1 \quad & -6 - (-10) = \\ & -6 + 10 = \\ & 4 = \end{aligned}$$

2

$$\begin{aligned} 2 \quad & -6x + 2x = \\ & -4x = \end{aligned}$$

$$\begin{aligned} 3 \quad & (-3-5) - 5^2 = \\ & (-8) - (5)(5) = \\ & (8) - (25) = \\ & 8 - 25 = \\ & -17 = \end{aligned}$$

$$4 \quad A = \pi r^2, \quad \pi = 3.14, \quad r = 5$$

$$A = 3.14 (5)^2$$

$$A = 3.14 (5)(5)$$

$$A = 3.14 (25)$$

$$A = 78.50$$

5. $x - 3y$, $x = -4$, $y = 4$

3

$$(-4) - 3(4) =$$

$$-4 - 12 =$$

$$\underline{-16 =}$$

6. $x^2 + 5x - 1$, $x = -4$

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

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

$$(16) + 5(-4) - 1 =$$

$$16 - 20 - 1 =$$

$$-4 - 1 =$$

$$\underline{-5 =}$$

7. $\frac{13}{7}$ write as a mixed number

$$\begin{array}{r} 1 \frac{6}{7} \\ 7 \overline{) 13} \\ \underline{-(7)} \\ 6 \text{ rem} \end{array}$$

Long division

$$\underline{1 \frac{6}{7} =}$$

10. 0.008754 = Write in Scientific Notation

$$8.754 \times 10^{-3} =$$

51

11. $3 + 2 * 5^2 =$

PEMDAS

$$3 + 2(5)(5) =$$

$$3 + 2(25) =$$

$$3 + 50 =$$

$$53 =$$

12. $2(x+3) - 6x =$

PEMDAS

$$2x + 6 - 6x =$$

$$-4x + 6 =$$

13. $2x - 3(2y - 5x) - 4y =$

PEMDAS

$$2x - 6y + 15x - 4y =$$

$$17x - 10y =$$

14. $-2(5 - x) =$

$$-10 + 2x =$$

$$15. -3(-2x + y - 5) =$$

$$6x - 3y + 15 =$$

6

$$16. \frac{11}{12} \div \frac{1}{4} =$$

$$\frac{11}{12} \cdot \frac{4}{1} = \text{rewrite}$$

Primes 2, 3, 5, 7

$$\begin{array}{l} 2 \overline{)12} \quad 2 \overline{)4} \\ 2 \overline{)6} \quad 2 \overline{)2} \\ 3 \overline{)3} \quad 1 \\ 1 \end{array}$$

$$12 = 2 \cdot 2 \cdot 3$$

$$4 = 2 \cdot 2$$

$$\frac{11}{\cancel{2}(\cancel{2})(3)} \cdot \frac{\cancel{2}(\cancel{2})}{1} =$$

$$\frac{11}{3} =$$

$$17. -2 + 2 \cdot 4 - 1 =$$

$$-2 + 8 - 1 =$$

$$6 - 1 =$$

$$5 =$$

$$18. -\frac{1}{2} + \frac{3}{8} =$$

$$-\frac{1}{2} \left(\frac{4}{4}\right) + \frac{3}{8} =$$

$$-\frac{4}{8} + \frac{3}{8} =$$

$$\frac{-4+3}{8} =$$

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

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

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

$$2 \cdot 2 \cdot 2$$

$$8 = 2 \cdot 2 \cdot 2$$

$$\text{LCD} = 2 \cdot 2 \cdot 2 = 8$$

(19) $\frac{1}{8} - \frac{1}{4} = \frac{6}{7} =$ Primes 2, 3, 5, 7...

$\frac{1}{8} - \frac{1}{4} = \frac{7}{6} =$ rework PEMDAS

$\frac{1}{8} - \frac{7}{24} =$

$\frac{1}{8} \left(\frac{3}{3}\right) - \frac{7}{24} =$

$\frac{3}{24} - \frac{7}{24} =$

$\frac{3-7}{24} =$

$-1 \frac{-4}{24} =$

~~$\frac{(-2)(2)}{(2)(2)(2)(3)}$~~

$\frac{-1}{6}$

$2 \overline{)8}$	$2 \overline{)24}$
$2 \overline{)4}$	$2 \overline{)12}$
$2 \overline{)2}$	$2 \overline{)6}$
1	3

$8 = 2 \cdot 2 \cdot 2 \cdot 1$
 $24 = 2 \cdot 2 \cdot 2 \cdot 3$

 $LCD = 2 \cdot 2 \cdot 2 \cdot 3$
 $= 24$

Primes 2, 3, 5, 7

$2 \overline{)4}$	$2 \overline{)24}$
$2 \overline{)2}$	$2 \overline{)12}$
1	$2 \overline{)6}$
	3

$4 = 2 \cdot 2$
 $24 = 2 \cdot 2 \cdot 2 \cdot 3$

7.

$$\textcircled{20} \quad (6x^2 - 3x + 1) - (-2x^2 - x + 5) =$$
$$6x^2 - 3x + 1 + 2x^2 + x - 5 =$$

8.

$$8x^2 - 2x - 4 =$$

$$\textcircled{21} \quad 4 \div [6(11-3) - 46] =$$

PEMDAS

$$4 \div [6(8) - 46] =$$

$$4 \div [48 - 46] =$$

$$4 \div [2] =$$

$$2 =$$

$$\textcircled{22} \quad 2 + 8 \div 4 - 3 \cdot 2 =$$

PEMDAS

$$2 + 2 - 3 \cdot 2 =$$

$$2 + 2 - 6 =$$

$$4 - 6 =$$

$$-2 =$$

$$23) 2x + 11 = 31$$

$$2x + 11 - 11 = 31 - 11$$

$$2x = 20$$

$$\frac{2x}{2} = \frac{20}{2}$$

$$x = 10$$

9

$$24) \frac{2}{5} = \frac{x}{20}$$

$$2(20) = 5(x) \quad \text{cross mult} \rightarrow$$

$$40 = 5x$$

$$\frac{40}{5} = \frac{5x}{5}$$

$$8 = x$$

$$25) \frac{2}{3}x = 12$$

$$\frac{2}{3}x = \frac{12}{1} \quad \text{rewrite}$$

$$\frac{3}{2} \left(\frac{2x}{3} \right) = \frac{3}{2} \left(\frac{12}{1} \right) \quad \text{mult}$$

$$x = \frac{36}{2}$$

$$x = 18$$

26

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

$$\frac{1x}{3} = \frac{m}{1}$$

rewrite

$$\frac{3}{1} \left(\frac{1x}{3} \right) = \frac{3}{1} \left(\frac{m}{1} \right) \quad \text{mult}$$

$$x = \frac{3m}{1}$$

$$x = 3m$$

10

27

$$-7x + 5 = 4(5 + x)$$

PEMDAS

$$-7x + 5 = 20 + 4x$$

$$-7x + \cancel{5} - \cancel{5} = 20 + 4x - 5$$

$$-7x = 4x + 15$$

$$-7x - 4x = 4x + 15 - 4x$$

$$-11x = 15$$

$$\frac{-11x}{-11} = \frac{15}{-11}$$

$$x = -\frac{15}{11}$$

rewrite

28.

$$-2(2x-1) + 3x = 4$$

$$-4x + 2 + 3x = 4$$

$$-1x + 2 = 4$$

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

$$-1x = 2$$

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

$$x = -2$$

PEMDAS

(11.)

29.

$$(x-3)(x+3) =$$

$$x^2 + 3x - 3x - 9 =$$

$$x^2 - 9 =$$

30.

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

$$(2x-3y)(2x-3y) = \text{rewrite}$$

$$4x^2 - 6xy - 6xy + 9y^2 =$$

$$4x^2 - 12xy + 9y^2 =$$

31

$$X^3 \cdot X^2 \cdot X =$$

$$X^3 \cdot X^2 \cdot X^1 =$$

$$X^{3+2+1} =$$

$$X^6$$

12

32

$$2X^3 \cdot 3y^2 \cdot 4Xy^5 =$$

$$2X^3 \cdot 3y^2 \cdot 4X^1y^5 = \text{rewrite}$$

$$24X^{3+1}y^{2+5} = \text{Mult numbers}$$

$$24X^4y^7 =$$

33

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

$$(-2)^1x^1y^5)^2 = \text{rewrite}$$

$$4x^2y^{10} =$$

$$(-2)^{1(2)}x^{1(2)}y^{5(2)} =$$

Mult Powers

$$(-2)^2x^2y^{10} =$$

$$(-2)(-2)x^2y^{10} =$$

24

$$\frac{28x^{10}y^9}{20x^4y^{11}}$$

Primes 2, 3, 5, 7...

13

$$\frac{(2)(2)(7) x^{10-4}}{(2)(2)(5) y^{11-9}}$$

rewrite

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

$$\begin{array}{l} 2 \overline{) 20} \\ 2 \overline{) 10} \\ 5 \overline{) 5} \\ 1 \end{array}$$

$$28 = 2 \cdot 2 \cdot 7$$

$$20 = 2 \cdot 2 \cdot 5$$

$$\frac{7x^6}{5y^2} =$$

35

$$\sqrt{3x+1} = \sqrt{x+11}$$

$$(\sqrt{3x+1})^2 = (\sqrt{x+11})^2$$

Square Both sides

$$3x+1 = x+11$$

$$3x + \cancel{-x} = x+11 - 1$$

$$3x = x+10$$

$$3x = 1x+10$$

$$3x - 1x = \cancel{1x} + 10 - \cancel{1x}$$

$$2x = 10$$

$$\frac{2x}{2} = \frac{10}{2}$$

$$x = 5$$

36

$$(5x)^2 =$$

$$(5x)(5x) =$$

$$25x^{1+1} =$$

$$25x^2 =$$

141

37

$$(2xy^5)(-3x^3y^3) =$$

$$(2x^1y^5)(-3x^3y^3) = \text{rewrite}$$

$$-6x^{1+3}y^{5+3} =$$

$$-6x^4y^8 =$$

38

$$(x^3)^{-3} =$$

$$x^{(3)(-3)} =$$

MULTI POWERS

$$x^{-9} =$$

OR

rewrite

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

$$39 \quad d = 2m + 3n$$

$$n =$$

(15)

$$d - 2m = 2m + 3n - 2m$$

$$d - 2m = 3n$$

$$\frac{d}{3} - \frac{2m}{3} = \frac{3n}{3}$$

$$\frac{d}{3} - \frac{2m}{3} = n$$

SOLVE

$$40 \quad (5x + 6)(9 - x) = 0$$

$$\text{let } 5x + 6 = 0 \quad \text{OR} \quad 9 - x = 0$$

$$5x + 6 - 6 = 0 - 6 \quad \text{OR} \quad 9 - x - 9 = 0 - 9$$

$$5x = -6 \quad \text{OR} \quad -x = -9$$

$$\frac{5x}{5} = \frac{-6}{5} \quad \text{OR} \quad -1x = -9 \quad \text{rewrite}$$

$$\text{OR} \quad \frac{-1x}{-1} = \frac{-9}{-1}$$

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

$$\text{OR} \quad x = 9$$

41) $4x + 2y = -8$ Graph

find
x-y-intercept
first

16

find x-intercept let $y=0$

$$4x + 2(0) = -8$$

$$4x + 0 = -8$$

$$4x = -8$$

$$\frac{4x}{4} = \frac{-8}{4}$$

$$x = -2$$

x-intercept

$$(-2, 0)$$

x y

find y-intercept let $x=0$

$$4(0) + 2y = -8$$

$$0 + 2y = -8$$

$$2y = -8$$

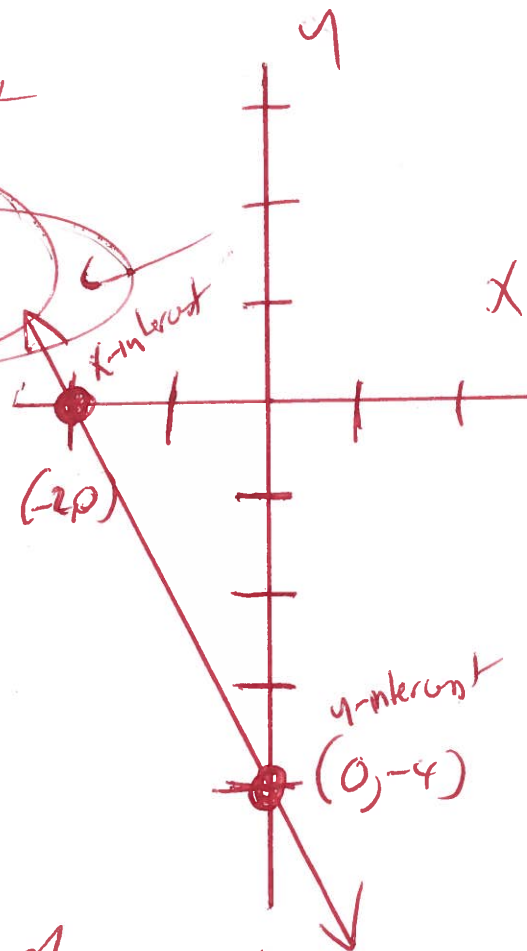
$$\frac{2y}{2} = \frac{-8}{2}$$

$$y = -4$$

y-intercept

$$(0, -4)$$

x y



42

$$\sqrt{25 \times 8}$$

$$5 \times 8^{\frac{1}{2}} = \text{divide power}$$

$$5 \times 4 =$$

17

43

$$(125)^{\frac{2}{3}} =$$

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

$$(5^{\frac{3}{1}})^{\frac{2}{3}} =$$

$$5^{\frac{3}{1}(\frac{2}{3})} = \text{Mult powers}$$

$$5^{\frac{6}{3}} =$$

$$5^2 = \text{divide}$$

$$(5)(5) = \text{expand}$$

$$25 =$$

$$5^3 =$$

$$5 \cdot 5 \cdot 5 =$$

$$125 =$$

Since →

44

$$2^{-4} =$$

$\frac{1}{2^4} =$ rewrite

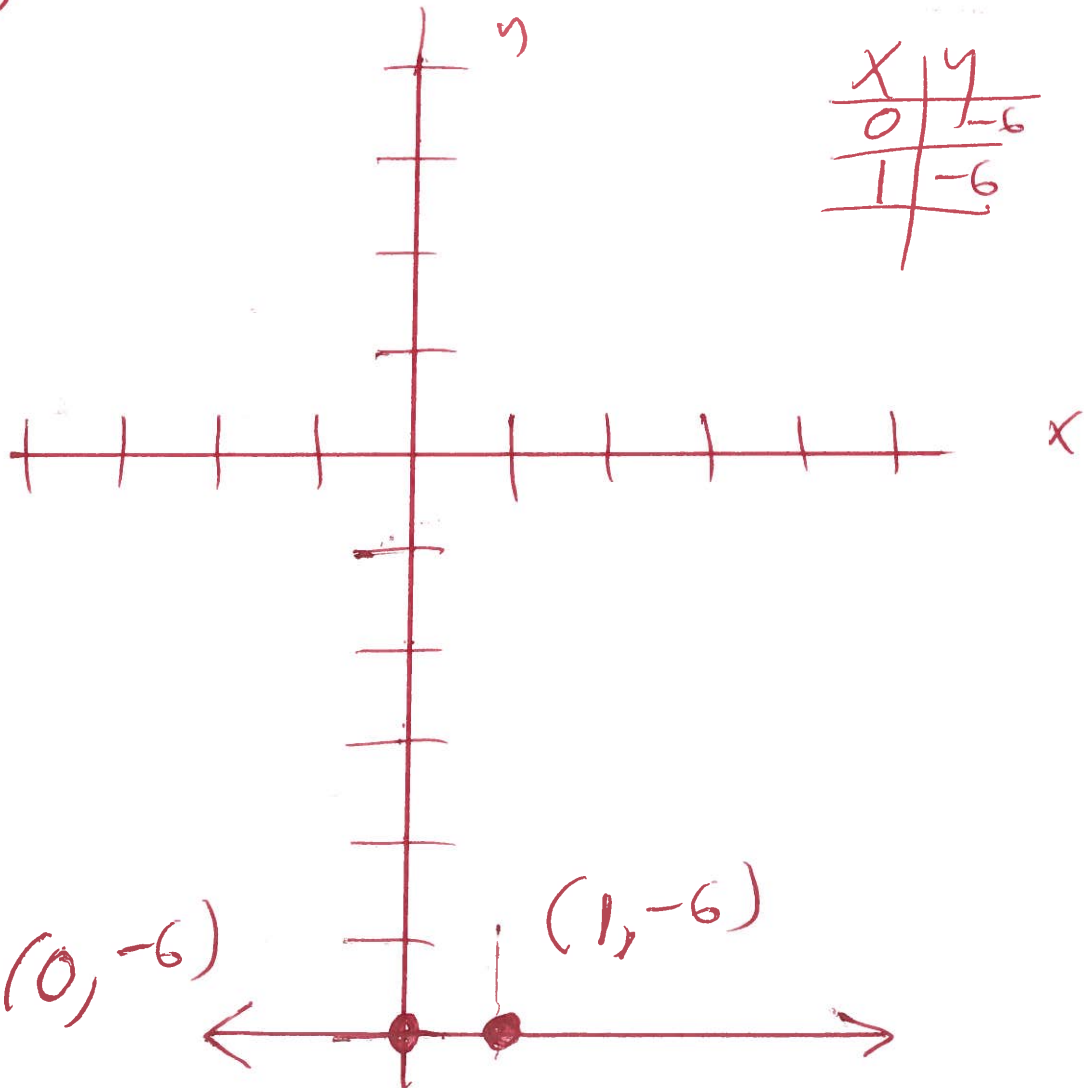
$$\frac{1}{(2)(2)(2)(2)} =$$

$$\frac{1}{16} =$$

18

45

$y = -6$ graph



x	y
0	-6
1	-6

$$(46) \quad -2x \leq 8$$

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

divide by a negative and
turn the alligator around

$$x \geq -4$$



$$[-4, \infty)$$

19

(47)

Solve

$$x^2 + 7x + 12 = 0$$

$$(x + 3)(x + 4) = 0$$

possible
1.1
2.6
3.4

$$\text{w } x + 3 = 0 \quad \text{OR} \quad x + 4 = 0$$

$$x + 3 - 3 = 0 - 3 \quad \text{OR} \quad x + 4 - 4 = 0 - 4$$

$$x = -3 \quad \text{OR} \quad x = -4$$

48

$$\sqrt{x+1} = 3$$

$$(\sqrt{x+1})^2 = (3)^2$$

$$x+1 = 9$$

$$x+1-1 = 9-1$$

$$x = 8$$

check

$$\sqrt{x+1} = 3$$

$$\sqrt{8+1} = 3$$

$$\sqrt{9} = 3$$

$$3 = 3$$

20

49

$$(x+1)^2 = 9$$

$$\sqrt{(x+1)^2} = \pm\sqrt{9}$$

$$x+1 = \pm 3$$

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

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

$$x = -4$$

$$x = 2$$

check

$$(x+1)^2 = 9$$

$$(-4+1)^2 = 9$$

$$(-3)^2 = 9$$

$$(-3)(-3) = 9$$

$$9 = 9$$

check

$$(x+1)^2 = 9$$

$$(2+1)^2 = 9$$

$$(3)^2 = 9$$

$$(3)(3) = 9$$

$$9 = 9$$