

Simplify

$$\textcircled{1} \frac{193+7}{3^2-4} =$$
$$\frac{193+7}{(3)(3)-4} =$$
$$\frac{193+7}{9-4} =$$
$$\frac{200}{5} =$$
$$\textcircled{40} =$$

MATH 0410 Step 1  
MATH 0410 Review  
040817

1.

Solve

$$\textcircled{2} F+1 = -2$$
$$F+\cancel{X}-X = -2-1$$
$$\textcircled{F = -3}$$

Simplify

$$\textcircled{3} 2(4x+2) + 3(x+4) =$$
$$8x + 4 + 3x + 12 =$$
$$\textcircled{11x + 16} =$$

$$\textcircled{4} 5x+4 = 49$$
$$5x+\cancel{X}-X = 49-4$$
$$5x = 45$$
$$\frac{\cancel{5}x}{5} = \frac{45}{5}$$
$$\textcircled{x = 9}$$

5.

Solve

$$2(5x-2) = 8x$$

$$10x - 4 = 8x$$

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

$$10x = 8x + 4$$

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

$$2x = 4$$

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

$$x = 2$$

2.

6.

Solve

$$5x - 6 = 2x - 30$$

$$5x - \cancel{6} + \cancel{6} = 2x - 30 + 6$$

$$5x = 2x - 24$$

$$5x - 2x = 2x - 24 - 2x$$

$$3x = -24$$

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

$$x = -8$$

7.

Solve

$$\frac{x}{5} = \frac{x}{6} + \frac{2}{5}$$

$$\frac{x}{5}(30) = \frac{x}{6}(30) + \frac{2}{5}(30)$$

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

$$6x = 5x + 12$$

$$6x - 5x = 5x + 12 - 5x$$

$$1x = 12$$

$$x = 12$$

mult by LCD = 30

8.

Solve

$$1.1x + 4.3 = 0.7x + 1.14$$

$$1.1x + 4.3 - 4.3 = 0.7x + 1.14 - 4.3$$

$$1.1x = 0.7x - 3.16$$

$$1.1x - 0.7x = 0.7x - 3.16 - 0.7x$$

$$.4x = -3.16$$

$$\frac{.4x}{.4} = \frac{-3.16}{.4}$$

$$x = -7.9$$

3.

9.

Find median

4, 6, 25, 23, 43, 47

4, 6, (23, 25), 43, 47 rewrite

$$\frac{23+25}{2} =$$

$$\frac{48}{2} =$$

$$24 = \text{median}$$

10.

Solve

19 is 4% of what number?

$$\frac{4}{100} = \frac{19}{x}$$

$4(x) = 100(19)$  cross mult

$$4x = 1900$$

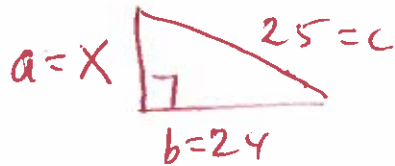
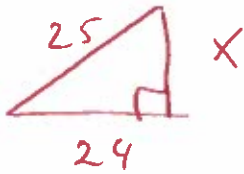
$$\frac{4x}{4} = \frac{1900}{4}$$

$$x = 475$$

$$\begin{array}{r}
 475 \\
 4 \overline{)1900} \\
 \underline{-(16)} \phantom{00} \\
 30 \phantom{0} \\
 \underline{-(28)} \phantom{0} \\
 20
 \end{array}$$

11.

Solve



$$a^2 + b^2 = c^2$$

$$(x)^2 + (24)^2 = (25)^2$$

$$x^2 + (24)(24) = (25)(25)$$

$$x^2 + 576 = 625$$

$$x^2 + 576 - 576 = 625 - 576$$

$$x^2 = 49$$

$$\sqrt{x^2} = \sqrt{49}$$

$$x = 7$$

4.

12. A bag contains 7 red marbles, 2 blue marbles, and 1 green marble. What is the probability of choosing a marble that is not blue when one marble is drawn from the bag?

$$\frac{\text{want}}{\text{all}} =$$

$$\frac{\text{not blue}}{\text{all}} =$$

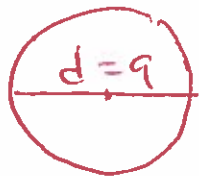
$$\frac{7+1}{7+2+1} =$$

$$\frac{8}{10} =$$

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

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

13 Find Area



use  $\pi = 3.14$   
 $r = \frac{d}{2} = \frac{9}{2} = 4.5$

51

$$A = \pi r^2$$

$$A = 3.14 (4.5)^2$$

$$A = 3.14 (4.5)(4.5)$$

$$A = 3.14 (20.25)$$

$$A = 63.585$$

14 Solve

$$8x - (4x - 1) = 2$$

$$8x - 1(4x - 1) = 2$$

$$8x - 4x + 1 = 2$$

$$4x + 1 = 2$$

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

$$4x = 1$$

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

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

15 Solve

$$\frac{5x}{6} + \frac{4}{3} = \frac{2x}{3}$$

$$\frac{5x}{6}(6) + \frac{4}{3}(6) = \frac{2x}{3}(6)$$

$$5x(1) + 4(2) = 2x(2)$$

$$5x + 8 = 4x$$

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

$$5x = 4x - 8$$

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

$$1x = -8$$

$$x = -8$$

16.

Solve

$$9x + 5 - 9x - 5 = 6x - 6x - 3$$

$$0 \neq -3$$

No solution

6

17.

Solve

$$2(x+5) = (2x+10)$$

$$2x + 10 = 2x + 10$$

$$2x + 10 - 10 = 2x + 10 - 10$$

$$2x = 2x$$

$$2x - 2x = 2x - 2x$$

$$0 = 0$$

All real numbers

18.

Solve for T

$$A = P + PRT$$

$$A - P = P + PRT - P$$

$$A - P = PRT$$

$$\frac{A - P}{PR} = \frac{PRT}{PR}$$

$$\frac{A - P}{PR} = T$$

19.

Solve

$$21x + 9 > 3(6x + 4)$$

$$21x + 9 > 18x + 12$$

$$21x + 9 - 9 > 18x + 12 - 9$$

$$21x > 18x + 3$$

$$21x - 18x > 18x + 3 - 18x$$

$$3x > 3$$

$$\frac{3x}{3} > \frac{3}{3}$$

$$x > 1$$



$$(1, +\infty)$$

20. Determine whether the ordered pair is a solution of the given linear equation.

$$-2y + 3x = -15$$

$$(5, 0)$$

$$-2(0) + 3(5) = -15$$

$$x \quad y$$

$$0 + 15 = -15$$

$$15 \neq -15$$

NO

21. Graph

$$y = 2x + 4$$

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

$$y = 0 + 4$$

$$y = 4$$

$$y = 2(1) + 4$$

$$y = 2 + 4$$

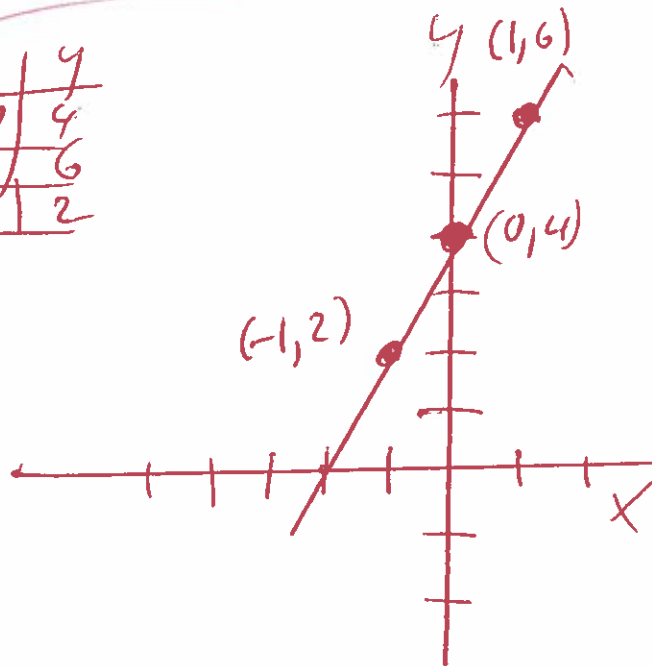
$$y = 6$$

$$y = 2(-1) + 4$$

$$y = -2 + 4$$

$$y = 2$$

x	y
0	4
1	6
-1	2



22. Graph  $5y - 25x = 10$

$$5y - 25x + 25x = 10 + 25x$$

$$5y = 10 + 25x$$

$$\frac{5y}{5} = \frac{10}{5} + \frac{25x}{5}$$

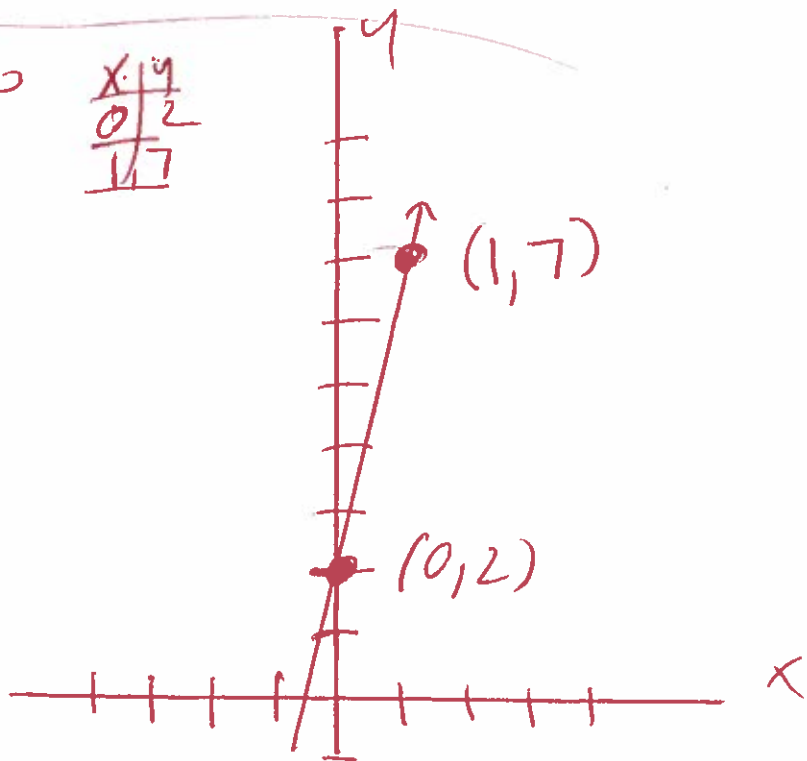
$$y = 2 + 5x$$

$$y = 5x + 2$$

$$y = 5(0) + 2 = 0 + 2 = 2$$

$$y = 5(1) + 2 = 5 + 2 = 7$$

x	y
0	2
1	7



23. Find the slope of the line through the two points  $(8, 5)$   $(6, 9)$

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

$$m = \frac{(5) - (9)}{(8) - (6)}$$

$$m = \frac{5 - 9}{8 - 6}$$

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

$$m = -2$$

24. Find the equation of the line with point slope  $(5, 2)$   $m = 2 = \text{slope}$

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

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

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

$$y - 2 = 2x - 10$$

$$y - 2 + 2 = 2x - 10 + 2$$

$$y = 2x - 8$$

25. Find  $f(4)$  when  $f(x) = x^2 + 4x - 3$

$$f(4) = (4)^2 + 4(4) - 3$$

$$f(4) = (4)(4) + 4(4) - 3$$

$$f(4) = 16 + 16 - 3$$

$$f(4) = 32 - 3$$

$$f(4) = 29$$



26

Solve

$$\begin{array}{r} -2x + 3y = 2 \\ -3x + 5y = 2 \\ \hline (-2x + 3y = 2) \quad (-5) \\ (-3x + 5y = 2) \quad (3) \end{array}$$

$$10x - 15y = -10$$

$$-9x + 15y = 6$$

$$1x = -4$$

$$x = -4$$

Subst

$$-2x + 3y = 2$$

$$-2(-4) + 3y = 2$$

$$8 + 3y = 2$$

$$8 + 3y - 8 = 2 - 8$$

$$3y = -6$$

$$\frac{3y}{3} = \frac{-6}{3}$$

$$y = -2$$

Mult

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

27

Solve

$$x + y = 7$$

$$x + y = 4$$

$$\begin{array}{r} (x + y = 7) \quad (-1) \\ (x + y = 4) \quad (1) \\ \hline \end{array}$$

$$-1x - 1y = -7$$

$$1x + 1y = 4$$

No solution

28

Solve

$$-2x + 2y = -5$$

$$6x - 6y = 15$$

$$\begin{array}{r} (-2x + 2y = -5) \quad (6) \\ (6x - 6y = 15) \quad (2) \\ \hline \end{array}$$

$$-12x + 12y = -30$$

$$12x - 12y = 30$$

$$0 + 0 = 0$$

$$0 = 0 \text{ Always}$$

Infinite Number of Solutions

29.

Simplify

$$(14x + 5) - (-13x^2 - 7x + 5) =$$

$$14x + 5 + 13x^2 + 7x - 5 =$$

$$13x^2 + 21x =$$

30.

Multiply

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

$$-12x^4 + 12x^3 + 36x^2 =$$

31.

Simplify

$$(a+8)(a+1) =$$

$$a^2 + 1a + 8a + 8 =$$

$$a^2 + 9a + 8 =$$

32.

Simplify

$$(b-5)(b^2 + 5b + 3) =$$

$$b^3 + 5b^2 + 3b - 5b^2 - 25b - 15 =$$

$$b^3 - 22b - 15 =$$

33.

Simplify

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

$$6x^3 - 24x^2 + 6x - 1x^2 + 4x - 1 =$$

$$6x^3 - 25x^2 + 10x - 1 =$$

34.

Simplify

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

$$(3a-7)(3a-7) =$$

$$9a^2 - 21a - 21a + 49 =$$

$$9a^2 - 42a + 49 =$$

35.

Simplify

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

$$x^2 - 11x + 11x - 121 =$$

$$x^2 - 121 =$$

11

36.

Simplify

$$\frac{2^{-7} x^{-5} y^3}{2^{-4} x^{-8} y^6} =$$

$$\frac{2^4 x^8 y^3}{2^7 x^5 y^6} =$$

$$\frac{x^{8-5}}{2^{7-4} y^{6-3}} =$$

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

$$x^3$$

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

$$\frac{x^3}{8 y^3} =$$

37.  $\frac{5m^2 + 5m - 10}{m+2}$  use synthetic division

$$\begin{array}{r|rrrr} -2 & 5 & 5 & -10 & \\ & & -10 & 10 & \\ \hline & 5 & -5 & 0 & \text{rem} \end{array}$$

$5m - 5$  ✓

OR Long division

$$\begin{array}{r} 5m - 5 \\ m+2 \overline{) 5m^2 + 5m - 10} \\ \underline{-(5m^2 + 10m)} \\ -5m - 10 \\ \underline{+(5m + 10)} \\ 0 \text{ rem} \end{array}$$

38.  $\frac{x^2 + 9x + 6}{x+2}$  use synthetic division

$$\begin{array}{r|rrr} -2 & 1 & 9 & 6 \\ & & -2 & -14 \\ \hline & 1 & 7 & -8 \text{ rem} \end{array}$$

$x + 7 + \frac{-8}{x+2}$

OR Long division

$$\begin{array}{r} x + 7 + \frac{-8}{x+2} \\ x+2 \overline{) x^2 + 9x + 6} \\ \underline{-(x^2 + 2x)} \\ 7x + 6 \\ \underline{-(7x + 14)} \\ -8 \text{ rem} \end{array}$$

39. factor GCF

$$20x^4y + 36xy^3 =$$

$$20x^4y^1 + 36x^1y^3 =$$

$$4xy^1(5x^3 + 9y^2) =$$

$4xy(5x^3 + 9y^2) =$

13

40 Factor by grouping

$$3xy - 9x + 7y - 21 =$$

$$(3xy - 9x) + (7y - 21) =$$

$$3x(y - 3) + 7(y - 3) =$$

$$(y - 3)(3x + 7) =$$

41 Factor

$$x^2 - x - 42 =$$

$$(x + 6)(x - 7) =$$

42.1 possible  
 21.2  
 6.7  
 14.3

42 Factor

$$u^2 - 3uv - 28v^2 =$$

$$(u + 4v)(u - 7v) =$$

28.1 possible  
 14.2  
 4.7

43 Factor

$$x^2 + 3xy - 18y^2 =$$

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

18.1 possible  
 9.2  
 6.3

44 Factor

$$z^2 - 121 =$$

$$(z)^2 - (11)^2 =$$

$$(z + 11)(z - 11)$$

Formula  
 $a^2 - b^2 = (a + b)(a - b)$

45. factor  
 $81x^2 - 49 =$

$$(9x)^2 - (7)^2 =$$

$$(9x+7)(9x-7) =$$

formula 14.  
 $a^2 - b^2 = (a+b)(a-b)$

46. factor  
 $121 - w^2 =$

$$(11)^2 - (w)^2 =$$

$$(11+w)(11-w) =$$

formula  
 $a^2 - b^2 = (a+b)(a-b)$

47. factor

$$64 - 81x^2 =$$

$$(8)^2 - (9x)^2 =$$

$$(8+9x)(8-9x) =$$

formula  
 $a^2 - b^2 = (a+b)(a-b)$

48. factor

$$w^2r^2 - 1 =$$

$$(wr)^2 - (1)^2 =$$

$$(wr+1)(wr-1) =$$

formula  
 $a^2 - b^2 = (a+b)(a-b)$



49

factor

$$25x^2 - 36y^2 =$$

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

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

formula

15

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

50

factor

$$x^2 - \frac{25}{64} =$$

$$(x)^2 - \left(\frac{5}{8}\right)^2 =$$

$$\left(x + \frac{5}{8}\right)\left(x - \frac{5}{8}\right) =$$

formula

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