Pre-Algebra Vocabulary List I

Name: _____

Match each word below with its equivalent symbol.

A. + B. – C. x D. ÷ E. < F. >

G. ≤ H. ≥ I. =

1. Product C
2. Equals I
3. Greater than or equal to H
4. Quotient D
5. The same as I
6. Difference B
7. Sum A
8. Multiplied by C
9. Less than E
10. Fewer than B
11. Addition A
12. Times C
13. Greater than F
14. Divided by D
15. Plus A
16. Less than or equal to G
17. Is I
18. No more than G
19. Minus B
20. At least H

Here are a few definitions that will also be helpful for this unit.

21. Expression: a written statement that does not contain an equal sign or inequality symbol.
22. Equality: a written statement that contains an equal sign.
23. Inequality: a written statement that contains an inequality symbol.
24. Variable: a letter or symbol that represents an unknown quantity.
25. Exponent: The number or variable that represents the number of times the base is used as a factor. In 5^3, 3 is the exponent.
26. Base: The number or variable that is used as a factor in repeated multiplication. In 5^3, 5 is the base.
27. Compare: To examine or judge two or more things in order to show how they are similar to or different from each other.
28. Data: Information or facts.

Pre-Algebra Worksheet U1-1

Name: _____ Date: _____

You buy a bag of M&M's and immediately rip open the bag and pour a huge handful. Before you test whether they melt in your mouth or hand, you count how many of each color you have in your hand.

Represent the number of each color as a percent.

Color	Number	Decimal	Percent
Green:	12	.12	12%
Blue:	27	.27	27%
Yellow:	18	.18	18%
Orange:	11	.11	11%
Red:	10	.1	10%
Brown:	22	.22	22%
	100		

Here are the actual percentages of each color that come in each bag of M&M's.

Brown:	13%
Yellow:	14%
Red:	13%
Blue:	24%
Orange:	20%
Green:	16%

1. Comparing the percent of each color in your hand to the percent that is supposed to be in the bag, which colors are underrepresented in your hand?
   Green, Orange, Red

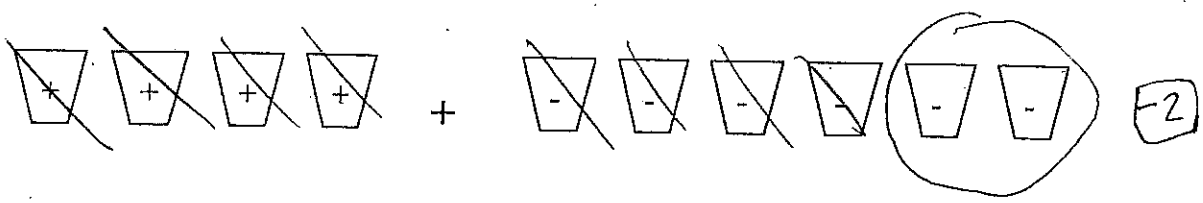
2. Which colors are overrepresented in your hand?
   Blue, Yellow, Brown

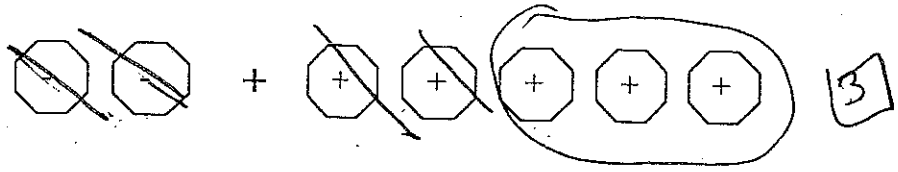
3. Which colors are represented about the same as the actual percent in the bag?

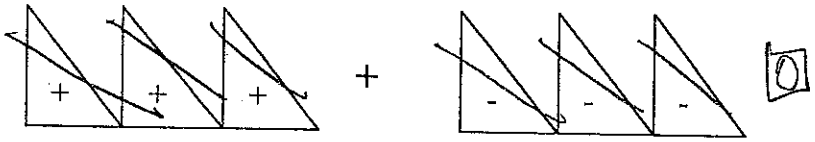
4. Importantly, do your imaginary M&M's melt in your hand?

5. More importantly, what is your favorite color of M&M?

Determine if the following addition problem with result in a positive or negative number and explain your answer

1. 

2. 

3. 

4. $7 + (-2) =$ 5

5. $9 + 4 =$ 13

6. $(-8) + 3 =$ -5

7. $(-25) + (-13) =$ -38

8. $15 + (-20) =$ -5

9. $(-4) + 10 =$ 6

Pre-Algebra Worksheet U1-2

Name: _____ Date: _____

Answer each question based on the given information. Express each answer as a fraction and as a percent.

1. A bag contains 125 marbles. There are 19 pink marbles, 32 green marbles, 59 black marbles, and 15 clear marbles.
   a. What is the probability that you would draw a pink marble from the bag?

$\frac{19}{125} = .152$

   b. What is the probability that you would draw a black marble from the bag?

$\frac{59}{125} = .472$

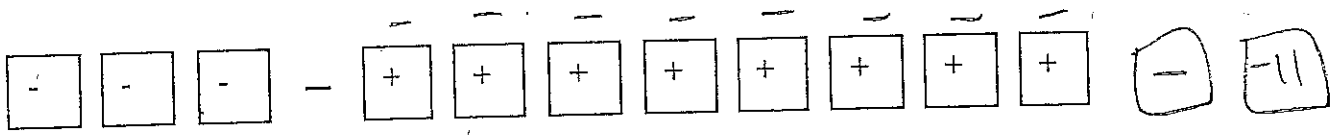
   c. What is the probability that you would draw something other than a clear marble?

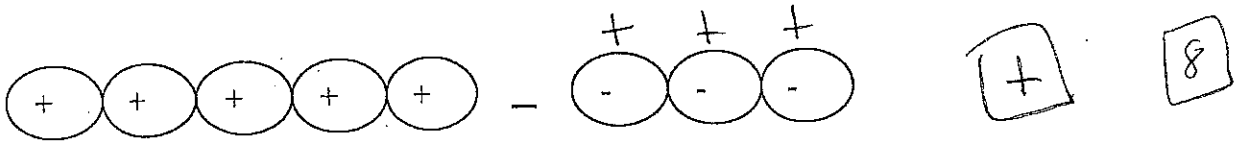
$\frac{110}{125} = .88$

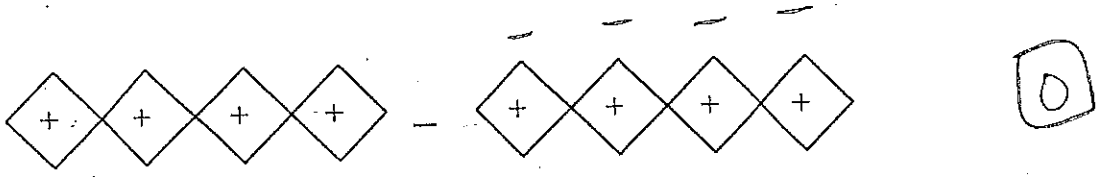
   d. What is the probability that you would draw a dark colored marble (black and green)?

$\frac{32+59}{125} = \frac{91}{125} = .728$

Determine if the following subtraction problem with result in a positive or negative number.

1. 

2. 

3. 

4. $(-7) - 8 =$ -15

5. $10 - 8 =$ 2

6. $13 - (-4) =$ 17

7. $(-3) - (-5)$ 2

8. $8 - (-4) =$ 12

9. $17 - 19 =$ -2

Pre-Algebra Worksheet U1-3

Name: _____ Date: _____

Answer each question based on the given information. Express each answer as a fraction and as a percent.

1. A bucket contains washers, bolts, and nuts. There are 125 washers, 165 bolts, and 200 nuts. 490

   a. What is the probability that you would pull a washer from the bucket?

   $\frac{125}{490} = .255$

   b. What is the probability that you would pull a nut from the bucket?

   $\frac{200}{490} = .408$

   c. What is the probability that you would pull a bolt from the bucket?

   $\frac{165}{490} = .337$

   d. What is the probability that you would pull something other than a bolt from the bucket?

   $\frac{325}{490} = .663$

   e. I find more washers, bolts, and nuts in a drawer in my garage and add them to the ones above. I find 13 washers, 24 bolts, and 8 nuts. What is the new probability that you would pull a bolt from the bucket? 535 $\frac{189}{535} = .353$

Evaluate the expressions when x = -8, y = 4, and z = -5

2. x + 15 — $-8+15$ → 7
3. y + (-75) — $4+(-75)$ → -71
4. -19 + z — $-19+(-5)$ → -24
5. x + y — $-8+4$ → -4
6. x + z — $-8+(-5)$ → -13

Evaluate the expression when m = -6

7. 17 – m — $17-(-6)$ → 23
8. 4 – m — $4-(-6)$ → 10
9. 10 – m – 5 — $10-(-6)-5$ → 11
10. 14 – 30 – m — $14-30-(-6)$ → -10

Pre-Algebra Worksheet U1-4

Name: _____ Date: _____

Finish More Probability worksheet.

Use the counting principle to determine the number of possible outfits that can be made using 1 of each type of item from the articles of clothing listed.

1. 4 shirts and 3 pairs of pants

   $4 \cdot 3 = 12$

2. 5 shirts, 3 pairs of pants, and 5 pairs of socks.

   $5 \cdot 3 \cdot 5 = 75$

3. 8 shirts, 4 pairs of jeans, 4 pairs of socks, and 2 belts.

   $8 \cdot 4 \cdot 4 \cdot 2 = 256$

4. The NBA has 15 teams in the Eastern Conference and 14 teams in the Western Conference. If one team from each conference advances to the finals, how many different team matchups could there be in the finals?

   $15 \cdot 14 = 210$

5. If 8 teams from the Eastern Conference and 8 teams from the Western Conference make the NBA playoffs, how many different matchups of the playoff teams could meet in the finals?

   $8 \cdot 8 = 64$

Pre-Algebra More Probability

Name: _____ Date: _____

Answer each question based on the given information. Express each answer as a fraction and as a percent.

1. A money-box contains 90 different bills. It contains 13 one-dollar bills, 7 two-dollar bills, 18 five-dollar bills, 27 twenty-dollar bills, 20 fifty-dollar bills, and 5 one hundred-dollar bills.
   a. What is the probability that you would draw a one-dollar bill from the box?

   $\frac{13}{90} = .1\overline{4}$

   b. What is the probability that you would draw a two-dollar bill from the box?

   $\frac{7}{90} = .0\overline{7}$

   c. What is the probability that you would draw a five-dollar bill from the box?

   $\frac{18}{90} = .2$

   d. What is the probability that you would draw a twenty-dollar bill from the box?

   $\frac{27}{90} = .3$

   e. What is the probability that you would draw a fifty-dollar bill from the box?

   $\frac{20}{90} = .\overline{2}$

   f. What is the probability that you would draw a one hundred-dollar bill from the box?

   $\frac{5}{90} = .0\overline{5}$

   g. What is the probability that you would draw a bill worth more than $20?

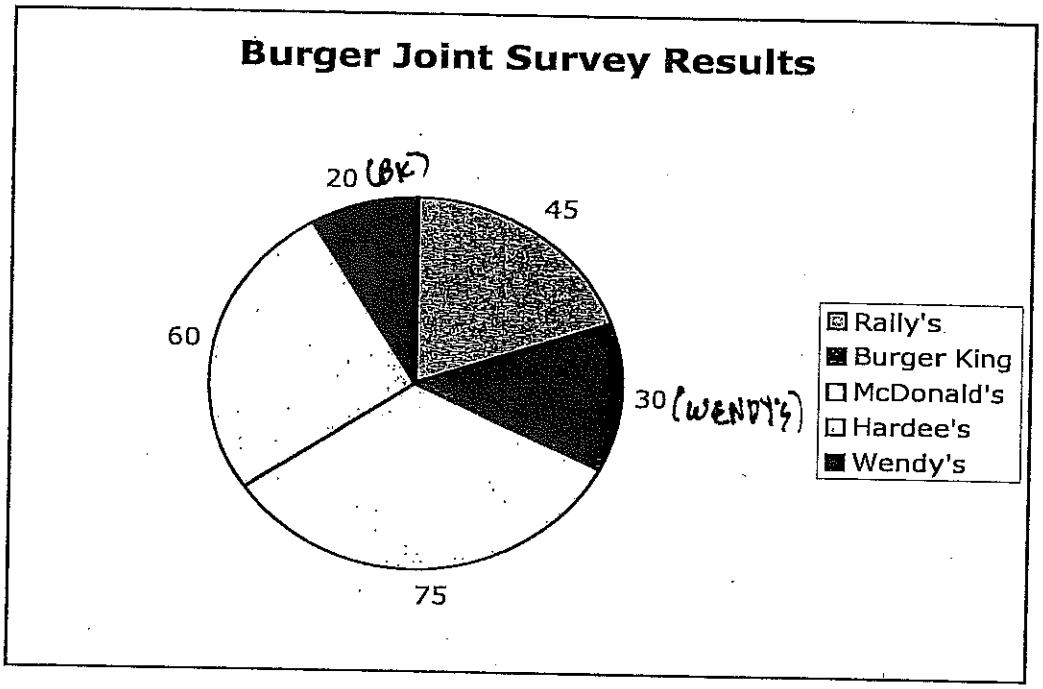
   $\frac{20+5}{90} = \frac{25}{90} = .2\overline{7}$

   h. What is the probability that you would draw a bill worth more than $10?

   $\frac{27+20+5}{90} = \frac{52}{90} = .5\overline{7}$

   i. You are the fifth person to draw from the money-box. The first person drew a one-dollar bill, the second person drew a twenty-dollar bill, the third person drew a twenty dollar bill, and the fourth person drew a one-hundred dollar bill. What is the new probability that you will draw a one-hundred dollar bill? 12 26 25 4

2. 230 individuals were surveyed about their favorite burger joint. The results are stated in the chart below. Answer the questions using the information from the pie chart.



a. What is the probability that someone interviewed at random would have like Rally's the best? $\frac{45}{230}$ 1195

b. What is the probability that someone interviewed at random would have like McDonald's the best?

c. What is the probability that someone interviewed at random would have like BK the best?

d. What is the probability that someone interviewed at random would have like one of the Big Three (Burger King, McDonald's, and Hardee's) the best?

Pre-Algebra Worksheet U1-5

Name: _____ Date: _____

Determine if the following multiplication problem with result in a positive or negative number.

1. $(-5) \bullet 7 =$ -35
2. $8 \bullet 3 =$ 24
3. $(-2) \bullet (-3) =$ 6
4. $10 \bullet (-3) =$ -30
5. $(-4) \bullet (-5) =$ 20
6. $6 \bullet (-3) =$ -18
7. $7 \bullet 2 =$ 14
8. $(-6) \bullet 4 =$ -24
9. $(-2) \bullet (6) \bullet (-3)$ 36

Find the next three numbers in the patterns below.

10. 4, 8, 12, 16, 20, 24, 28, 32
11. 2, 2, 4, 6, 10, 16, 26, 42, 68
12. 0, 3, 9, 18, 30, 45, 63, 84 (3, 6, 9, 12)
13. 1, 2, 5, 10, 17, 26, 37, 50 (1, 3, 5, 7)
14. 2, 6, 10, 14, 18, 22, 26, 30

Pre-Algebra Worksheet U1-6

Name: _____ Date: _____

Determine if the following problems with result in a positive or negative number.

1. $-3+5=$ 2
2. $7+3=$ 10
3. $8+(-10)=$ -2
4. $(-8)+(-3)=$ -11
5. $6-10=$ -4
6. $(-4)-(-7)=$ 3
7. $12-8=$ 4
8. $5-(-9)=$ 14
9. $3\bullet(-5)=$ -15
10. $(-4)\bullet(-2)=$ 8
11. $5\bullet6=$ 30
12. $(-7)\bullet4=$ -28
13. $\frac{-10}{2}=$ -5
14. $\frac{30}{-5}=$ -6
15. $\frac{-27}{-9}=$ 3
16. $\frac{24}{3}=$ 8

Find the next three numbers in the patterns below.

-3 +5 -3 +5

17. 15, 12, 17, 14, 19, 16, 21, 18

18. 3, 2, 5, 7, 12, 19, 31, 50, 81

19. -2, 4, -8, 16, -32, 64, -128

20. 2, 6, 18, 54, 162, 486, 1458, 4374

21. 5, 8, 13, 21, 34, 55, 89, 144

Pre-Algebra Worksheet U1-7

Name: _____ Date: _____

Evaluate the expression with x = -3, y = 5, and z = -1.

1. $x - 5$ $-3-5$ -8

2. $y + z$ $5+(-1)$ 4

3. $z + 6 + y$ $-1+6+5$ 10

4. $8 - x - y$ $8-(-3)-5$ 6

5. $3x$ $3(-3)$ -9

6. $2 \bullet (-2) \bullet z$ $2\cdot(-2)(-1)$ 4

7. $4 \bullet x \bullet z$ $4(-3)(-1)$ 12

8. $\frac{y-z}{x}$ $\frac{5-(-1)}{-3} = \frac{6}{-3} = -2$

Please write an expression, equation, or inequality for each statement below.

9. 15 times a number x. $15x$

10. A number y minus 13. $y-13$

11. 100 divided by a number z. $\frac{100}{z}$ OR $100 \div z$

12. A number x multiplied by 7 plus 4. $7x+4$

13. The product of 15 and a number y minus 12. $15y-12$

14. The difference of 25 and a number z equals 45. $25-z=45$

15. The quotient of a number x and 7 is less than –4. $\frac{x}{7} < -4$

16. Six plus a number equals 12. $6+x=12$

17. 13. The difference of a number and 8 is less than $x-8<13$

Please write an expression and then evaluate it using the given value for x.

18. A number divided by 10 x = 50 $\frac{x}{10}$ $\frac{50}{10}=5$

19. The sum of a number and 22 x = 4 $x+22$ $4+22=26$

BMC4

Name KEY ID: 1

Date _____ Period ____

Assignment

Evaluate each using the values given.

1) $q + q + p$; use $p = 6$, and $q = 6$

18 $6+6+6 = (18)$

2) $6(y + x)$; use $x = 2$, and $y = 1$

18 $6(1+2)$ $6(3)$ (18)

3) $n(m + m)$; use $m = 5$, and $n = 5$

50 $5(5+5)$ $5(10)$ (50)

4) $yx - y$; use $x = 4$, and $y = 5$

15 $5(4)-5$ $20-5$ (15)

5) $n(m - n)$; use $m = 4$, and $n = 2$

4 $2(4-2)$ $2(2)$ (4)

6) $x - (4 - y)$; use $x = 4$, and $y = 1$

1 $4-(4-1)$ $4-3$ (1)

Write each as an algebraic expression.

7) twice x is equal to 37

$2x = 37$ $2X=37$

8) d increased by 12 is 25

$d + 12 = 25$ $d-12=25$

9) the product of x and 11

$x \cdot 11$ $11X$

10) x decreased by 18 is equal to 40

$x - 18 = 40$ $X-18=40$

11) 11 less than r is equal to 5

$r - 11 = 5$ $r-11=5$

12) the sum of v and 5 is equal to 32

$v + 5 = 32$ $V+5=32$

Pre-Algebra Worksheet U1-8

Name: _____ Date: _____

Translate the expression, equation, or inequality below into a written statement.

1. $x+10$ a number plus 10

2. $4x-5$ the product of a number and 4 minus 5

3. $\frac{x}{-4}=6$ the quotient of a number and -4 is equal to 6.

4. $5x<2$ the product of a number and 5 is less than 2

5. $2(6-x)>11$ 2 times the quantity of 6 minus a number is greater than 11

6. $3(2x+1)=21$ 3 times the quantity of 2 times a number plus 1 is equal to 21.

Evaluate each expression for $x=3$.

7. $6x-8$

$6(3)-8$

$18-8$

$\boxed{10}$

8. $4(x+2)$

$4(3+2)$

$4(5)$

$\boxed{20}$

9. $\frac{x+6}{3x}$

$\frac{3+6}{3(3)}=\frac{9}{9}=\boxed{1}$

Evaluate each expression for $x=-3$.

7. $6x-8$

$6(-3)-8$

$-18-8$

$\boxed{-26}$

8. $4(x+2)$

$4(-3+2)$

$4(-1)$

$\boxed{-4}$

9. $\frac{x+6}{3x}$

$\frac{-3+6}{3(-3)}=\frac{3}{-9}=\boxed{\frac{-1}{3}}$

Pre-Algebra Worksheet U1-9

Name: _____ Date: _____

Simplify each expression below

1. $2 + (3 \bullet 2)$

$2+6$

8

2. $4(5 + 3)$

$4(8)$

32

3. $(2 \bullet 4) - (4 - 3)$

$8 - 1$

7

4. $[9 + (10 + 3)] - 4$

$[9+13]-4$

$22-4$

18

5. $2[(4 \bullet 3) - 10]$

$2[12-10]$

$2(2)$

4

6. $[(3+3) + (4+4)]+8$

$(6+8)+8$

$14+8$

22

Write the following expressions as an exponent.

7. $2 \bullet 2 \bullet 2 \bullet 2$

2^4

8. $4 \bullet 4 \bullet 4 \bullet 4 \bullet 4 \bullet 4$

4^6

9. $\triangle \bullet \triangle \bullet \triangle$

$\triangle^3$

Expand each exponent.

10. 5^5

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

11. 3^6

$3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3$

12. Π^3

$\pi \cdot \pi \cdot \pi$

Evaluate each expression for x = -2.

13. $2x - 7$

$2(-2)-7$

$-4-7$

-11

14. $-6(x - 2)$

$-6(-2-2)$

$-6(-4)$

24

15. $\frac{5x}{-3+x}$

$\frac{5(-2)}{3+(-2)} = \frac{-10}{1} = -10$

Pre-Algebra Worksheet U1-10

Name: _____ Date: _____

Simplify each expression below using the **ORDER OF OPERATIONS.**

1. $16+4\div2-3$ $16+2-3$ $18-3$ 15

2. $4+9-1$ $13-1$ 12

3. $6\div3+2\bullet7$ $2+2\cdot7$ $2+14=16$

4. $16\div8\bullet2^2$ $2\cdot2^2$ $2\cdot4$ 8

5. $10\div(3+2)+9$ $10\div5+9$ $2+9$ 11

6. $[(7-4)^2+3]+15$ $[(3)^2+3]+15$ $[9+3]+15$ $12+15=27$

7. $6(5-3)^2+3$ $6(2)^2+3$ $6(4)+3$ $24+3=27$

8. $\dfrac{9\bullet2}{4+3^2-1}$ $\dfrac{18}{4+9-1}=\dfrac{18}{13-1}=\dfrac{18}{12}=\dfrac{3}{2}$

Simplify each expression below using the **ORDER OF OPERATIONS** and your knowledge of **Absolute Value.**

9. $|-6|$ 6

10. $|10|$ 10

11. $|-100|$ 100

12. $|5-9|$ $|-4|=4$

13. $|(3)(3)-5|$ $|9-5|=|4|=4$

14. $|3^2-12|$ $|9-12|$ $|-3|=3$

15. $|(2\bullet4)+(4-6)|$ $|8+-2|$ $|6|=6$

16. $|(9-7)^2-8|+5$ $|(2)^2-8|+5$ $|4-8|+5$ $|-4|+5$

17. $(6+4\div2)-|3(-2)|$ $6+2-|-6|$ $8-6$ 2

Pre-Algebra Worksheet U1-11

Name: _____ Date: _____

Simplify each expression below using the **ORDER OF OPERATIONS.**

1. $24-8\bullet 2$

$24-16$

$\boxed{8}$

2. $3\bullet 2+7-1$

$6+7-1$

$13-1$

$\boxed{12}$

3. $5+8\bullet 2-4$

$5+16-4$

$21-4$

$\boxed{17}$

4. $2\bullet 3^2\div 6$

$2\cdot 9\div 6$

$18\div 6$

$\boxed{3}$

5. $7[(18-6)-6]$

$7(12-6)$

$7(6)$

$\boxed{42}$

6. $3(2.7\div .9)-5$

$3(3)-5$

$9-5$

$\boxed{4}$

7. $[10+(5^2\bullet 2)]\div 6$

$[10+(25\cdot 2)]\div 6$

$[10+50]\div 6$

$60\div 6$

$\boxed{10}$

8. $\dfrac{13-4}{18-4^2+1}$

$\dfrac{9}{18-16+1} = \dfrac{9}{2+1} = \dfrac{9}{3} = \boxed{3}$

Evaluate the expression when x = -3, y = 4, and z = -5

9. $.25y+x$

$.25(4)+(-3)$

$1+(-3)$

$\boxed{-2}$

10. $.25(y+x)$

$.25(4+-3)$

$.25(1)$

$\boxed{.25}$

11. $4(z-x)$

$4(-5-(-3))$

$4(-2)$

$\boxed{-8}$

12. $x+\dfrac{24.4}{y}$

$-3+\dfrac{24.4}{4}$

$-3+6.1$

$\boxed{3.1}$

13. $\dfrac{6.5y}{x-1}$

$\dfrac{6.5(4)}{-3-1} = \dfrac{26}{-4} = \boxed{-6.5}$

14. $7z-x^2$

$7(-5)-(-3)^2$

$-35-9$

$\boxed{-44}$

15. $x+2[z-(y-1)]$

$-3+2[-5-(4-1)]$

$-3+2(-5-3]$

$-3+2(-8)$

$-3+-16 = \boxed{-19}$

BMC 4

Name Key ID: 1

Quiz 1 In Class STATION Review

Date _____ Period ____

Evaluate each expression. STATION 1

1) $\left(-\frac{1}{6}\right)+\frac{2}{5}$ $-\frac{5}{30}+\frac{12}{30}$

$\frac{7}{30}$

$\frac{7}{30}$

2) $\left(-\frac{7}{6}\right)+\frac{5}{7}$ $-\frac{49}{42}+\frac{30}{42}$

$-\frac{19}{42}$

$\frac{-19}{42}$

3) $\frac{4}{3}+\left(-\frac{3}{2}\right)$ $\frac{8}{6}+-\frac{9}{6}$

$-\frac{1}{6}$

$\frac{-1}{6}$

4) $\left(-\frac{10}{7}\right)+\frac{2}{7}$ $=\frac{-8}{7}$

$-\frac{8}{7}$

Write each as an algebraic expression. STATION 2

6) 16 less than n is 41

$n - 16 = 41$

n-16=41

7) the sum of n and 10 is equal to 12

$n + 10 = 12$

n+10=12

8) x squared is equal to 29

$x^2 = 29$

$X^2=29$

9) x decreased by 3

$x - 3$

X-3

10) u decreased by 3 is equal to 36

$u - 3 = 36$

u-3=36

Evaluate each expression. STATION 3

11) $(1+5)\cdot 4(5-4)$

24

$(1+5)\cdot 4(5-4)$

$6 \cdot 4(1)$

$6 \cdot 4$

(24)

12) $5+1+4+3-2$

11

$5+1+4+3-2$

$6+4+3-2$

$10+3-2$

$13-2$

(11)

13) $|1|(3+3-4+2)$

4

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

$1(6-4+2)$

$1(2+2)$

$1(4)$

(4)

14) $4-4+-6+(-13-5)\div -6$

−3

$4-4+-6+(-13-5)\div -6$

$4-4+-6+(-18)\div -6$

$4-4+-6+3$

$0+-6+3$

$-6+3$

(-3)

15) $(-1+4\div -1)(4+|1|)$

−25

$(-1+4\div -1)(4+1)$

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

$-5(5)$

(-25)

16) $3+\frac{10}{2}(1+2)-2$

16

$3+\frac{10}{2}(1+2)-2$

$3+5(3)-2$

$3+15-2$

$18-2$

16

17) $4+6+6-(5+4+5)$

2

$4+6+6-(5+4+5)$

$4+6+6-(9+5)$

$4+6+6-(14)$

$10+6-(14)$

$16-14$

2

18) $\frac{12-2\cdot 2}{1+3}$

2

$\frac{12-4}{4}=\frac{8}{4}=2$

19) $(11\cdot 2-3-4)\div 5$

3

$(11\cdot 2-3-4)\div 5$

$(22-3-4)\div 5$

$(19-4)\div 5$

$15\div 5$

3

20) $(11-(-1-5+5))\div -3$

−4

$(11-(-1-5+5))\div -3$

$(11-(-6+5))\div -3$

$(11-(-1))\div -3$

$(11+1)\div -3$

$12\div -3$

−4

Evaluate each using the values given. STATION 4

21) $m + m + mq$; use $m = -3$, and $q = -6$

12

$-3+-3+(-3)(-6)$

$-3+-3+18$

$-6+18$

12

22) $1 - (b + |a|) + 2$; use $a = 3$, and $b = 5$

−5

$1-(5+|3|)+2$

$1-(5+3)+2$

$1-8+2$

$-7+2$

-5

23) $m + pm - 4 \div 4$; use $m = 2$, and $p = 5$

11

$2+5(2)-4\div4$

$2+10-1$

$12-1$

11

24) $x^2 - (y^2 - y)$; use $x = 5$, and $y = 3$

19

$(5)^2-((3)^2-3)$

$25-(9-3)$

$25-6$

19

25) $(6 - (j - j))(h + h)$; use $h = 5$, and $j = 3$

60

$(6-(3-3))(5+5)$

$(6-0)(10)$

$6(10)$

60

26) $j + 1 + h + h^2$; use $h = 6$, and $j = 3$

46

$3+1+6+(6)^2$

$3+1+6+36$

$4+6+36$

$10+36$

46

BMC 4

Name KEY ID: 1

Quiz 1 Review

Date _____ Period ____

Evaluate each expression.

1) $\frac{7(2)}{4(2)} \frac{5}{8}$ $\frac{14}{8} - \frac{5}{8} = \frac{9}{8}$

$\frac{9}{8}$

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

$-\frac{1}{2}$

3) $\left(-\frac{1}{5}\right)\frac{(7)}{(7)} + \frac{10(5)}{7(5)} - \frac{7}{35} + \frac{50}{35} = \frac{43}{35}$

$\frac{43}{35}$

4) $\frac{9(4)}{7(4)} \frac{7(7)}{4(7)}$ $\frac{36}{28} - \frac{49}{28} = \frac{-13}{28}$

$-\frac{13}{28}$

Write each as an algebraic expression.

5) 23 less than z is less than 36

$z - 23 < 36$ $z - 23 < 36$

6) q decreased by 9 is 8

$q - 9 = 8$ $q - 9 = 8$

7) n squared is equal to 33

$n^2 = 33$ $n^2 = 33$

8) w increased by 11 is less than 23

$w + 11 < 23$ $w + 11 < 23$

9) the quotient of n and 2 is 22

$\frac{n}{2} = 22$ $\frac{n}{2} = 22$

10) the product of b and 5 is equal to 42

$b \cdot 5 = 42$ $5b = 42$

Evaluate each expression.

11) $4 \div 2 \cdot 3^3 - 5$

49

$4 \div 2 \cdot 3^3 - 5$

$4 \div 2 \cdot 27 - 5$

$2 \cdot 27 - 5$

$54 - 5$

49

12) $10 \div (4 + 2 - (1 + 3))$

5

$10 \div (4 + 2 - (1+3))$

$10 \div (4 + 2 - 4)$

$10 \div (6 - 4)$

$10 \div 2$

5

13) $-2 \div 2 + (|-1| - 4) \cdot 5$

-16

$-2 \div 2 + (1 - 4) \cdot 5$

$-1 + -3 \cdot 5$

$-1 + -15$

-16

14) $(3 + 2) \div (-4 - -2 - (5 - 2))$

-1

$(3+2) \div (-4 - -2 - (5-2))$

$5 \div (-4 + 2 - 3)$

$5 \div (-2 - 3)$

$5 \div -5$

-1

15) $(4 + 5) \div (-2 - (1 - (6 - 6)))$

-3

$(4+5) \div (-2 - (1 - (6-6)))$

$9 \div (-2 - (1 - 0))$

$9 \div (-2 - 1)$

$9 \div -3$

-3

16) $6 \cdot 6 + 2 \cdot 5 + \frac{15}{5}$

49

$6 \cdot 6 + 2 \cdot 5 + \frac{15}{5}$

$36 + 10 + 3$

$46 + 3$

49

17) $\frac{(6 - 1) \cdot 2}{(4 - 3) \cdot 2}$

5

$\frac{5 \cdot 2}{1 \cdot 2} = \frac{10}{2} = 5$

18) $\frac{12 - 1^2 - 1}{4 + 1}$

2

$\frac{12 - 1^2 - 1}{4+1} = \frac{12 - 1 - 1}{5}$

$= \frac{10}{5}$

$= 2$

19) $5 - 3^2|1|$

−4

$5-3^2|1|$

$5-9(1)$

$5-9$

-4

20) $(-12 - -3 - 3) \div (|-4|)$

−3

$(-12+3-3) \div 4$

$(-9-3) \div 4$

$-12 \div 4$

-3

Evaluate each using the values given.

21) $z - xy(x - y)$; use $x = 5$, $y = 6$, and $z = 1$

31

$1-5(6)(5-6)$

$1-30(-1)$

$1+30$

31

22) $(b + a - 6)(b - a)$; use $a = -4$, and $b = 3$

−49

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

$(-1-6)(3+4)$

$(-7)(7)$

-49

23) $xy - |y + 6|$; use $x = -6$, and $y = 5$

−41

$-6(5)-|5+6|$

$-30-|11|$

$-30-11$

-41

24) $4 + |y \div 5| + x$; use $x = -2$, and $y = -5$

3

$4+|-5 \div 5|+-2$

$4+|-1|+-2$

$4+1+-2$

$5+-2$

3

25) $y(x + x^3)$; use $x = 2$, and $y = 2$

20

$2(2+2^3)$

$2(2+8)$

$2(10)$

20

26) $pq \div 6 + q^2$; use $p = 6$, and $q = 4$

20

$6(4) \div 6 + (4)^2$

$24 \div 6+16$

$4+16$

20

27) $xy^2 + 2y$; use $x = 3$, and $y = 4$

56

$3(4)^2+2(4)$

$3(16)+8$

$48+8$

56

28) $n(n \div 4 + m) - 5$; use $m = 1$, and $n = 4$

3

$4(4 \div 4+1)-5$

$4(1+1)-5$

$4(2)-5$

$8-5$

3

Pre-Algebra Worksheet U1-12

Name: _____ Date: _____

Simplify each expression below using the **ORDER OF OPERATIONS** and your knowledge of **Absolute Value.**

1. $|13|$ 13

2. $|-23|$ 23

3. $|-5.5|$ 5.5

4. $|15+(-9)|$ $|6| = 6$

4. $|(5)(-2)-6|$
$|-10-6|$
$|-16| = 16$

5. $|-4-6+3^2|$
$|-10+9|$
$|-1| = 1$

6. $|(5+8\bullet 1)-|-7||$
$|5+8-7|$
$|13-7|$
$|6| = 6$

7. $\left|\left(\frac{24}{-12}\right)-8\right|+10$
$|-2-8|$
$|-10|+10$
$10+10 = 20$

8. $(5-5+8)\bullet|(5)(-3)|$
$0+8\cdot|-15|$
$8\cdot 15$
120

Evaluate each expression below for the given value of x.

9. $2x-5$ $x=-5$
$2(-5)-5$
$-10-5$
-15

10. $-x+12$ $x=-8$
$-(-8)+12$
$8+12$
20

11. $7(3x-4)$ $x=1$
$7(3(1)-4)$
$7(3-4)$
$7(-1)$
-7

12. $4x(x-1)$ $x=-5$
$4(-5)(-5-1)$
$-20(-6)$
120

13. $(-4x+1)^2$ $x=3$
$(-4(3)+1)^2$
$(-12+1)^2$
$(-11)^2$
121

14. $2+|9x+15|$ $x=-3$
$2+|9(-3)+15|$
$2+|-27+15|$
$2+|-12|$
$2+12$

Pre-Algebra Worksheet U1-13

Name: _____ Date: _____

Please simplify each expression below by combining all like terms.

1. $3x+7-8$

$3x-1$

2. $12x+6+4x$

$16x+6$

3. $9-10x+12$

$-10x+21$

4. $7+2x+8x-15$

$10x-8$

5. $18x+7-4x+11$

$14x+18$

6. $-9+11x-5-x$

$10x-14$

7. $4x^2+5x-8x^2+9-2x$

$-4x^2+3x+9$

8. $-9x^3+12+5x-3x^3+8$

$-12x^3+5x+20$

9. $7x^4+6x^2+7x^4-3x-3x^4$

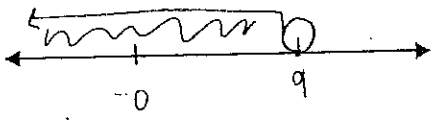
$11x^4+6x^2-3x$

10. $9x+4-8x^2+11-6x+3x+12x^2$

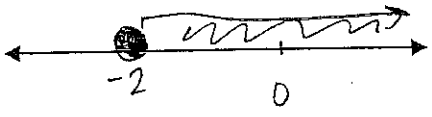
$4x^2+6x+15$

Graph each inequality on a number line.

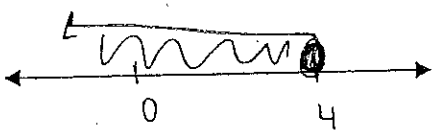
11. $x<9$



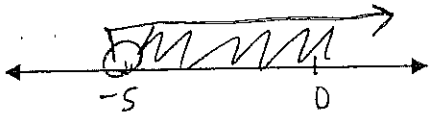
12. $x\geq -2$



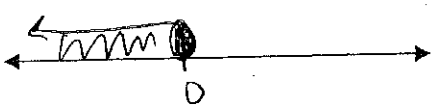
13. $x\leq 4$



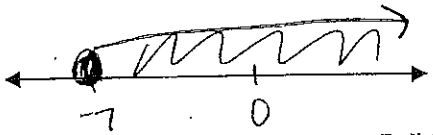
14. $x>-5$



15. $x\leq 0$



16. $x\geq -7$



Pre-Algebra Worksheet U1-14

Name: _____ Date: _____

Please simplify each expression below by using the distributing property and combining like terms.

1. $4(2x-5)$

$8x-20$

2. $-3(3x+8)$

$-9x-24$

3. $-7(-5x-3)$

$35x+21$

4. $8(-2x+2)$

$-16x+16$

5. $-(9x-4)$

$-9x+4$

6. $7(7x+10)$

$49x+70$

7. $-2(4x-8+5x)$

$-8x+16-10x$

$-18x+16$

8. $5(3+4x-5)$

$15+20x-25$

$20x-10$

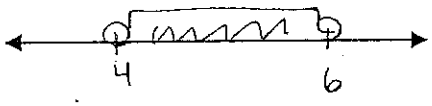
9. $-4(-2x+8x+10)$

$8x-32x-40$

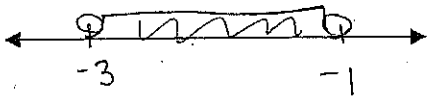
$-24x-40$

For each problem below, shade the part of the number line that satisfies the following....

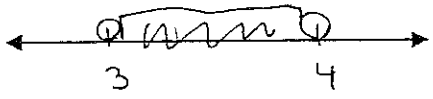
10. greater than 4 and less then 6.



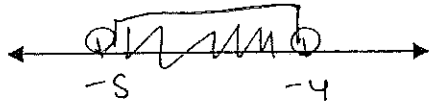
11. greater than –3 and less than –1.



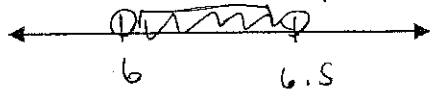
12. greater than 3 and less than 4.



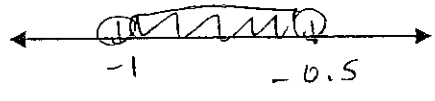
13. greater than –5 and less than –4.



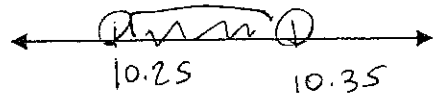
14. greater than 6 and less than 6.5.



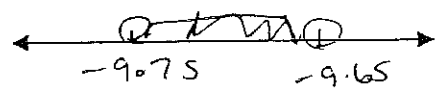
15. greater than –1 and less than –0.5.



16. greater than 10.25 and less than 10.35.



17. greater than –9.75 and less than –9.65.



Pre-Algebra Worksheet U1-15

Name: _____ Date: _____

Please simplify each expression below by using the distributing property and combining like terms.

1. $6(x-2)$ $6x-12$

2. $-7(2x+3)$ $-14x-21$

3. $-8(-4x-10)$ $32x+80$

4. $9(-7x+1)+4$ $-63x+9+4$ $-63x+13$

5. $-3(2x-14)-6x$ $-6x+42-6x$ $-12x+42$

6. $5(2x+1)+2x-3$ $10x+5+2x-3$ $12x+2$

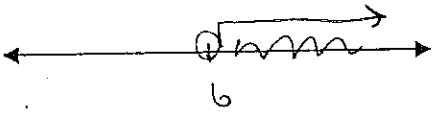
7. $6(3x-7)+2(-3x-5)$ $18x-42-6x-10$ $12x-52$

8. $-(9x+8)-4(3x+7)$ $-9x-8-12x-28$ $-21x-36$

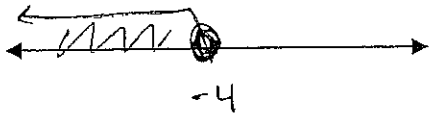
9. $3(-8x+18x-11)$ $-24x+54x-33$ $30x-33$

For each problem below, shade the part of the number line that satisfies the following…

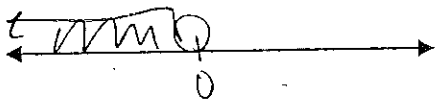
10. greater than 6



11. less than or equal to –4

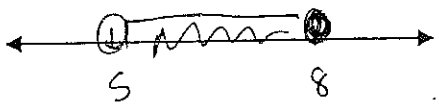


12. less than 1

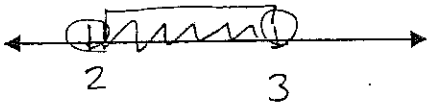


13. greater than or equal to 0

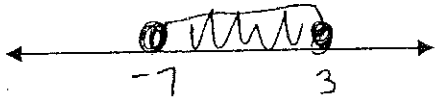
14. greater than 5 and less than or equal to 8



15. greater than 2 and less than 3



16. greater than or equal to –7 and less than or equal to -3



Unit 1 Review Packet

Name: _____

Concept 1: Writing an Expression.

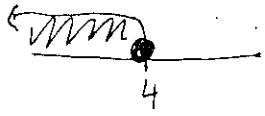
Please write an expression for each statement below.

1. a number plus 16 $x+16$
2. the product of 5 and a number minus 10 $5x-10$
3. the sum of a number and 12 is less than negative 2 $n+12<-2$
4. the quotient of a number and 10 equals 7. $\frac{x}{10}=7$
5. the difference of 6 times a number and 8 is greater than or equal to 15. $6x-8\geq 15$
6. a number squared is less than the product of –4 and a number $x^2<-4x$
7. the quantity of 18 plus a number equals 23 $(18+x)=23$

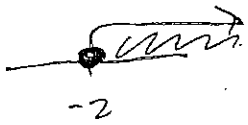
Concept 2: Graphing Inequalities

Graph each inequality below on a number line.

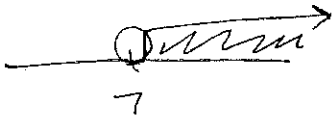
1. $x \leq 4$



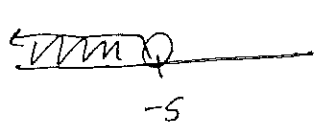
2. $x \geq -2$



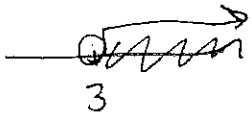
3. $x > 7$



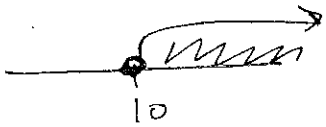
4. $x < -5$



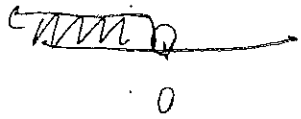
5. $x > 3$



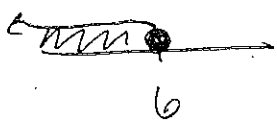
6. $x \geq 10$



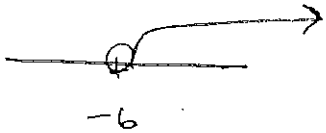
7. $x < 0$



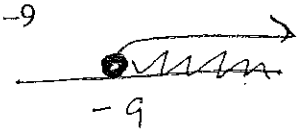
8. $x \leq 6$



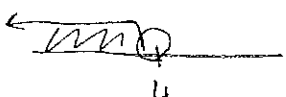
9. $x > -6$



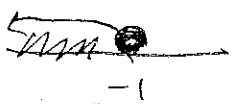
10. $x \geq -9$



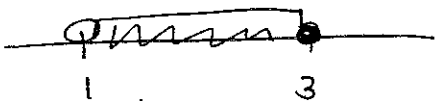
11. $x < 4$



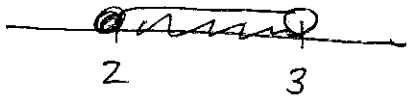
12. $x \leq -1$



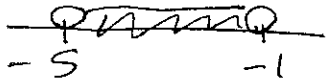
13. greater than 1 and less than or equal to 3



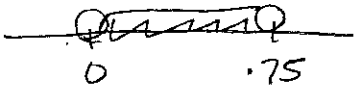
14. greater than or equal to 2 and less than 3



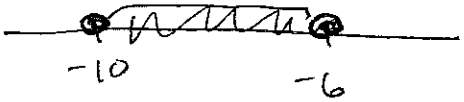
15. greater than –5 and less than –1



16. greater than 0 and less than .75



17. greater than or equal to –10 and less than or equal to -6



Concept 3: Exponents

Write each statement as an exponent.

1. $4 \bullet 4 \bullet 4$ → 4^3

2. $7 \bullet 7 \bullet 7 \bullet 7 \bullet 7 \bullet 7$ → 7^6

3. $10 \bullet 10$ → 10^2

4. $-3 \bullet -3 \bullet -3 \bullet -3$ → $(-3)^4$

5. $12 \bullet 12 \bullet 12 \bullet 12 \bullet 12 \bullet 12 \bullet 12 \bullet 12 \bullet 12 \bullet 12$ → 12^{10}

Expand each exponent.

6. 6^7 → $6 \cdot 6 \cdot 6 \cdot 6 \cdot 6 \cdot 6 \cdot 6$

7. $(-2)^5$ → $(-2)(-2)(-2)(-2)(-2)$

8. π^8 → $\pi \cdot \pi \cdot \pi \cdot \pi \cdot \pi \cdot \pi \cdot \pi \cdot \pi$

Concept 4: Number patterns

Find the next three numbers in each pattern below.

1. 7, 14, 21, 28, 35, 42, 49, 56

2. 2, 5, 11, 20, 32, 47, 64, 83 (3, 6, 9, 12)

3. 1, 2, 2, 4, 8, 32, 256, 8192, 2,097,152

4. 5, 6, 9, 14, 21, 30, 41, 54 (1, 3, 5, 7)

5. 8, 18, 23, 33, 38, 48, 53, 63, 68, 78

6. 1, 9, 5, 13, 9, 17, 13, 21, 17, 25, 21, 29 (+8, −4)

7. 1, 1, 2, 3, 5, 8, 13, 21, 34, 55

Concept 5: Order of Operations

Simplify each expression below using the order of operations.

1. $6+7\bullet2$

$6+14$

20

2. $2-6\div3+4\bullet3$

$2-2+12$

$0+12$

12

3. $3^2+5\bullet(-2)$

$9+(-10)$

-1

4. $(16\div8+2)-9$

$(3+2)-9$

$5-9$

-4

5. $(10-2\bullet7)+(5\bullet1-3)$

$(10-14)+(5-3)$

$(-4)+(2)$

-2

6. $(6+3\bullet4)^2$

$(6+12)^2$

$(18)^2$

324

7. $(5(-3)+7(3))+4^2$

$(-15+21)+16$

$6+16$

22

8. $[(3-3\bullet3)-(24\div2+8)]-10$

$[(3-9)-(12+8]-10$

$[-6-20]-10$

$-26-10$

-36

9. $[(12+25\div(-5)+3\bullet2)-2^2]+10$

$[(12+(-5)+6)-4]+10$

$[(7+6)-4]+10$

$[13-4]+10$

$9+10=19$

10. $7+12\bullet2-3\div3+10-5$

$7+24-1+10-5$

$31-1+10-5$

$30+10-5$

$40-5$

35

11. $(15\div5+16)-5^2+(10\bullet2-12)$

$(3+16)-25+(20-12)$

$19-25+8$

$-6+8=2$

12. $5((16+(14\div2+10)+4^2)-20)$

$5(16+(7+10)+16)-20)$

$5(16+17+16)-20)$

$5(33+16)-20)$

$5(49-20)$

$5(29)$

145

Concept 6: Absolute Value Problems

Simplify each expression below.

1. $|-10|$

10

2. $|7|$

7

3. $|15|$

15

4. $|-\Delta|$

Δ

5. $|-5+8|$

$|3|$

$\boxed{3}$

6. $|10 \bullet -3+25|$

$|-30+25|$

$|-5|$

$\boxed{5}$

7. $|3^2+24 \div 3|$

$|9+8|$

$|17|$

$\boxed{17}$

8. $|(3-6) \bullet 2+12|$

$|(-3)(2)+12|$

$|-6+12|$

$|6| = \boxed{6}$

9. $|(2 \bullet -3) \bullet (18 \div -9)|^2$

$|-6 \cdot -2|^2$

$|12|^2$

$12^2 = \boxed{144}$

10. $|9(5+4 \bullet 8)-23|$

$|9(5+32)-23|$

$|9(37)-23|$

$|333-23|$

$|310| = \boxed{310}$

Concept 7: Evaluating Expressions

Please evaluate and simplify each expression below.

1. $x-6$; $x=3$

$3-6$

$\boxed{-3}$

2. $3x+6$; $x=-4$

$3(-4)+6$

$-12+6$

$\boxed{-6}$

3. $5(2x+3)$; $x=2$

$5(2(2)+3)$

$5(4+3)$

$5(7) = \boxed{35}$

4. $-3(4x-6x)$; $x=1$

$-3(4(1)-6(1))$

$-3(4-6)$

$-3(-2)$

$\boxed{6}$

5. $(9x+6)^2$; $x=-2$

$(9(-2)+6)^2$

$(-18+6)^2$

$(-24)^2$

$\boxed{576}$

6. $6x(9-4x)$; $x=6$

$6(6)(9-4(6))$

$36(9-24)$

$36(-15)$

$\boxed{-540}$

7. $7x+4-8x+6$; $x=-7$

$7(-7)+4-8(-7)+6$

$49+4+56+6$

$\boxed{115}$

8. $(3x+4)(5-2x)$; $x=0$

$(3(0)+4)(5-2(0))$

$(0+4)(5-0)$

$(4)(5)$

$\boxed{20}$

9. $(3x)^2(5x)^2$; $x=2$

$(3(2))^2+(5(2))^2$

$(6)^2+(10)^2$

$36+100 = \boxed{136}$

10. $(7-5x)(4x+1)$; $x=8$

$(7-5(8))(4(8)+1)$

$(7-40)(32+1)$

$(-33)(33)$

-1089

11. $(x+8-3x)^2$; $x=-3$

$(-3+8-3(-3))^2$

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

$(5+9)^2$

$(14)^2$

196

12. $10x+12x-8$; $x=10$

$10(10)+12(10)-8$

$100+120-8$

212

Concept 8: Fractions, Decimals, and Percents

Convert each fraction into a decimal and then convert each decimal into a percent. Round your decimal answer to the nearest 100^{th}.

1. $\frac{13}{15}$

Decimal: $.8\overline{6}$

Percent: 87%

2. $\frac{7}{8}$

Decimal: .875

Percent: 88%

3. $\frac{5}{14}$

Decimal: .357

Percent: 36%

4. $\frac{10}{17}$

Decimal: .588

Percent: 59%

5. $\frac{19}{16}$

Decimal: 1.187

Percent: 119%

6. $\frac{11}{9}$

Decimal: $1.\overline{2}$

Percent: 122%

Concept 9: Probability

1. Your computer password has 2 lowercase letters followed by 6 digits. Your friend randomly chooses 2 lowercases letters and 6 digits. What is the probability that your friend chooses your password? $26 \cdot 26 \cdot 10 \cdot 10 \cdot 10 \cdot 10 \cdot 10 \cdot 10 = 676{,}000{,}000$

2. You roll a die, randomly draw a marble from a bag (red, blue, or yellow), and flip a coin. What is the number of outcomes that are possible?

$6 \cdot 3 \cdot 2 = 36$

3. A huge, and I mean huge, bucket contains 300 different types of balls. It contains 56 footballs, 86 baseballs, 38 softballs, 47 volleyballs, 60 ping-pong balls, and 13 tennis balls.

   a. What's the probability that a baseball will be randomly selected from the bucket?

   $\frac{86}{300} = .28\overline{6}$

   b. What's the probability that a tennis ball will be randomly selected from the bucket?

   $\frac{13}{300} = .04\overline{3}$

   c. What's the probability that a round ball will be randomly selected from the bucket?

   $\frac{86+38+47+60+13}{300} = \frac{244}{300} = .81\overline{3}$

   d. What's the probability that a ball that is randomly selected from the bucket will be larger than a baseball?

   $\frac{56+38+47}{300} = \frac{141}{300} = .47$

   e. What's the probability that a ball that is randomly selected from the bucket will be larger than a baseball and round?

   $\frac{38+47}{300} = \frac{85}{300} = .28\overline{3}$

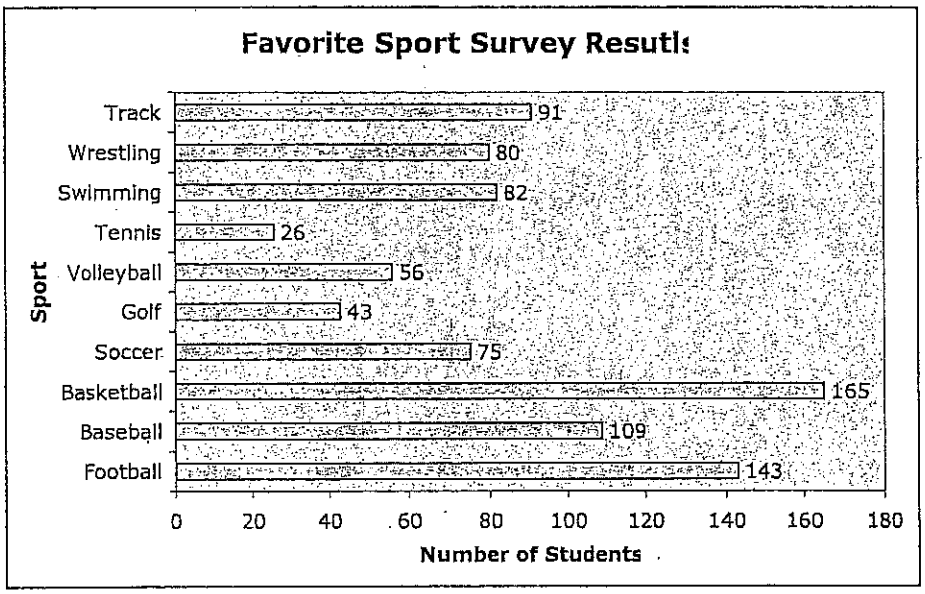
   f. Seventy kickballs are purchased and added to the bucket of balls. What is the new probability that a ball that is randomly selected from the bucket will be larger than a baseball and round?

   $\frac{38+47+70}{370} = \frac{155}{370} = .419$

   g. What is the probability that a ball that is randomly selected from the bucket will have seams on the ball?

   $\frac{86+38}{300} = \frac{124}{300} = .41\overline{3}$

4. 870 students were asked what sport was their favorite sport. The results of the survey are shown in the chart below.



a. What is the probability that a student from the survey is selected at random and the student liked golf the most? $\frac{43}{870} = 0.049$

b. What is the probability that a student from the survey is selected at random and the student liked track the most? $\frac{91}{870} = .105$

c. What is the probability that a student from the survey is selected at random and the student liked basketball the most? $\frac{165}{870} = .190$

d. What is the probability that a student from the survey is selected at random and the student liked a sport that uses ball? $\frac{26+56+43+75+165+109+143}{870} = \frac{617}{870} = .709$

e. What is the probability that a student from the survey is selected at random and the student liked a sport that is not played on a field? $\frac{91+80+82+26+56+43+165}{870} = \frac{543}{870} = .624$

f. What is the probability that a student from the survey is selected at random and the student liked a sport that has more than 5 players participating at one time during the game? $\frac{56+75+109+143}{870} = \frac{383}{870} = .440$

Concept 10: Distributive Property and Combining Like Terms

Simplify each expression below using your knowledge of the distributive property and combining like terms.

1. $6(2x+9)$

$12x+54$

2. $-4(3x-8)$

$-12x+32$

3. $5(11x+90)$

$55x+450$

4. $-7(-2x-6)$

$14x+42$

5. $10(-4x+12)$

$-40x+120$

6. $-12(3x+8)$

$-36x-96$

7. $4x+9x-5+10$

$13x+5$

8. $13-5x+10-4x$

$-9x+23$

9. $-7x-16+5x+19$

$-2x+3$

10. $6x+9x-7+6x-5$

$21x-12$

11. $-4+10x-6+7x+12$

$17x+2$

12. $3+10-7x-9x+1$

$-16x+14$

13. $5(6x-2)+5x$

$30x-10+5x$

$35x-10$

14. $-4(3x-2)+6$

$-12x+8+6$

$-12x+14$

15. $8(x+7)+12x$

$8x+56+12x$

$20x+56$

16. $7(2x+9)-3x+8$

$14x+63-3x+8$

$11x+71$

17. $5x+9-4(6x+1)$

$5x+9-24x-4$

$-19x+5$

18. $7x+6(4x-5)+17$

$7x+24x-30+17$

$31x-13$

19. $4(-3x+3)+5(8x-3)$

$-12x+12+40x-15$

$28x-3$

20. $-2(-5x+10)+3(7x+2)$

$10x-20+21x+6$

$31x-14$

21. $7(x+1)-7(7x+7)$

$7x+7-49x-49$

$-42x-42$