Fundamentals of College Algebra Summer Packet Name:_____

1. Determine which of the numbers in the set are (a) natural numbers, (b) integers, (c) rational numbers, and (d) irrational numbers.

   a. $\left\{\frac{1}{5}, \sqrt{5}, -\frac{24}{3}, -42, -4.5, 10, -\pi\right\}$

2. Order the fractions by (a) writing both fractions with the same denominator and (b) rewriting both fractions in decimal form.

   a. $-\frac{3}{8}, -\frac{5}{4}$

   b. $\frac{3}{4}, \frac{5}{6}$

3. Evaluate the expression.
   a. $|-16.2|$

   b. $-|-0.08|$

4. Place the correct symbol (<, >, or =).

   a. $|525| \quad |-525|$

   b. $|16| \quad |-25|$

   c. $|-\pi| \quad -|-2\pi|$

5. Find the sum **WITHOUT** a calculator.

   a. $-23 + (-4)$

   b. $34 + (-16)$

   c. $-54 + 68$

   d. $18 + (-26)$

   e. $7 + (-4) + 1$

   f. $-82 + (-36) + 82$

   g. $2 + (-51) + 13$

6. Find the difference **WITHOUT** a calculator.

   a. $26 - 34$

   b. $-63 - (-8)$

   c. $-942 - (-942)$

   d. $-12 - (-7)$

   e. $-84 - 55$

   f. $-120 - 142$

   g. $-2500 - (-600)$

7. Evaluate the expression **WITHOUT** a calculator.

   a. $-1 + 3 - (-4) + 10$

   b. $6 + 7 - 12 - 5$

8. Find the product **WITHOUT** a calculator. (Use the vertical method if needed.)

   a. $4(2)(-6)$

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

   c. $-10(-4)(-2)$

   d. $|8(-9)|$

   e. $|8(-3)(5)|$

f. -14×24

g. $-72(866)$

h. $-11(-24)$

i. $-14(-585)$

9. Perform the division **WITHOUT** a calculator. (Use long division when needed.)

   a. $0 \div 17$

   b. $\frac{-125}{-25}$

   c. $\frac{72}{-12}$

   d. $936 \div 52$

   e. $936 \div (-8)$

   f. $-5152 \div 23$

10. Evaluate the expression and write the result in simplest form.

   a. $-\frac{39}{23} + \frac{11}{23}$

   b. $-\frac{13}{8} - \frac{3}{4}$

   c. $-8\frac{1}{2} * 3\frac{2}{5}$

   d. $\frac{11}{13} \div 0$

   e. $2\frac{4}{9} \div 5\frac{1}{3}$

11. Evaluate the expression.

   a. 4^3

   b. 5^3

   c. $\left(\frac{4}{5}\right)^4$

   d. $(-4)^2$

   e. $-(-6)^3$

12. Evaluate the expression. Round your answers to two decimal places.

   a. $-1.0012 - 3.25 + 0.2$

   b. $7.8(12.32)(-0.95)$

13. Translate the verbal phrase into an algebraic expression.

   a. 17 more than *y*

   b. *k* decreased by 7

   c. Ten more than *x*

   d. The product of 30 and *c*

   e. *d* divided by 100

   f. One-half of *y*

14. Write a verbal description of the algebraic expression, without using a variable. (There is more than one correct answer.)

   a. $x + 9$

b. $4 - 7x$

c. $9 - \frac{1}{4}x$

d. $-10(t - 6)$

e. $\frac{y-3}{4}$

f. $\frac{1}{4} + \frac{y}{8}$

g. $x^3 - 1$

h. $3(x - 5) - 2$

i. $3(r - 2s) - 5(3r - 5s)$

j. $10x + 5[6 - (2x + 3)]$

k. $-2x(x - 1) + x(3x - 2)$

l. $4y[5 - (y + 1)] + 3y(y + 1)$

m. $(2x - 1)2 + x + 9$

15. Simplify the expressions.

a. $-7(5a)$

b. $-(5t)$

c. $(-3y)(-4y)$

d. $(10t)(-4t^2)$

e. $\frac{5x}{8} * \frac{16}{5}$

f. $\left(\frac{4x}{3}\right)\left(\frac{3x}{16}\right)$

g. $(7r^2s^3)(3rs)$

16. Evaluate the expression for the given value of the variable(s).

a. $3x - 2$, for $x = \frac{4}{3}$

b. $64 - 16t^2$, for $t = 3$

c. $a^2 + 2ab$, for $a = -2, b = 3$

d. $y - |-3x + y|$, for $x = -2, y = -1$

e. $\frac{5x}{y-3}$, for $x = 2, y = 4$

f. $\frac{2x-y}{y^2+1}$, for $x = 1, y = 3$

g. $\frac{yz-3}{x+2z}$, for $x = 0, y = -7, z = 3$