Lab #1: Math Review

1) Explain each of the following in words:
- **a.** $X > 5$
- **b.** $X < 5$
- **c.** $X \leq 5$
- **d.** $X \geq 5$

2) Express the following statements in symbols:
- **a.** X is greater than Y
- **b.** X multiplied by Y is less than Z
- **c.** X is greater than –Y but less than Y
- **d.** X divided by Y is less than or equal to Z

3) If x = 3, y = 12, & z = 25,
are the following true or false?
- **a.** $X < Y < Z$
- **b.** $\frac{X}{Y} \geq \frac{Y}{Z}$
- **c.** $(X)(Y) \leq |-Z|$
- **d.** $(XY - Z) \leq Y$

4) Solve:
- **a.** $|-6| =$
- **b.** $|6| =$
- **c.** If w = 6 and y = 10:
  - **i.** $|w - y|$
  - **ii.** $|-w - y|$

5) Solve:
- **a.** $8 + 2 =$
- **b.** $8 - (-2) =$
- **c.** $8 + (-2) =$
- **d.** $-8 - (-2) =$

6) Solve:
- **a.** $(-6)(-2) =$
- **b.** $(-6)(2) =$
- **c.** $(-6)(1)(0)(-3) =$
- **d.** $(-a)(-b)(-c)(-d) =$

7) Solve:

a. $(-4)(1)(2)(-3) =$

b. $(14)(-6)(-2)(-12) =$

c. $(-a)(b)(-c)(-d) =$

d. $(15)(-6)(0)(1) =$

8) Solve:

a. $\frac{(-a)(b)}{-c} =$

b. $\frac{c}{(-b)(d)} =$

c. $\frac{(-c)(d)}{(-c)(-a)} =$

d. $\frac{0}{a} =$

9) If x = 7, y = -13, & z = 15:

a. $\frac{(-x)(y)}{z} =$

b. $\frac{x+z}{(-y)(x)} =$

c. $\frac{z-y}{-x} =$

d. $\frac{(x)(y)}{(z-x)} =$

10) Reduce:

a. $\frac{4}{30} =$

b. $\frac{6}{15} =$

c. $\frac{32}{12} =$

d. $\frac{11}{121} =$

11) Solve:

a. $\frac{1}{2}+\frac{1}{3}=$

b. $\frac{1}{4}+\frac{5}{12}=$

c. $\frac{16}{3}-\frac{12}{3}=$

d. $\frac{1}{4}-\frac{2}{9}=$

12) Solve:

a. $\frac{a}{b}+\frac{c}{b}=$

b. $\frac{a}{b}-\frac{a}{bd}=$

c. $\frac{a}{b}+\frac{c}{d}=$

13) Solve:

a. $\frac{2}{6}*\frac{3}{4}=$

b. $\frac{1}{2}*\frac{3}{8}=$

c. $2\frac{1}{3}*\frac{4}{5}=$

d. $\frac{a}{b}*\frac{c}{d}=$

e. $\frac{1}{2}*\frac{3}{4}*\frac{12}{25}*\frac{5}{9}=$

14) Solve:

a. $\frac{1}{3}\div\frac{2}{3}=$

b. $\frac{2}{6}\div\frac{3}{4}=$

c. $2\frac{2}{5}\div\frac{2}{15}=$

d. $\frac{3}{5} \div \frac{1}{4} =$

15) Solve:

a. $5! =$

b. $0! =$

c. $\frac{4!6!}{8!} =$

d. $\frac{5!}{2!} =$

16) Solve:

a. $2^3 =$

b. $3^1 =$

c. $4^0 =$

d. $\left(\frac{3}{8}\right)^2 =$

17) Solve:

a. $2^3 + 3^4 =$

b. $2^0 + 5^3 =$

c. $3^4 - 2^4 =$

d. $5^2 - 6^1 =$

18) Simplify:

a. $\left(x^3\right)\left(x^4\right) =$

b. $\left(x^5\right)\left(x^3\right) =$

c. $\left(2^2\right) \div \left(2^5\right) =$

d. $\left(\frac{2}{5}\right)^3 \div \left(\frac{1}{2}\right) =$

19) Simplify:

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

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

c. $(ab+bc)^2 =$

d. $(x+\bar{x})^2 =$

e. $(3x-4)(x+6) =$

20) Simplify:

a. $\frac{(ab-ac)+a(b+c)}{2b}=$

b. $4(3x)^2=$

c. $\left[4(3x)\right]^2=$

d. Solve for x: $\frac{x}{y}=c$

e. Solve for b: $-a-b=c$

21) Simplify:

$ab+5\left[a-b(6-4)\right]^2=$

22) Simplify:

$\frac{bc(a+c)}{abc-cb^2}=$

23) Simplify:

$\frac{-x(y-z)-(z-xy)}{x-1}=$

24) Simplify:

a. $\sqrt{b^2}=$

b. $2\sqrt{9}=$

c. $\sqrt{25a}=$

d. $\sqrt{16+9}=$

e. $\sqrt{32}=$

25) Simplify:

a. $\sqrt{16x^2}=$

b. $\sqrt{2x^2}=$

c. $\frac{6}{9}\sqrt{9x}=$

d. $\sqrt{x(2x^2)}=$

e. True or false?

i. $\sqrt{\frac{x+y}{z}}=\frac{\sqrt{x+y}}{\sqrt{z}}$

ii. $\sqrt{x+y}=\sqrt{x}+\sqrt{y}$