MATH 081 FINAL EXAM REVIEW

1. **Evaluate:**
   a. $|10-15|$
   b. -7^2
   c. $-4^3\sqrt{100}+|-5+-7|$
   d. $-36\div(-3)^2\times(-5)$
   e. $-5(-7+16\div 2)$
   f. $-4-(-2)-3$
   g. $-6+56\div 8$
   h. $5(8-10)^3-[12\div(3)(2)]^2$
   i. $-2(7-9)^3-[8\div 4\cdot 2]^2$
   j. $12^2-[21+6\div 3]$

2. **Perform the indicated operation:**
   a. $\left(\frac{8}{15}\right)\times\left(-\frac{5}{12}\right)$
   b. $(-16)\times\left(-\frac{3}{8}\right)$
   c. $\left(-\frac{5}{4}\right)\div\left(-\frac{45}{28}\right)$
   d. $\frac{3}{2}\div\left(-\frac{1}{3}\right)$
   e. $\frac{7}{3}\div 21$
   f. $\frac{10}{\frac{5}{7}}$
   g. $\frac{1}{5}+\frac{7}{10}$
   h. $\frac{1}{6}+\frac{4}{15}$
   i. $-\frac{7}{12}-\frac{13}{24}$
   j. $3-\frac{9}{5}$

3. **Evaluate the expression:**
   a. $\left(\frac{5}{3}\right)^3$
   b. $-\frac{4}{7}+\frac{3}{7}\div\frac{36}{28}$

4. **Simplify the expression:**
   a. $9x-4y-7+5y-6x-3$
   b. $5.6a-8.9a+4.7b+6.3b+1.2$
   c. $\frac{7}{8}a+\frac{2}{3}-\frac{1}{4}a-\frac{1}{4}$
   d. $3(8x-4)$
   e. $-(6m+5)$
   f. $\frac{2}{3}(6x-5)$

5. **Evaluate the expression:**
   a. Evaluate $2x-y+3$ if $x=-9$ and $y=1$.
   b. Evaluate $\frac{28}{c}-\frac{35}{x}-y$ if $c=-4$, $x=7$, and $y=11$.
   c. Evaluate $\frac{x}{12}-\frac{y}{5}+z$ if $x=-6$, $y=-35$, and $z=\frac{1}{2}$.
   d. Evaluate $(b+3a)^2-3c^2$ if $a=5$, $b=-7$, and $c=-1$

6. **Solve the following equations:**

a. $x+9=-7$

b. $-4.9x=15.68$

c. $\frac{3}{5}x=3$

d. $13=-\frac{z}{2}$

e $-a=-12$

f. $1.2y-3.7=2.3$

g. $3x-5x=-6+2$

h. $7x+3=-11$

i. $3x-5=2x+7$

j. $5x+3=6-2x$

k. $-3(5x-3)=14$

l. $4(x+3)-8x=32$

m. $12-7y=17y-5(3-4y)$

n. $4-5y=7y-2(3-y)$

o. $\frac{3}{5}x=-\frac{4}{7}+x$

p. $\frac{6}{5}y+3=\frac{3}{10}-\frac{1}{5}y$

7. **Write an algebraic equation for each word problem. Then solve the equation to answer the question:**

a. The difference of 9 and 5 times a number is 14. What is the number?

b. Lisa and Bob drove 100 miles on their vacation. Lisa drove 22 miles more than Bob drove. How many miles did each drive?

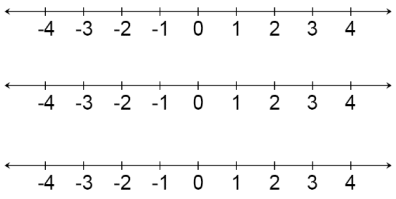
c. The length of a rectangle is 5 inches more than its width. If the perimeter of the rectangle is 34 inches, find its length and width. Recall that the perimeter of a rectangle is given by $P=2L+2W$.

8. **Solve each inequality, graph the solution set, and write it in interval notation:**

a. $3x-7<11+9x$

b. $5(5x-6)<23x-26$

c. $-17x+2\le -15x$



9. **Find the indicated variable:**

a. Use the formula $P=2L+2W$ to find P if $L=10$ and $W=4$.

b. Use the formula $F=ma$ to find m if $F=30$ and $a=5$

10. **Solve the equation for the indicated variable:**

a. In the equation $y = mx + b$, solve for x.

b. In the equation $PV = nRT$, solve for T.

c. In the equation $N = r(A - s)$, solve for A.

11. **Solve the following proportions:**

a. $\frac{-26}{n} = \frac{4}{5}$ b. $\frac{2}{1.5} = \frac{n}{4.5}$ c. $\frac{n}{\frac{3}{5}} = \frac{\frac{2}{5}}{\frac{4}{3}}$

12. **Translate each problem into a proportion and solve the problem:**

a. A solution calls for 15 ml of a drug for every 38 liters of water. How much water is needed for 4.5 ml of the drug?

b. If 2.5 pounds of carriage bolts costs $3.80, how much will 21.5 pounds cost?

13. **Perform each unit conversion:**

a. Convert 60 inches to feet. Use the conversion fact: **12 inches = 1 foot**.

b. Convert 65 grams to milligrams. Use the conversion fact: **1000 milligrams = 1 gram.**

c. Convert 8 pounds to ounces. Use the conversion fact: **16 ounces = 1 pound**.

d. Convert 647 centimeters to meters. Use the conversion fact: **100 centimeters = 1 meter**.

14. **Convert:**

a. Write $\frac{7}{8}$ as a percent.

b. Write 0.65 as a percent.

c. Write 0.003 as a percent.

d. Write 9 % as a decimal.

e. Write 150 % as a decimal.

f. Write 84 % in simplest fraction form.

g. Write 0.5 % in simplest fraction form.

15. **Solve each percent problem:**

a. 23 is 5% of what number?

b. What percent of 50 is 27?

c. What is 35% of 400?

16. **Solve each application problem:**

a. An automobile company is recalling 8% of its cars sold in Baltimore. If 350 cars were sold in Baltimore, how many cars are being recalled?

b. Alison bought a sofa for $239 and paid $14.34 in tax. What is the tax rate?

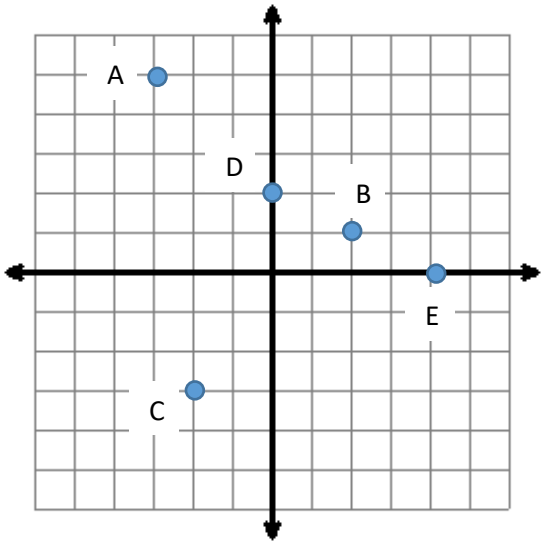
c. Andre is paid 12.5% commission on his sales. If he wants to earn $2500 in commission, what amount of sales must he make?

d. A shirt costs $45 and a pair of pants costs $50. If sales tax is 6%, do I have enough to buy both with $100? Explain why or why not.

e. What is the simple interest on a loan of $30,000 for 5 years if the interest rate is 8.4%?

f. How much time does it take an investment of $2500 to double in value if the annual simple interest rate is 5%?

17. **Write the ordered pair (*x*, *y*) for each of the points shown on the graph:**



A =

B =

C =

D =

E =

18. **Determine if the ordered pair is a solution of the given equation:**

a. Is $(-2,4)$ a solution of the equation $-x+2y=6$?

b. Is $(2,-3)$ a solution of the equation $x-3y=11$?

19. **Determine the intercept of the graph of the given equation:**

a. Find the *x*-intercept of the graph of $3x+2y=-6$.

b. Find the *y*-intercept of the graph of $3x+2y=-6$.

c. Find the *x*-intercept of the graph of $-12x+8y=-6$.

20. **Find the slope of the line:**

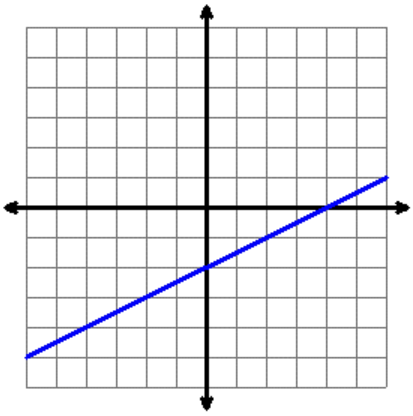
a. passing through the points $(1,10)$ and $(3,4)$

b. passing through the points $(8,-3)$ and $(4,-7)$

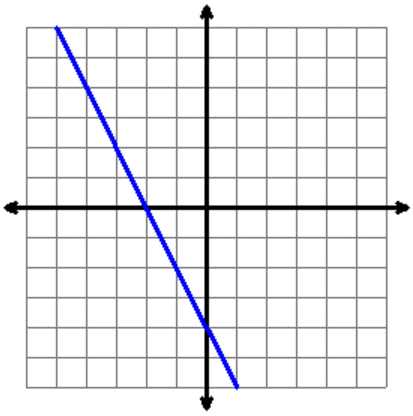
c. passing through the points $(5,3)$ and $(7,3)$

21. **Write the equation of each graphed line:**

a.



b.



22. **Use the information given to write the equation of each line:**

a. Write the equation of the line with slope 3 that passes through the point $(2,-4)$.

b. Write the equation of the line with slope $-\frac{5}{4}$ that passes through the point $(-8,13)$.

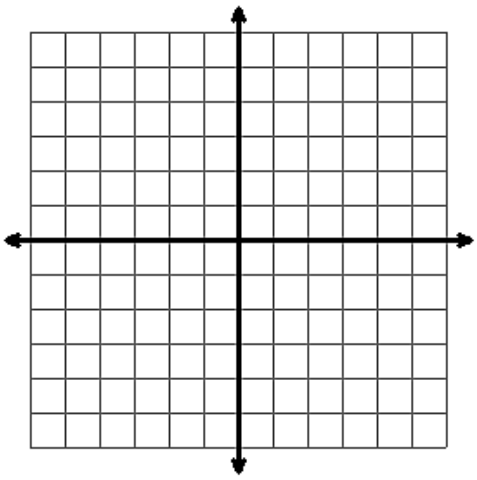
c. Write the equation of the line that passes through the points $(4,6)$ and $(0,3)$.

d. Write the equation of the line that passes through the points $(-9,-2)$ and $(3,4)$.

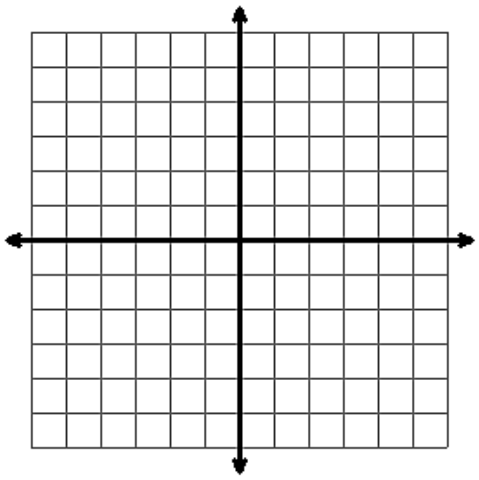
e. Write the equation of the line that passes through the points $(-9,-2)$ and $(-9,4)$.

23. **Graph each line (continued on next page):**

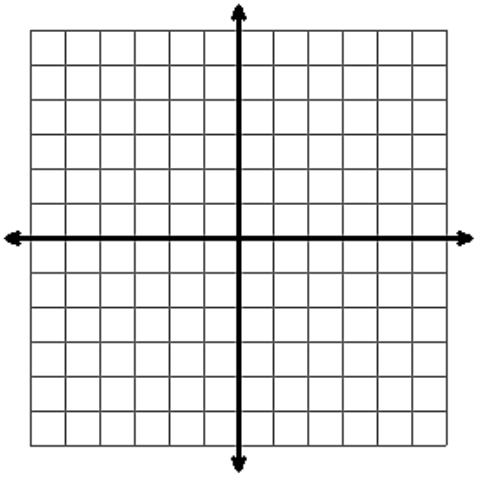
a. $y=\frac{2}{5}x-3$



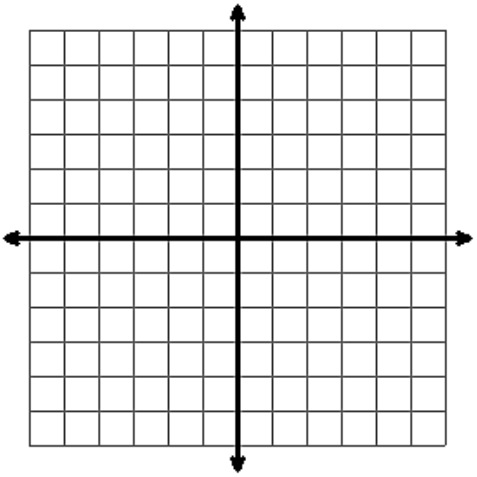
b. $y=-\frac{4}{3}x+2$



c. $2x - y = -4$



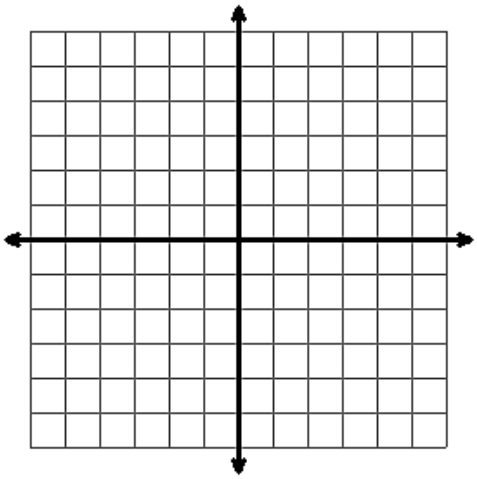
d. $6x + 5y = 30$



24. **Solve each system of equations by graphing:**

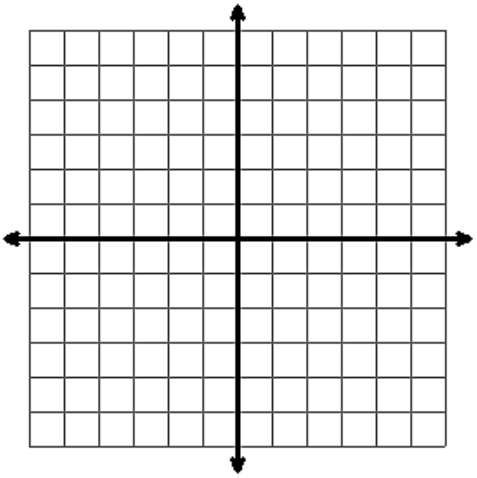
a.

$$y = -\frac{1}{2}x + 4$$
$$y = 2x - 1$$



b.

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



MATH 081 FINAL EXAM REVIEW – ANSWERS

1. a. 5
   b. –49
   c. –628
   d. 20
   e. –5
   f. –5
   g. 1
   h. –104
   i. 0
   j. 121

2. a. $-\frac{2}{9}$
   b. 6
   c. $\frac{7}{9}$
   d. $-\frac{9}{2}$
   e. $\frac{1}{9}$
   f. 14
   g. $\frac{9}{10}$
   h. $\frac{13}{30}$
   i. $-\frac{9}{8}$
   j. $\frac{6}{5}$

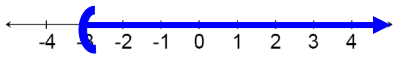
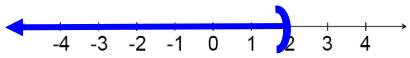
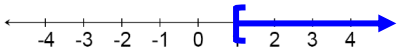
3. a. $\frac{125}{27}$
   b. $-\frac{5}{21}$

4. a. $3x+y-10$
   b. $-3.3a+11b+1.2$
   c. $\frac{5}{8}a+\frac{5}{12}$
   d. $24x-12$
   e. $-6m-5$
   f. $4x-\frac{10}{3}$

5. a. –16
   b. –23
   c. 7
   d. 61

6. a. $x=-16$
   b. $x=-3.2$
   c. $x=5$
   d. $z=-26$
   e $a=12$
   f. $y=5$
   g. $x=2$
   h. $x=-2$
   i. $x=12$
   j. $x=\frac{3}{7}$
   k. $x=-\frac{1}{3}$
   l. $x=-5$
   m. $y=\frac{27}{44}$
   n. $y=\frac{5}{7}$
   o. $x=\frac{10}{7}$
   p. $y=-\frac{27}{14}$

7. a. Equation: $9-5n=14$ Solution: The number is -1.
   b. Equation: $b+22+b=100$ Solution: Lisa drove 61 miles and Bob drove 39 miles.
   c. Equation: $2w+2(w+5)=34$ Solution: The width is 6 inches and the length is 11 inches.

8. a. $x>-3$  Interval Notation: $(-3,\infty)$
   b. $x<2$  Interval Notation: $(-\infty,2)$
   c. $x\geq 1$  Interval Notation: $[1,\infty)$

9. a. $P=28$
   b. $m=6$

10. a. $x=\dfrac{y-b}{m}$
    b. $T=\dfrac{PV}{nR}$
    c. $A=\dfrac{N+rs}{r}$ or $A=\dfrac{N}{r}+s$

11. a. $n=-\dfrac{65}{2}=-32.5$ b. $n=6$ c. $n=\dfrac{9}{50}$

12. a. 11.4 liters of water
    b. $ 32.68

13. a. 5 feet
    b. 65,000 milligrams
    c. 128 ounces.
    d. 6.47 meters.

14. a. 87.5 %
    b. 65 %
    c. 0.3 %
    d. 0.09
    e. 1.5
    f. $\dfrac{21}{25}$
    g. $\dfrac{1}{200}$

15. a. 460
    b. 54 %
    c. 140

16. a. 28 cars
    b. 6 %
    c. $ 20,000
    d. No, $100.70 is needed.
    e. $ 12,600
    f. 20 years

17. A = $(-3,5)$ B = $(2,1)$ C = $(-2,-3)$ D = $(0,2)$ E = $(4,0)$

18. a. No b. Yes

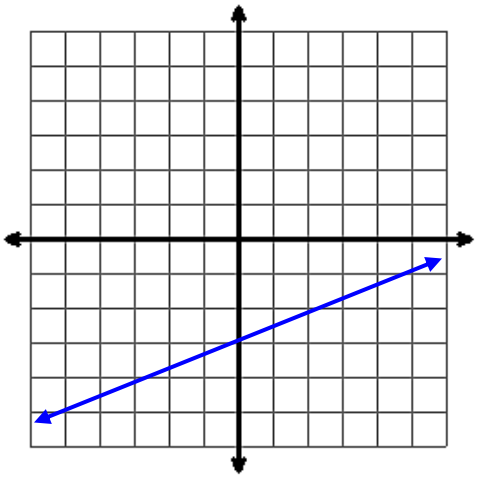
19. a. x-intercept: -2
    b. y-intercept: -3
    c. x-intercept: $\frac{1}{2}$

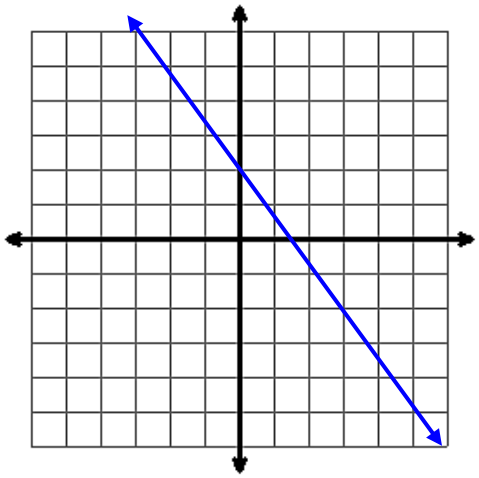
20. a. slope $m = -3$
    b. slope $m = 1$
    c. slope $m = 0$

21. a. $y = \frac{1}{2}x - 2$ b. $y = -2x - 4$

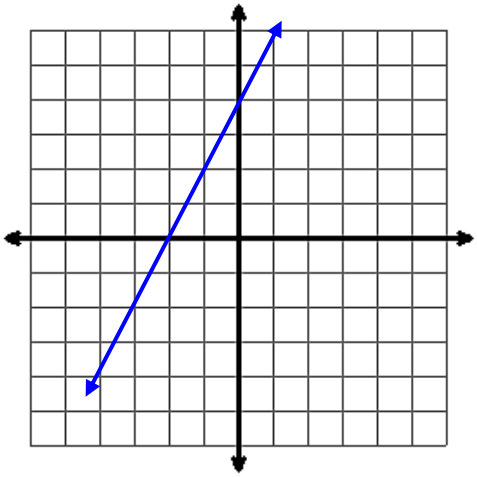
22. a. $y = 3x - 10$
    b. $y = -\frac{5}{4}x + 3$
    c. $y = \frac{3}{4}x + 3$
    d. $y = \frac{1}{2}x + \frac{5}{2}$
    e. $x = -9$

23. a. b.

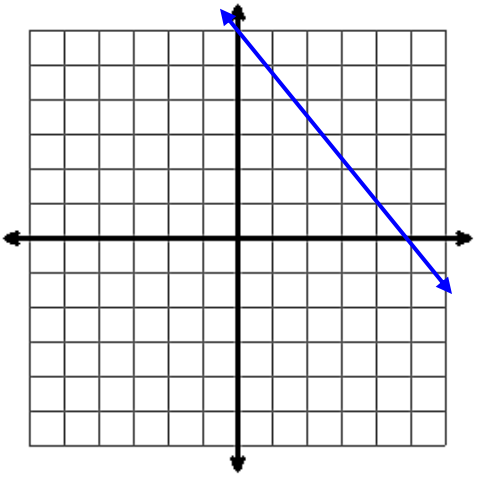




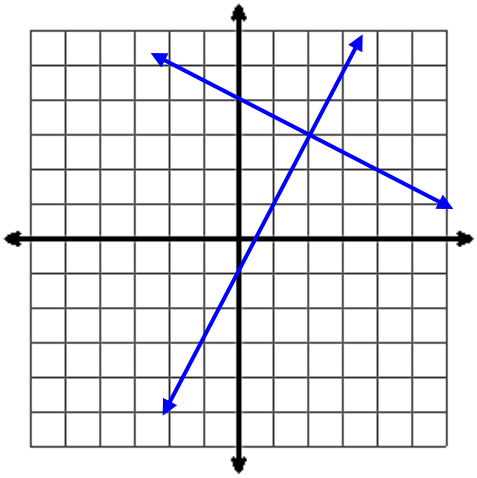
c.



d.



24. a. Solution: $(2,3)$



b. Solution: $(1,-2)$