BOUND BROOK
HIGH SCHOOL

A supportive multicultural community that provides an innovative and academically challenging educational program while offering a variety of extra-curricular and social opportunities that encourage life long learning and citizenship.

Quantitative Reasoning
2023 Summer Assignment

Dear Student,

This summer assignment will prepare you for success in Quantitative Reasoning. Please complete the following exercises this summer, and be prepared to submit your work either September 7th or 8th (whichever your first day of class is).

You will have a quiz on the material covered in this packet. That grade combined with your submitted summer packet will be worth one quiz grade in the first marking period grade. Make sure you show all work for all problems. For graphs, make sure your axes have appropriate labels and you have a consistent scale. Make sure to read all instructions carefully for each problem. Failure to comply with the instructions will result in points deducted.

You are encouraged to work in groups and help each other, but copied work is unacceptable and will not be tolerated. This packet is meant to review the key concepts necessary to begin the course material on day 1. Remember this is a college class; review work is not part of the course material. You are responsible for knowing this material at the beginning of class.

If you have any questions, please contact me at: sdubiel@bbrook.k12.nj.us and keep in mind I do not check this e-mail daily during the summer (so don't wait until the last minute).

Sincerely,
Bound Brook High School Math Department

Name _____

1. Simplify each expression using order of operations.

    a. $(-11 - 6 - -5 + 1 + 3 \times 2) \div -5$

    b. $\dfrac{2^3 + 4*1 - (6 \div 2)}{\dfrac{1+2}{4}}$

2. Does the table below represent a function? Explain your reasoning.

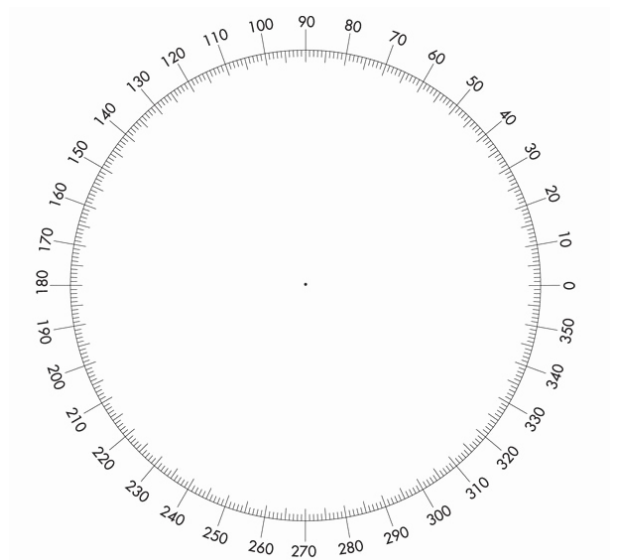| Input	-3	-1	0	1	3	-1
Output	-7	1	5	9	17	-1

3. Twenty students were surveyed about their favorite ice cream flavors. Their results are shown in the table below.

Vanilla	Chocolate	Cookie Dough	Strawberry	Rocky Road	Other
5	4	3	2	3	3

a. Create a bar graph of the data. Be sure to label your axes and use a consistent scale.

b. Create a pie chart of the data. Show all your calculations.

4. Fill in the blanks in the table to convert between fractions, decimals, and percents.

Fraction	Decimal	Percent
$\dfrac{3}{5}$		
	1.34	
		0.02%

5. Solve each proportion.

a. $\dfrac{2}{8} = \dfrac{n+4}{n-4}$

b. $\dfrac{5}{r-9} = \dfrac{8}{r+5}$

c. $\dfrac{4}{3} = \dfrac{8}{x}$

6. The currency in Argentina is the Peso. The exchange rate is approximately \$3 = 1 Peso. At this rate, how many Pesos would you get if you exchanged \$121.10?

7. Mary reduced the size of a painting to a width of 3.3 in. What is the new height if it was originally 32.5 in tall and 42.9 in wide?

8. Tickets for a concert normally cost \$150. The tickets are currently discounted 21%. What is the discounted price of the concert ticket?

9. When going out to eat with friends, the bill comes out to \$55 before tax and tip. If tax is 7% and the tip is 20% of the bill, how much will the total for the meal be? If you split the cost 5 ways, how much will each person owe?

10. Fill in the blank for each percent problem.

a. 5 is _____ % of 40

b. _____ is 15% of 66

c. 12 is 120% of _____   d. 140 is _____% of 70

11. Find the average rate of change of the from 0°C to 35°C.

Degrees Celsius	Degrees Fahrenheit
0	32
15	59
35	95

12. Find the slope of the line passing through each set of points. Leave your answers as fractions.
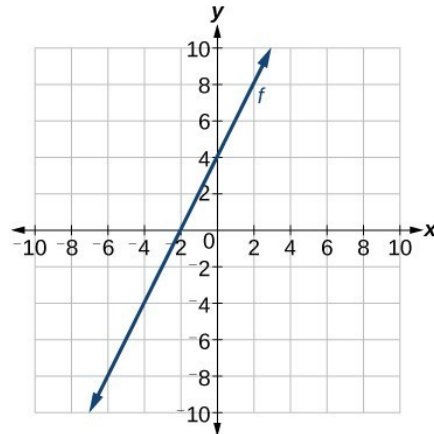
a. (-2,6) and (5,10)

b. $(\frac{1}{2}, \frac{-1}{2})$ and $(\frac{-1}{3}, \frac{2}{3})$

13. Write the equation of the line using the given information:
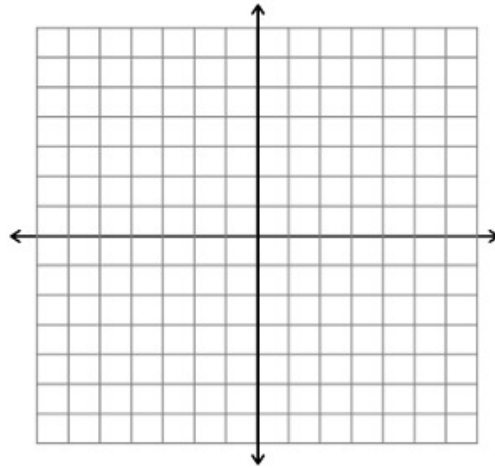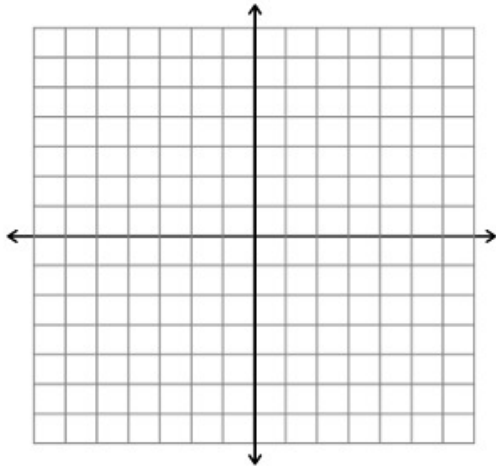
a. Slope: $\frac{3}{4}$ through (-8,2)

b.

c. passing through (3, 20) and (-3,8).

14. Graph each equation on the axes provided.

a. y = -3x + 4   b. 2x - 3y = 9

15. A cell phone plan charges a monthly fee of a flat rate of $20 plus $0.10 per minute used. Let m = the number of minutes during the month the person uses the phone and C = the monthly cost of the plan.

   a. Write an equation to model this scenario.

   b. Use your equation to determine how much it would cost if you talked on the phone for 200 minutes during that month.

   c. Phone plan B costs $50 per month regardless of how much you talk on the phone. How many minutes would you need to talk on the phone for the original phone plan to be more expensive than phone plan B?

15. You deposit $500 into a bank account that pays 2% simple interest. You leave the money in the account for 3 years and no additional money is added or withdrawn. How much money will you have in the account at the end of the 3 years? (The formula for simple interest is I=Prt)

16.   a. You deposit $1500 into a bank account that pays 1% interest compounded monthly (12 times per year). If you leave the money in the account for 4 years, how much will you have in the account?

Compound Interest: $A = P(1 + \dfrac{r}{n})^{nt}$

b. Now, you take the money you have in part a and transfer it into a bank account that pays 3% interest compounded monthly. If you leave that money in the account for 3 years, how much money will you have?

17. A police officer is hiding on the side of the road checking speeds. The speed limit on this road is 40 miles per hour. The officer records the speed of passing drivers in the list below.

43, 35, 39, 40, 40, 38, 37, 35, 41, 42, 42, 43, 45, 48, 50, 55, 34, 29, 60, 33, 32, 31, 30, 30, 34, 38, 39, 37, 40

   a. Find the average speed of drivers on that road.

   b. Find the median of the speeds on the road.

   c. Find the mode of the speeds on the road.

   d. Are there any outliers in the data? Explain your reasoning.

   e. What percent of the people were speeding on this road (speeding = over 40mph)?

   f. Using your answer to part e, if the police officer had recorded 100 driver's speeds on this road, how many drivers would you expect to be speeding?