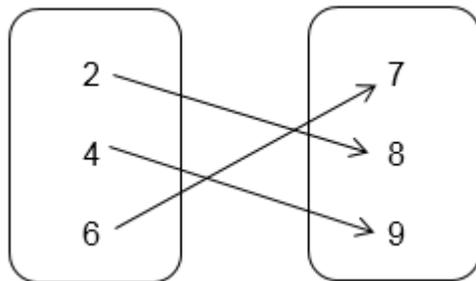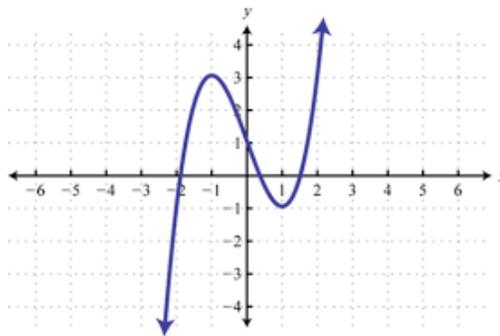Name:_____

2025 Grade 8 Semester Exam Review

1. Do the following representations show y as a function of x? 8.5G

YES   or   NO

YES   or   NO

{(0, 12), (4, 18), (6, 3), (5, 2), (4, 7)}

YES   or   NO

X	-3	3	-2	2
Y	14	25	10	25

YES   or   NO

2. Which equation represents the relationship between x and y in the table below? 8.5B

x	y
3	16
5	20
6	22
10	30

A $\quad y = 2x + 10$

C $\quad y = 2x - 10$

B $\quad y = \frac{1}{2}x + 10$

D $\quad y = \frac{1}{2}x - 10$

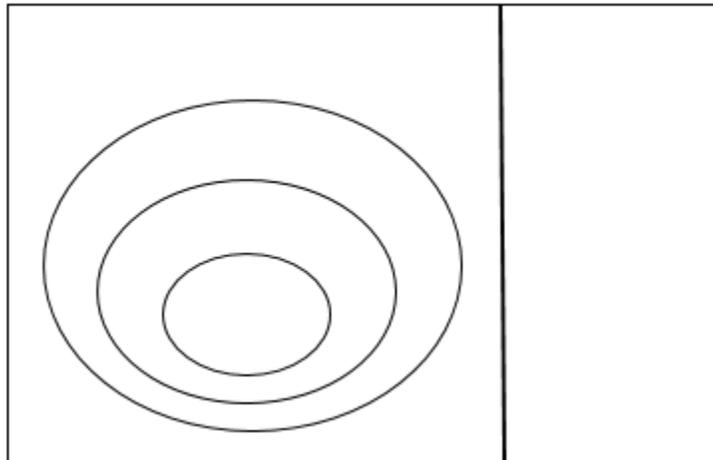3. Correctly label the Venn diagram below to show the relationship between the subsets of real numbers. 8.2A
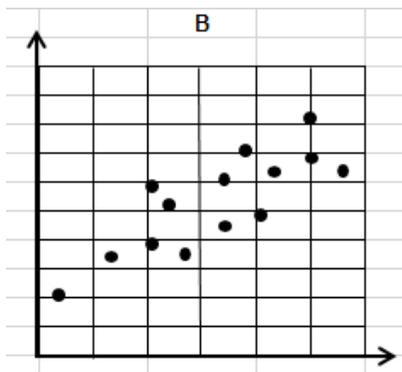
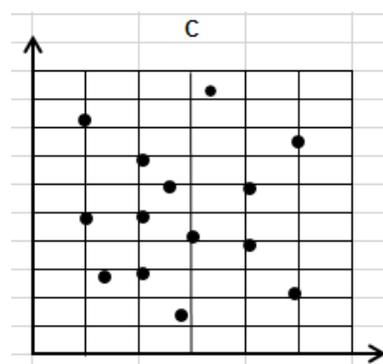**Whole**

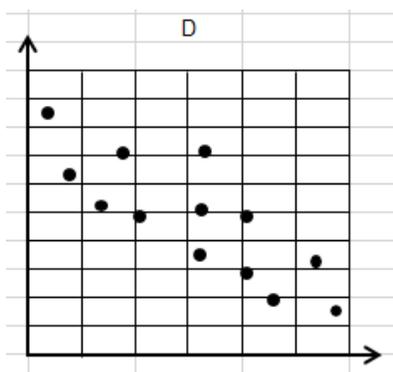**Rational**

Integer

Irrational

Natural

4. Using the scatterplots below, label each graph with the appropriate association (positive, negative, or no correlation) and describe if it is linear or non-linear. 8.11A
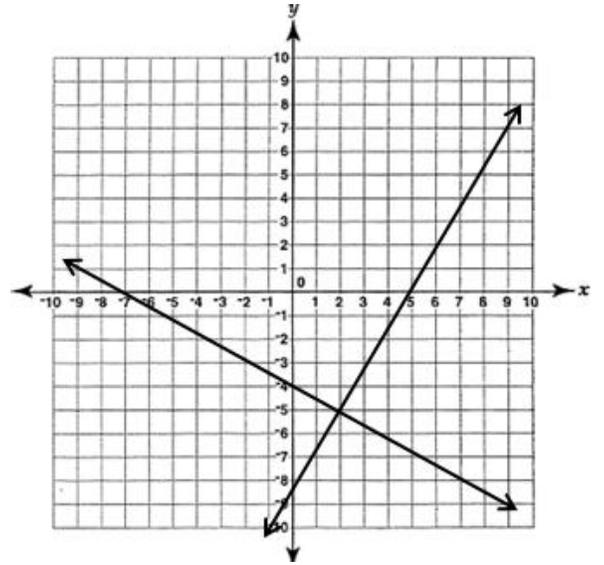
B

_____

_____

C

_____

_____

D

_____

_____

5. What is the solution to the system of equations graphed below? 8.9A

A $(5, 2)$

B $(-5, -2)$

C $(2, -5)$

D $(-2, -5)$

6. Write an inequality or equation for each problem below. 8.8A

Mini-golf course A has an entrance fee of $8.20, and then a charge of $2.00 per game. Mini-golf course B has an entrance fee of $4.80, and then a charge of $3.00 per game. Write an equation to determine x, the number of games needed to be played for both courses to cost the same.
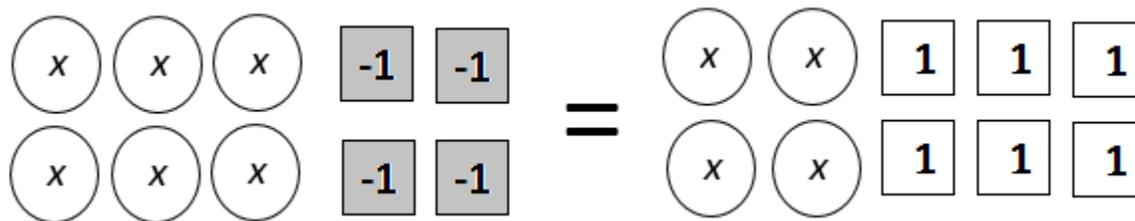
Equation _____

Corey earns $50 for each insurance policy he sells plus $500 each week. Maria earns $25 for each policy she sells plus $250 each week. Write an inequality to show how many policies each employee will need to sell so that Maria earns more than Corey.

Inequality _____

7. Order the following numbers from least to greatest. 8.2D

$$8\frac{3}{8}, \quad 8.25, \quad 3\pi, \quad \sqrt{67}$$

_____

8. An equation is modeled below. 8.8C

What value of x makes this equation true?

9. Which is the equation for the values in the table? 8.5I

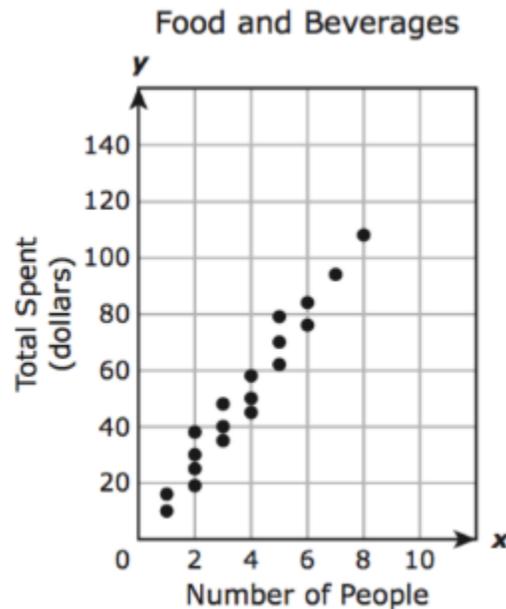| x	-10	10	20	30
y	-7	3	8	13

A $y = -\dfrac{1}{2}x - 2$

B $y = -2x + 2$

C $y = 2x + 2$

D $y = \dfrac{1}{2}x - 2$

10. What is the best approximation of the value of $\sqrt{221}$? **Round to the nearest tenth.**
8.2B

11. The manager of a restaurant recorded how many people were in different groups of customers and how much those groups spent on food and beverages. The scatterplot below shows the data she recorded. 8.5D

Food and Beverages

Based on this scatterplot, about how much money would a group of 10 people be expected to spend on food and beverages at this restaurant?

A $135

B $115

C $105

D $150

12.   Which of the following tables below shows a proportional relationship? 8.5F

A

x	y
6	14
9	30
12	42

C

x	y
6	36
8	48
12	72

B

x	y
3	15
4	20
6	25

D

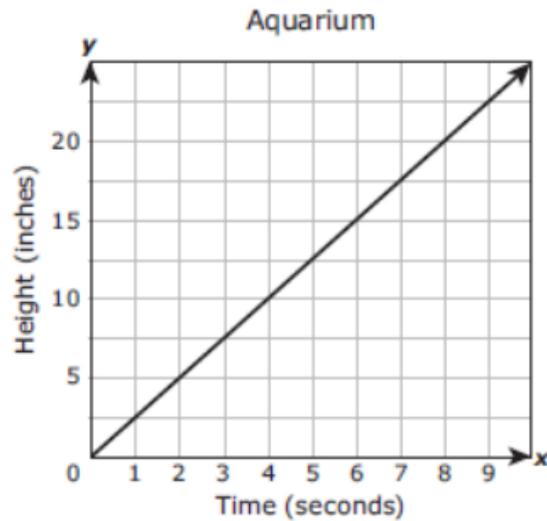| x	y
6	22
9	30
12	45

13. An aquarium is being filled with water. The graph shows the height of the water over time as the aquarium is being filled. 8.4B

Aquarium

Which statement best describes the rate of change for this situation?

A   The height of the water increases 20 inches per second.

B   The height of the water increases 1 inch per second.

C   The height of the water increases 5 inches per second.

D   The height of the water increases 2.5 inches per second.

14. Which equation can be used to calculate Stan's earnings for any number of hours? 8.5A

A $y = x + 17.50$

B $x = 17.50y$

C $y = 17.50x$

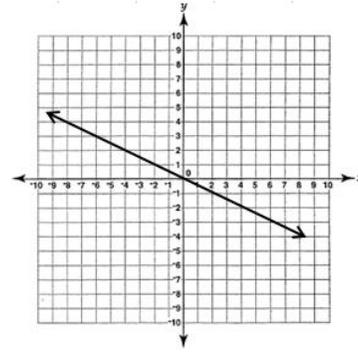D $y = \dfrac{x}{17.50}$

Stan's Earnings

15. Which of these lines has a slope of 2? 8.4C

A
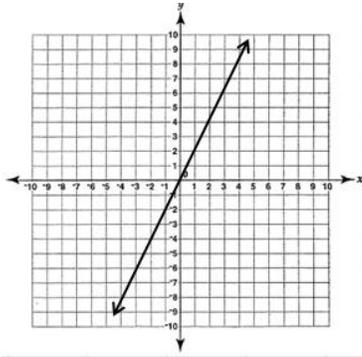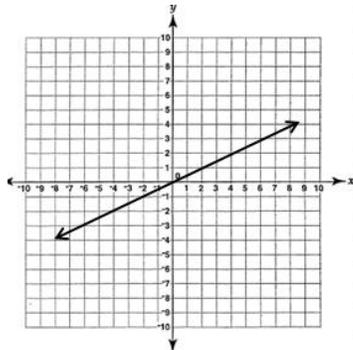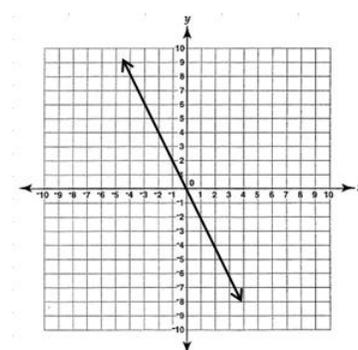

C

B

D

16. In an equation, y varies directly with x. If $x = 8$ when $y = \frac{16}{3}$, what is the value of x when $y = 12$? 8.5E

    A   8

    B   18

    C $\frac{3}{2}$

    D $\frac{2}{3}$

17. Write an equation that best describes the relationship between x and y in the table below. 8.5I
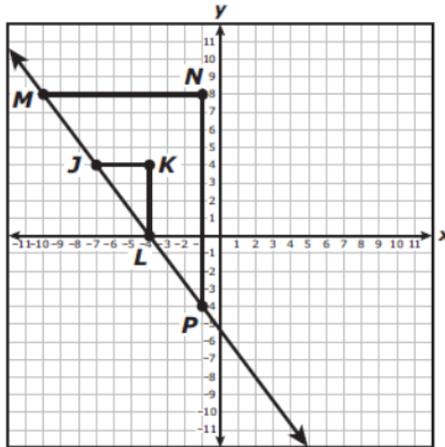
x	y
-16	-1
0	3
8	5
24	9

    A $y = x + 3$

    B $y = \frac{1}{4}x + 3$

    C $y = \frac{1}{3}x + 3$

    D $y = 3x - 10$

18. Triangle MNP and triangle JKL are similar right triangles. 8.4A

Which proportion can be used to show that the slope of $\overline{JL}$ is equal to the slope of $\overline{MP}$?
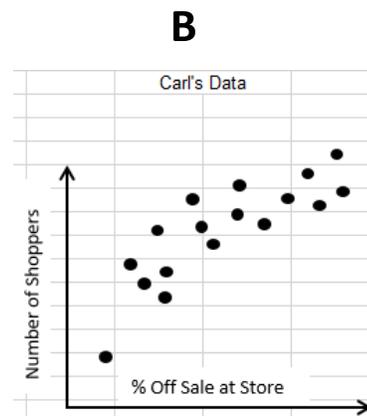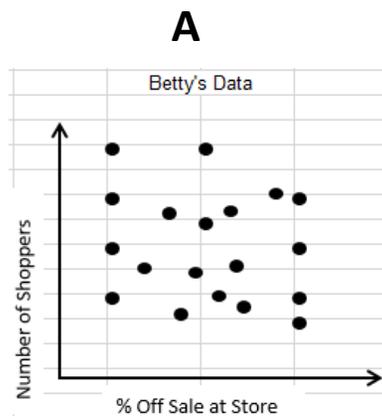
A $\dfrac{0-(-7)}{4-(-4)} = \dfrac{-4-(-10)}{8-(-1)}$

B $\dfrac{0-4}{-4-(-7)} = \dfrac{-4-8}{-1-(-10)}$

C $\dfrac{0-(-4)}{4-(-7)} = \dfrac{-4-(-1)}{8-(-10)}$

D $\dfrac{-4-(-7)}{0-4} = \dfrac{-1-(-10)}{-4-8}$

19. Carl and Betty collected data on the number of shoppers at their favorite store on days with percent off sales. They each made a scatterplot of the data. 8.5C

A

B

Which scatterplot shows a linear relationship?

A   Graph A

B   Graph B

20. For each question below, **write an equation** that represents the relationship. Circle **YES** if a situation represents a proportional relationship and **NO** if a situation does not represent a proportional relationship. 8.5H

- A job at a coffee shop paying $15.25 an hour. _____ **YES** or **NO**

- The cost of purchasing apples for $1.75 per pound plus a shipping fee of $0.16 per pound.   _____ **YES** or **NO**

- Bobby has 13 more freckles than his sister Abigail. _____ **YES** or **NO**

- At a farm stand, each basket of cherries costs $3.75 per pound plus $2.00 for the basket.   _____ **YES** or **NO**

- For every minute you bicycle, you burn 62 calories. _____ **YES** or **NO**

21. A block of cheddar cheese is on sale for $0.50 per pound. Which graph has a slope that best represents the price per pound of cheddar cheese? 8.4B

A

Cost of Cheese

C

Cost of Cheese

B

Cost of Cheese

D

Cost of Cheese
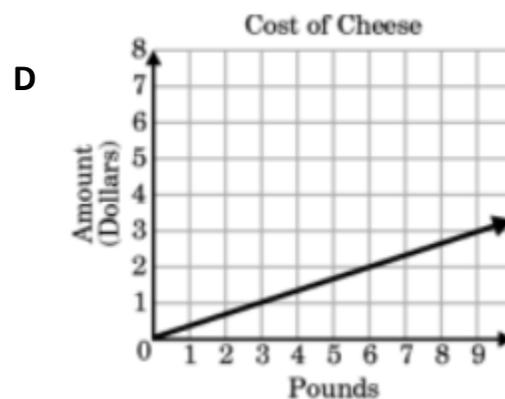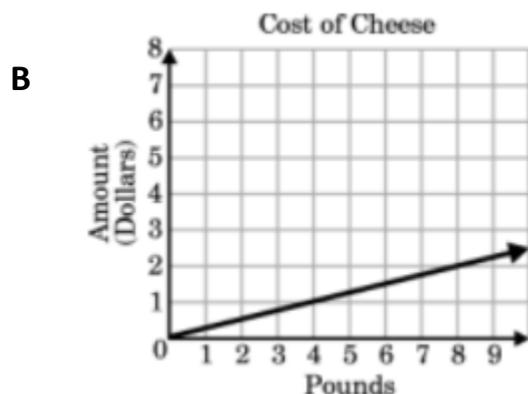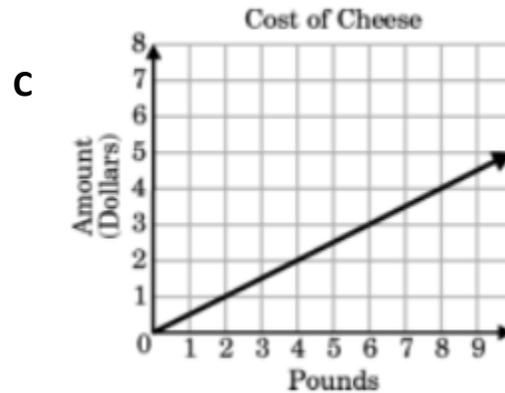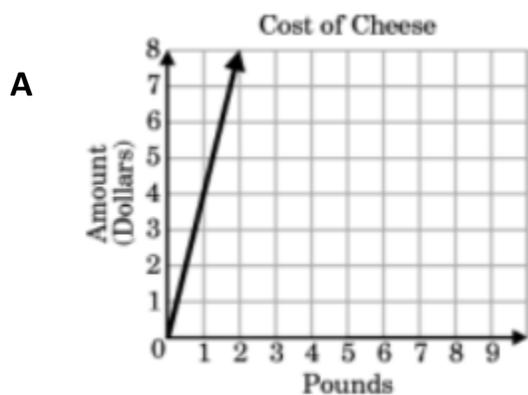
22. Harry is doing a traffic survey. He records the speeds of cars passing through two different intersections. What is the mean absolute deviation of the data in the table? 8.11B

Intersection (miles per hour)	24	25	25	30

23. Matthew works with machines that measure the weights and widths of very small objects. He weighed a piece of sand that was 0.0000031 gram. What is this number in scientific notation? 8.2C

   A 3.1×10^{-6}

   B 3.1×10^{-5}

   C 3.1×10^{5}

   D 3.1×10^{6}

24.   Which set of ordered pairs is a function? 8.5G

   A $\left(\frac{2}{3}, -\frac{3}{2}\right), \left(-\frac{4}{3}, \frac{5}{7}\right), \left(\frac{2}{3}, \frac{7}{2}\right), \left(\frac{7}{5}, -\frac{2}{7}\right)$

   B $\left(2, \frac{3}{10}\right), \left(-\frac{4}{2}, 5.31\right), \left(2, 7\frac{3}{5}\right), (-4, -2.22)$

   C $\left(-\frac{2}{7}, 3.14\right), (-4, 5), \left(-\frac{2}{7}, -\frac{7}{7}\right), \left(\frac{7}{2}, -\frac{7}{2}\right)$

   D $(2.22, 3.14), \left(-\frac{4}{5}, \frac{5}{4}\right), \left(-\frac{2}{3}, -\frac{7}{5}\right), \left(\frac{7}{2}, -\frac{2}{11}\right)$

25. Which situation can be modeled by the inequality $10x + 75 > 6.50x + 120$? 8.8B

A   Membership at Gym A costs $120 down plus $6.50 per month. Gym B charges $10 down plus $75 per month. After how many months will Gym A cost less in total than Gym B?

B   Membership at Gym A costs $120 down plus $6.50 per month. Gym B charges $10 down plus $75 per month. After how many months will Gym B cost less in total than Gym A?

C   Talia has $75. Her brother Caleb has $120. Talia saves $10 per week. Her brother saves $6.50 per week. After how many weeks will Talia have more money than Caleb?

D   Talia has $75. Her brother Caleb has $120. Talia saves $10 per week. Her brother saves $6.50 per week. For how many weeks will Talia have less money than Caleb?