

Determine if the functions represent a linear, quadratic, or exponential relationship.

1. $y = \frac{1}{2}x + 8$

2. $y = \frac{3}{4}(3)^x$

3. $y = \frac{1}{2}x^2 + 2x - 7$

4. $\{(5, -1)(4,2)(3,5)(2,8)\}$

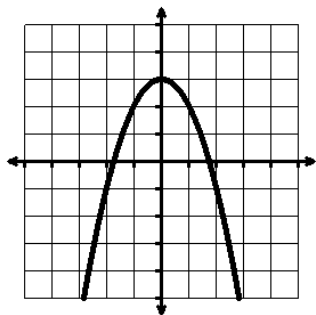
5.

x	y
-2	32
-1	16
0	8
1	4
2	2

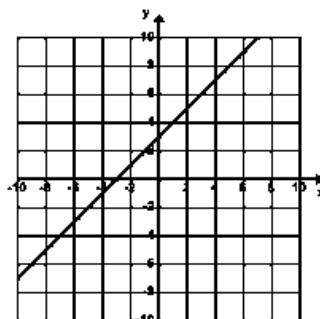
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x	y
5	10
4	4
3	2
2	4
1	10

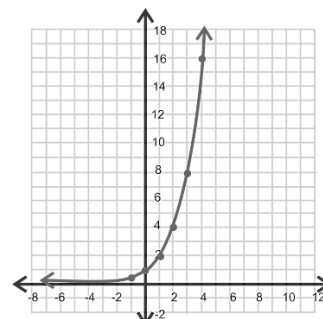
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8.



9.



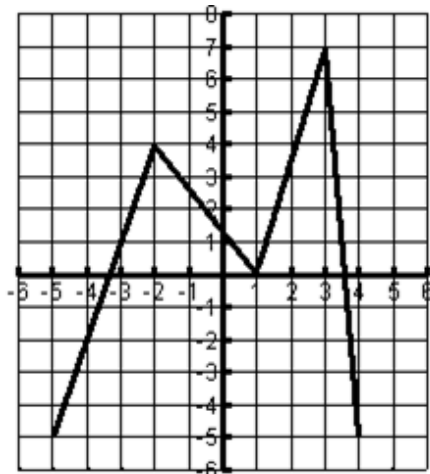
10. A bank account has \$100. Every month the account earns 5% interest.

11. An apple tree produces 2 pounds of apples in its first year. After each year, the tree yields twice the initial amount.

12. The school has 33 new calculators, each month 5 go missing.

Find the rate of change.

13.



What is the rate of change between [-5,-2]?

What is the rate of change between [-2,1]?

What is the rate of change between [1,3]?

Find the rate of change between [3,4]?

What is the steepest rate of change?

14.

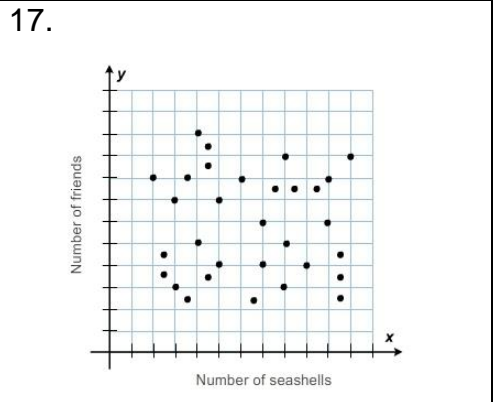
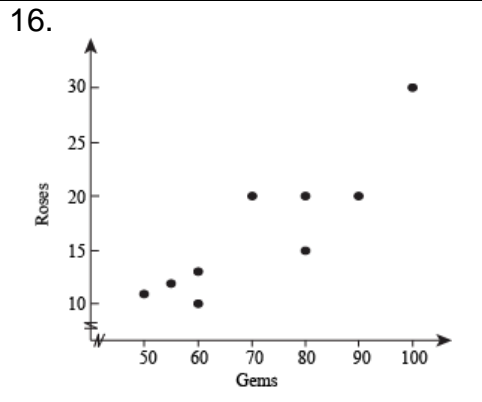
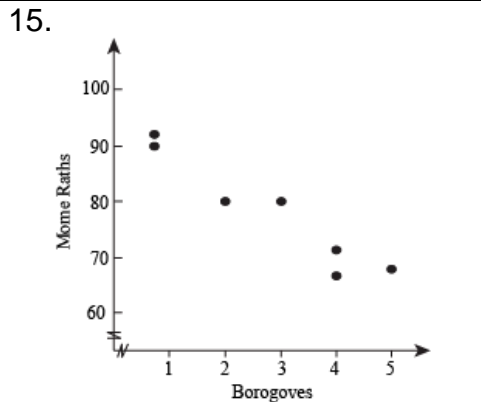
x	y
1	3
2	5
3	9
4	14
5	20

What is the rate of change between [1,3]?

What is the rate of change between [4,5]?

Which has a higher rate of change?

Estimate the correlation coefficient and determine if it is strong positive, strong negative, weak positive or weak negative, or no correlation.



18. A data set has a correlation of -0.876. What can be said about the data set?

19. A data set has a correlation of 0.342. What can be said about the data set?

20. Which of the following variables would you expect there to be a negative correlation?

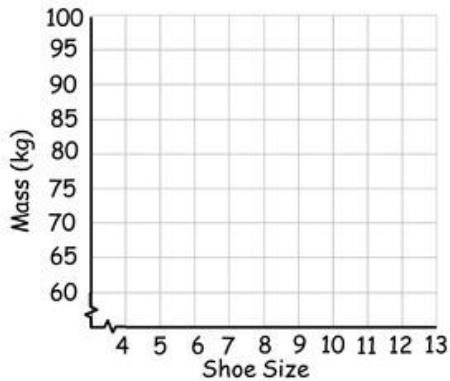
The longer the day, the higher the temperature.
Or
As days get longer, nights get shorter.

21. Which of the following variables would you expect there to be a positive correlation?

The longer you live, the heavier you weigh.
Or
The longer you live, the less hair you have on your head.

22. The data shows the mass and shoe size of ten men. Create a scatter plot. Is the data strong positive, strong negative, weak positive, weak negative, or no correlation?

Size	5	12	7	10	10	9	8	11	6	8
Mass	65	97	68	92	78	78	76	88	74	80



23. The data below represents the life expectancy of the population of the United States from 2001 to 2011, based on years of birth. **Let the year 2001 be $x = 0$** , and let x represent the number of years since 2001.

Year	2001	2003	2005	2007	2009	2011
Life exp.	76.24	75.49	74.75	73.00	72.24	71.49

- What is the best fitting **linear** line for the data?
- Based on the data, what is the life expectancy for someone born in **2020**?
- Why do you think the life expectancy is decreasing?

24. Below is a table that shows the amount of sugar (grams) left in your body after eating Chipotle. Answer the following questions about the data.

Time (hours)	.5	1.5	2	3	3.75	5
Sugar (grams)	20.05	5.12	2.5	1.25	0.46	0.35

- What is the best fitting **exponential** model for the data?
- Based on the data, when will your sugar level be **4** grams?

25. The table below shows my income from ages 26-30. Use the data to answer the following questions.

Age	26	27	28	29	30
Income (\$1000)	16.8	19.1	23.3	25.8	33.9

- Find a linear equation for the data.
- What does the y-intercept mean?
- What does the slope mean?
- Using your equation, how much will I make when I'm 40 years old?
- Determine how old I will be when I make \$60,000.

1. Which of the following data sets is best described by a linear model?

- A. $\{(5, -1)(4,2)(3,5)(2,8)\}$
- B. $\{(5,16)(4,8)(3,4)(2,2)\}$
- C. $\{(5,51)(4,33)(3,19)(2,9)\}$
- D. $\{(5,10)(4,4)(3,2)(2,4)\}$

2. Which is the average rate of change over the interval $[1, 3]$?

Equation A:

x	1	2	3	4
y	3	12	27	48

Equation B: $2x - 3$

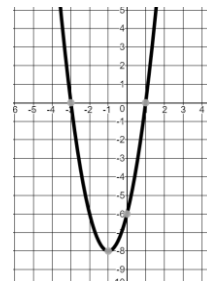
- A. A: 7.5, B: 1
- B. A: 12, B: 1
- C. A: 12, B: 2
- D. A: 4, B: 2

3. Which of the following models best describes the data set?

$\{(-1,2)(0,6)(1,18)(2,54)\}$

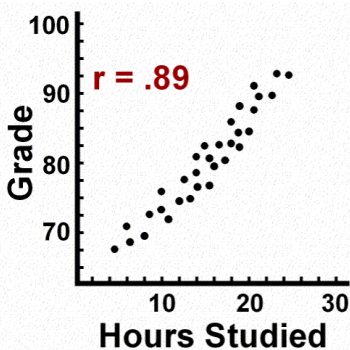
- A. linear
- B. exponential above
- C. quadratic
- D. none of the above

4. Which kind of model best describes the data graphed below?



- A. linear
- B. exponential above
- C. quadratic
- D. none of the above

5. Which BEST describes the correlation of the two variables shown in the scatter plot?

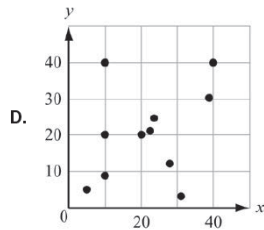
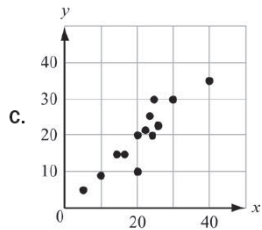
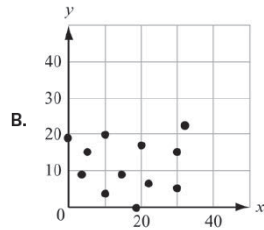
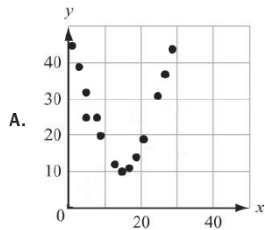


- A. strong positive
- B. weak positive
- C. strong negative
- D. weak negative

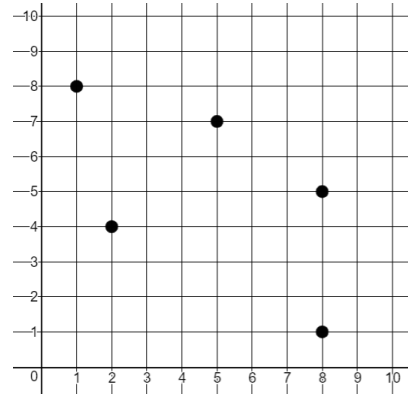
6. Which of these statements is an example of causation?

- A. When the weather becomes colder, more students care about their grades.
- B. As the weather becomes colder, the heating bill increases.
- C. The more that I use heat, the more I pay for my heating bill.
- D. As kids buy more ice cream, less kids are sick.

7. Which graph MOST clearly displays a set of data for which a linear function is the model of best fit?



8. The scatter plot below was graphed from a data set containing five data points.



Which is closest to the correlation coefficient of the relationship shown in the graph?

(A) -0.02

(C) -0.59

(B) 0.02

(D) 0.59

9. A market researcher tracks the number of people who visit a company's store each month. The table shows the data from the last five months of the year.

Months	Number of customers
1	152
2	303
3	607
4	1211
5	2443

A. Which type of function would model this situation?

B. Describe the approximate monthly growth demonstrated in the table using words.

C. Assuming the growth rate was the same for an entire year, give an estimate of the number of visitors to the store in month 7. Show work or explain