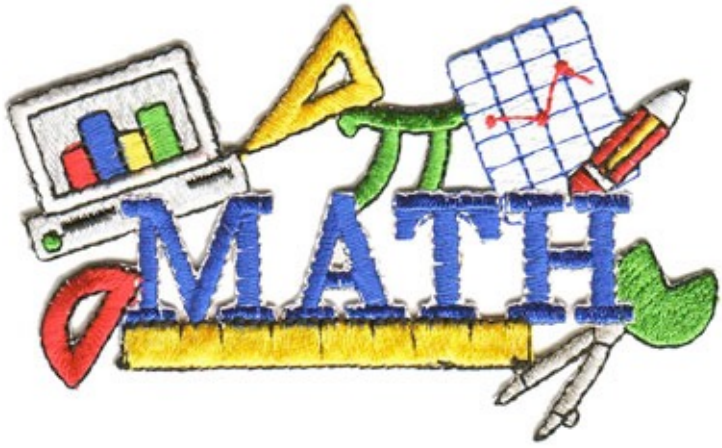
8th Grade Math

Benchmark 3

Parent Handbook



This handbook will help your child review material learned this quarter, and will help them prepare for their third Benchmark Test. Please allow your child to work independently through the material, and then you can check their work using the answer key in the back of the handbook. If you have any questions or concerns about this material, please contact your child's teacher. Thank you for your support.

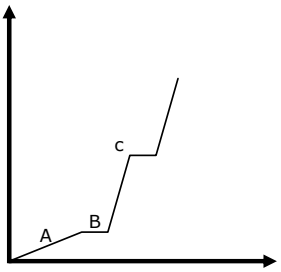
Eighth Grade Benchmark #3
Math Essential Standards

Learning Objective #1:

- **"Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally." (8.M.F.B.05)**

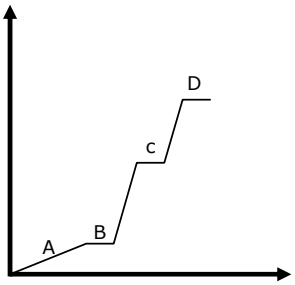
Practice:

1. The graph below represents Michael going to the playground. First, he walks to church. He stays there for few minutes. Then he hires a taxi to drive him to the playground. The taxi stops at a coffee shop and then the playground. In the graph, which part represents Michael waiting for the taxi driver to pick him up?



a. Part A
b. Part B
c. Part C

2. Isabella is a plumber. She walks to the market. She buys some tools and stays there a few minutes. Then she hires a taxi to go to Sarah's house. After Sarah's she takes the taxi to Olivia's house. The graph below represents her trip to Olivia's house. Which part of the graph represents Isabella's taxi ride to Sarah's house?



a. Between Part A & B
b. Between Part B & Part C
c. Between Part C & D
d. Between Part B & D

3. What part of the graph represents Isabella's time shopping at the market?

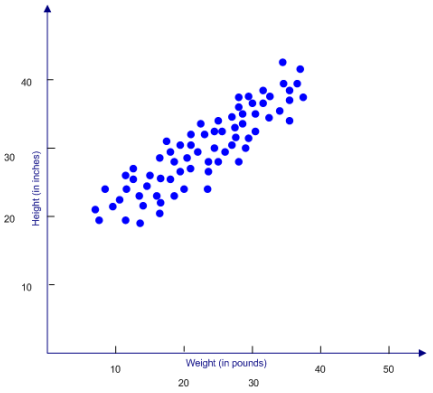
a. Part A
b. Part B
c. Part C
d. Part D

Learning Objective #2:

***"Construct and interpret scatter plots for bivariate measurement data to investigate and describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association."* (8.M.SP.A.01)**

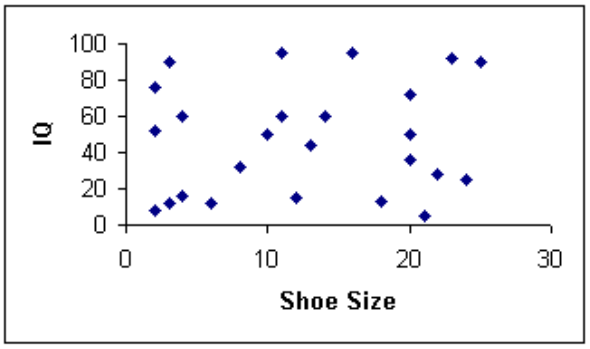
Practice:

4. The scatterplot below shows weight (in pounds) and height (in inches). What is the relationship between the variables?



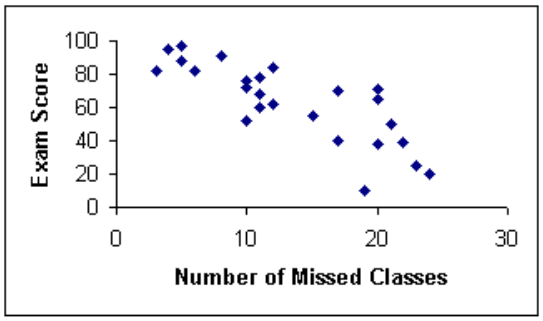
a. positive correlation
b. negative correlation
c. no correlation
d. reverse correlation

5. The scatterplot below shows a person's IQ and their shoe size . What is the relationship between the variables?



a. positive correlation
b. negative correlation
c. no correlation
d. reverse correlation

6. The scatterplot below shows a the number of missed classes and exam scores. What is the relationship between the variables?



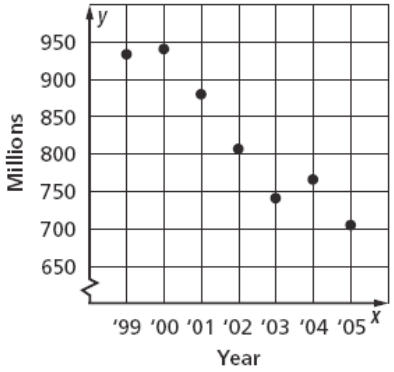
a. positive correlation
b. negative correlation
c. no correlation
d. reverse correlation

Learning Objective #3:

- *"Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept."* **(8.M.SP.A.03)**

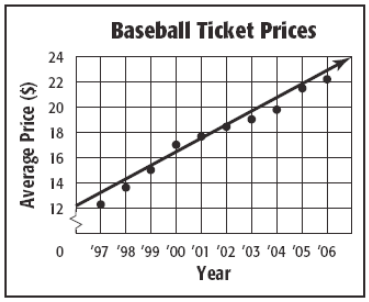
Practice:

7. The scatter plot shows the number of CDs (in millions) that were sold from 1999 to 2005. If the trend continued, about how many CDs were sold in 2006?



a. 600 million
b. 750 million
c. 700 million
d. 625 million

8. The scatter plot shows the average price of a major-league baseball ticket from 1997 to 2006. If the trend continued, what is the average price of tickets in 2009?



Source: Team Marketing Report, Chicago

a. $23.15
b. $25.60
c. $24.00
d. $24.50

9. The scatter plot shows the number of hours worked and wages earned. If the trend continued, what would the wage be if 50 hours are worked?

a. $500
b. $750
c. $625
d. $800

Learning Objective #4:

- **"Analyze and solve pairs of simultaneous linear equations." (8.M.EE.C.08)**

Practice:

10. How many solutions would the following system of equations have:

$$2y = 2x + 4$$
$$4y = 4x - 16$$

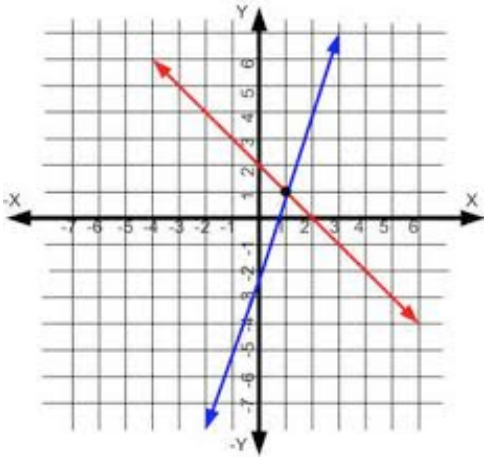
a. no solution
b. one solution
c. infinite solutions

11. How many solutions would the following system of equations have:

$$y = 7x - 21$$
$$2x + 3y = 9$$

a. no solution
b. one solution
c. infinite solutions

12. Using the graph below, what is the solution for the system of equations?



a. (0 , 2)
b. (0 , -2)
c. (2 , 0)
d. (1 , 1)

13. What is the solution to the system of equations:

$$-4x-2y=-12$$
$$4x+8y=-24$$

_____

Learning Objective #5:

- ***"Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables."*** **(8.M.SP.A.04)**

Practice:

A large group of people was surveyed about their favorite movie genre. The participants had to give their age and choose their favorite genre from Action, Comedy, and Horror.

	Action	Comedy	Horror	Total
18-25 years old	238	450	312	1,000
25-49 years old	350	472	178	1,000
50+ years old	320	490	190	1,000
Total				

14. A company that sells a product designed for young adults is looking to advertise before the movies of one of these genres. Which genre should they choose?
    a. Action
    b. Comedy
    c. Horror

15. If you surveyed 12,000 people total, about how many 18-25 year olds would you expect to choose Horror as their favorite genre?
    a. 1,200
    b. 5,400
    c. 2,880
    d. 4,500

16. If you surveyed 24,000 people total, about how many 25-49 year olds would you expect to choose Comedy as their favorite genre?

_____

Benchmark 3 Essential Math Vocabulary

- **graph** - to draw a representation of a given mathematical function.
- **analyze** - to examine something by separating it into smaller parts and determining the relationship between the parts.
- **scatter plot -** a graph of points representing a collection of data.
- **positive correlation -** when one characteristic (variable) goes up (increases), so does the other.
- **negative correlation -** when one variable increases, the other decreases.
- **line of best fit -** a straight line used as a best approximation of a summary of all the points in a scatter-plot.
- **outliers -** a value that "lies outside" (is much smaller or larger than) most of the other values in a set of data.
- **slope-intercept form -** a written form of a linear equation, $y = mx + b$,where m is the slope and b is the y-intercept.
- **slope** - the measure of steepness of a line; represented by "m" in slope-intercept form.
- **y-intercept** - the coordinate at which the graph of a line intersects the y-axis.
- **infinite solutions** - when an equation has all real numbers as it's solution.
- **system of equations** - is a set of two or more equations with the same variables graphed on the same coordinate plane. The intersection of the lines from the two equations is the solution that solves the system of equations.
- **linear combination** - a sum of products of each quantity times a constant.

MATH ANSWER KEY

1. B
2. B
3. B
4. A
5. C
6. B
7. D
8. B
9. C
10. A
11. B
12. D
13. (6, -6)
14. B
15. A
16. 11, 328; any answer between 11,200 - 11,400 is a good approximation