



Whittier Tech

Grade 11:
Honors Algebra II
Summer Project

Name: _____

Date: _____

Directions: You must show all work on each question. You will not receive credit for a correct answer if you do not show your work.

1. What is the value of the expression $x^3 - 2y^2$ for $x = -4$ and $y = -5$?
2. The formula $K = \frac{1}{2}mv^2$ gives the kinetic energy K of an object in terms of its mass m and velocity v . What is the equation for m ?
3. What is the solution of the inequality: $5 \leq |2x + 1|$?
4. What is the solution of the linear system?
$$\begin{aligned} 3x - 2y &= 1 \\ -x + 4y &= -27 \end{aligned}$$

5. Which data set shows direct variation?

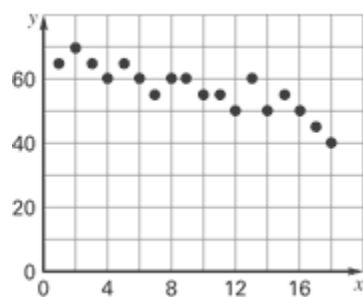
a. x 1 2 3 4 5
 y 8 6 4 2 0

b. x 1 2 3 4 5
 y 0.5 1 1.5 2 2.5

c. x 1 2 3 4 5
 y 2 3 4 5 6

d. x 1 2 3 4 5
 y 60 30 20 15 12

6. Which linear equation approximates the best fit to the data?



- a. $y = -2x + 65$
- b. $y = -5x + 100$
- c. $y = -x + 68$
- d. $y = -0.5x + 55$

7. Write an equation of the line in slope-intercept form:

The slope is -5; the y -intercept is 7.

8. What is the solution of the system?

$$2x - y + z = 7$$

$$x + y + z = 2$$

$$x - y - z = 0$$

9. What is the solution of $\frac{1}{8}(x-3)^2 = 5$?

10. What is the y -intercept of the graph of the function: $y = -3 \cdot 1.2^x$?

11. Which is an exponential decay function?

a. $y = 7(8.4)^x$

b. $y = 4.8(0.95)^x$

c. $y = 0.85(2.6)^x$

d. $0.95(4.8)^x$

12. What is the **product** of: $\frac{x^2 - 1}{x - 4} \bullet \frac{x + 3}{x^2 + 4x + 3}$?

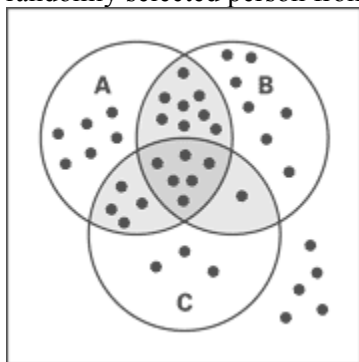
13. What is the **solution** of: $\frac{x+1}{x} = \frac{12}{x^2-3x}$?

14. What is the distance between the points $(-7, 3)$ and $(-2, -9)$?

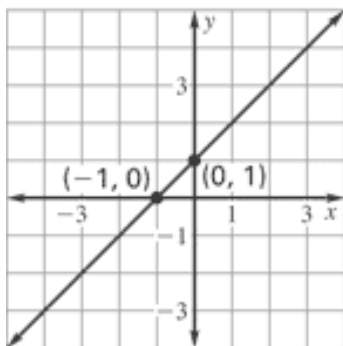
15. A teacher chooses 3 students from a group of 14 to explain their project. In how many ways can she choose 3 students?

16. A number from 1 to 100 is chosen at random. What is the probability that it is divisible by 5?

17. The Venn diagram shows the number of people in a neighborhood of 40 people who use 3 town services: the library A, the playground B, and the jogging trail C. What is the probability that a randomly selected person from the neighborhood uses the library and playground?



18.



Write an equation of the line shown in the graph.

19. Write an equation for the line that passes through the point and has the given slope. Write the equation in **slope-intercept form**.

$(3, 0), m = -2$

20. Solve: $3x + 2 \leq 17$

21. Solve: $2 - x > 5$

22. You are at the music store to buy some CDs. You have \$45 to spend and the store sells CDs for \$12.99 each. **Write an inequality** that represents the number of CDs that you can buy without spending more money than you have.

23. Simplify the expression, if possible. **Write your answer as a power.**

$$(4xy^2)^2$$

24. Evaluate the expression without using a calculator. **Write the result in decimal form. (hint: do not write your answer in scientific form!)**

$$\frac{4 \times 10^{-2}}{2 \times 10^{-3}}$$

25. Evaluate the expression without using a calculator. **Write the result in decimal form. (hint: do not write your answer in scientific form!)**

$$(3 \times 10^{-2}) \cdot (12 \times 10^3)$$

26. Find the sum or difference.

$$(x^2 + 2x + 1) + (4x^2 + 5x + 3)$$

27. Find the sum or difference.

$$(3x^2 + 5x + 4) - (x^2 + 2x + 1)$$

28. Find the product.

$$(x + 1)(x^2 + x + 1)$$

29. Factor the expression.

$$x^2 - 8x + 16$$