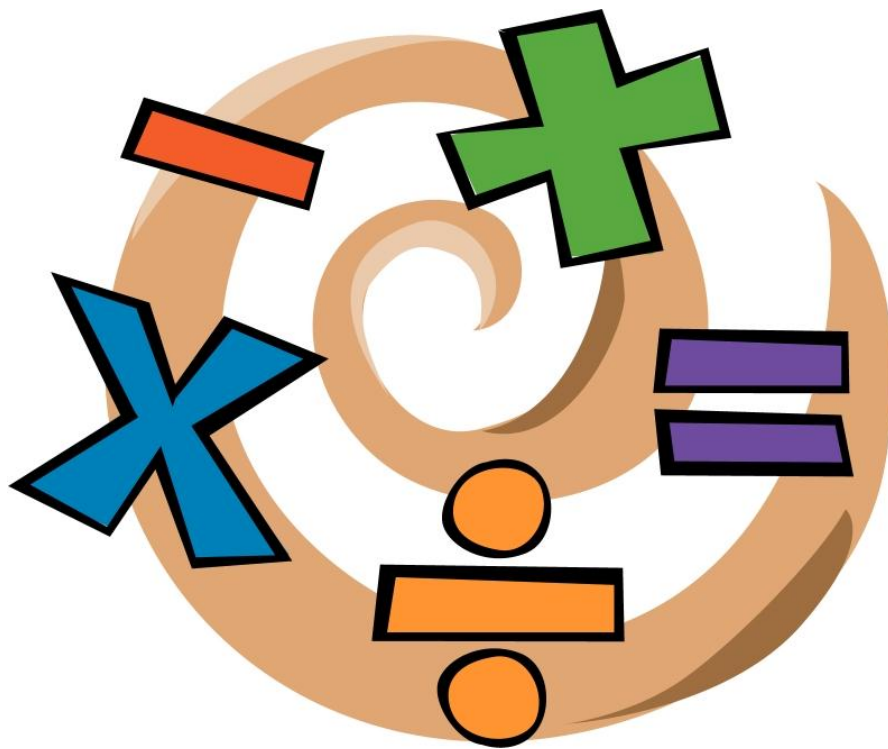


Tilden Middle School



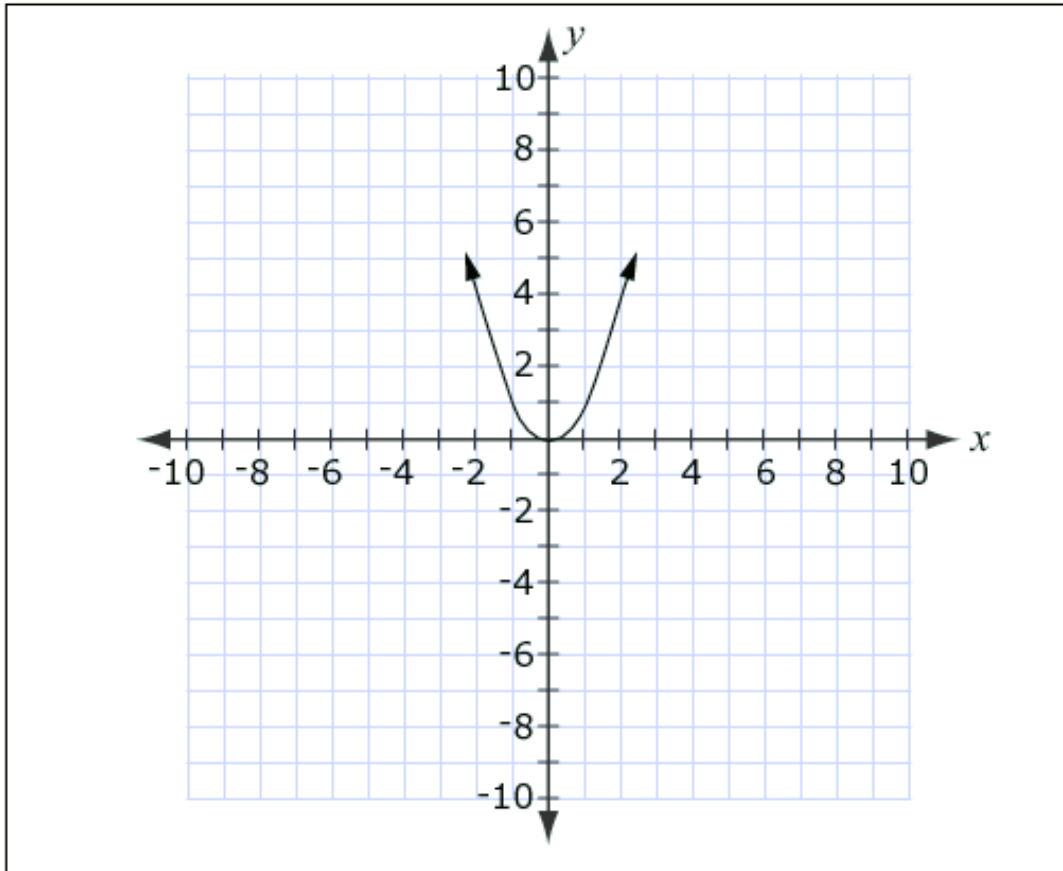
Summer Math Packet Incoming Honors Geometry

Resource: Smarter Balanced Assessment Consortium
Practice test Grade 11, 2013

Special Thanks to
Rocky Hill MS and North Bethesda MS

1. The graph of $y = x^2$ is shown on the grid.

Show the graph of $y = (x - 4)^2 + 2$ on the same grid.



2. Multiply and combine like terms to determine the product of these polynomials.

$$(2x - 3)(5x + 6)$$

3. Determine whether each expression is equivalent to $(x^3 + 8)$. Check YES or NO for each expression.

| | Yes | No |
|-------------------------|--------------------------|--------------------------|
| $(x + 8)^3$ | <input type="checkbox"/> | <input type="checkbox"/> |
| $(x - 2)(x^2 + 2x + 4)$ | <input type="checkbox"/> | <input type="checkbox"/> |
| $(x + 2)(x^2 - 2x + 4)$ | <input type="checkbox"/> | <input type="checkbox"/> |

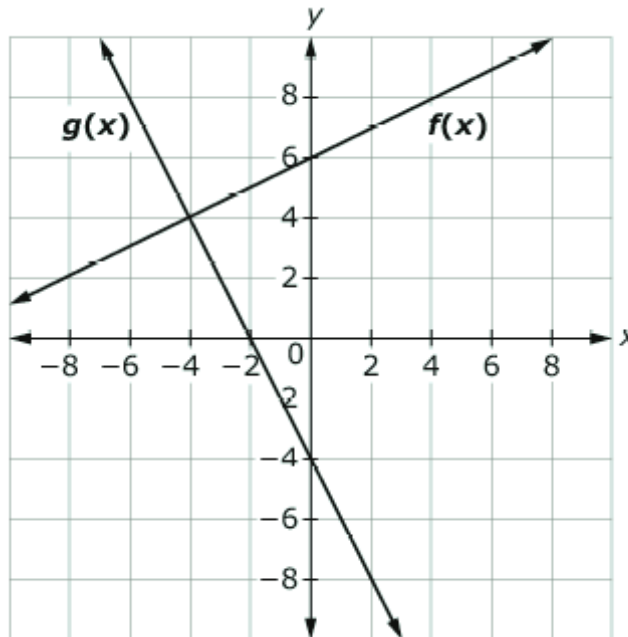
4. Choose **two** numbers whose product is **irrational**. Prove it.

| | | | | | |
|----------------|----|---------------|---------------|-------------|------------|
| Numbers | -5 | $\frac{1}{3}$ | $\frac{2}{3}$ | $3\sqrt{2}$ | $\sqrt{8}$ |
|----------------|----|---------------|---------------|-------------|------------|

5. Solve the following equation for n .

$$18n^2 - 50 = 0$$

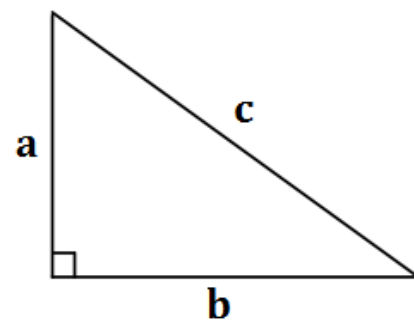
6. This graph shows linear equations $y = f(x)$ and $y = g(x)$.



Find the solution to the equation $f(x) - g(x) = 0$.

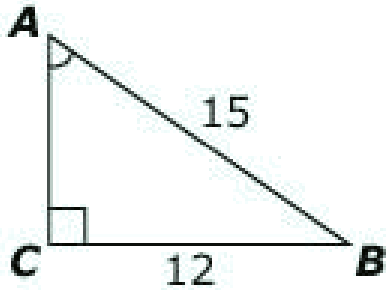
7. The Pythagorean Theorem is the formula relating the 3 sides of a right triangle. Use the formula to find the missing sides.

- a. 3, 4, c
- b. 5, b, 13
- c. a, 8, 10
- d. 7, 7, c



$a^2 + b^2 = c^2$
where c is the longest side (hypotenuse)

8. Consider this right triangle. Find the measure of side \overline{AC} .

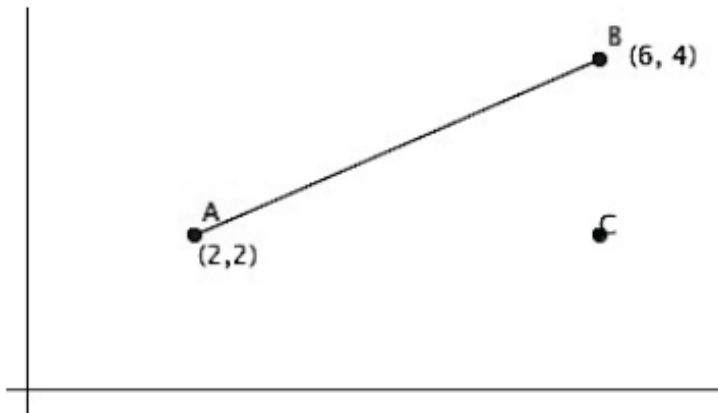


Distance Formula: Given the two points (x_1, y_1) and (x_2, y_2) , the distance between these points is given by the formula:

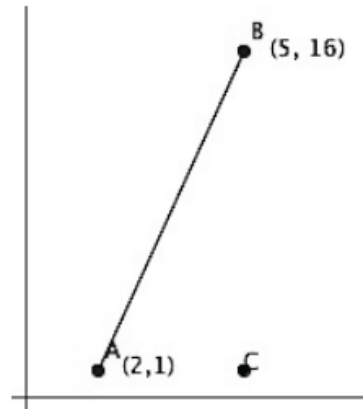
$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Use the distance formula to find the lengths of the line segments.

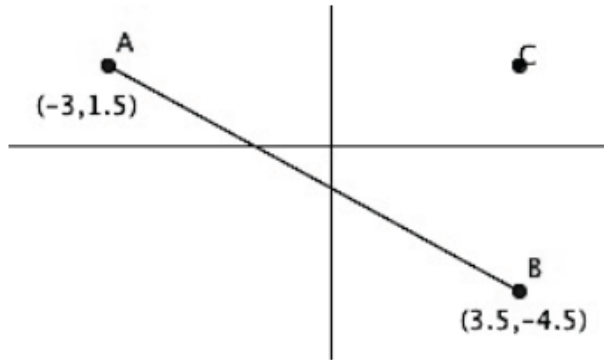
9. Find AB.



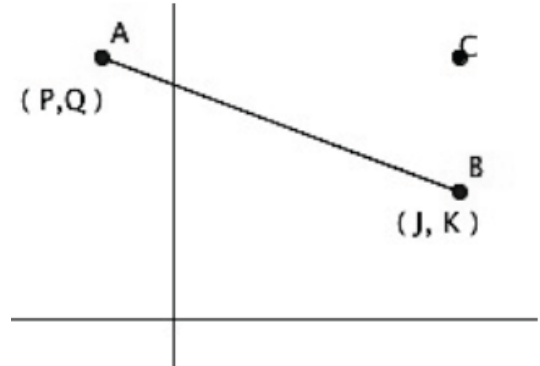
10. Find AB.



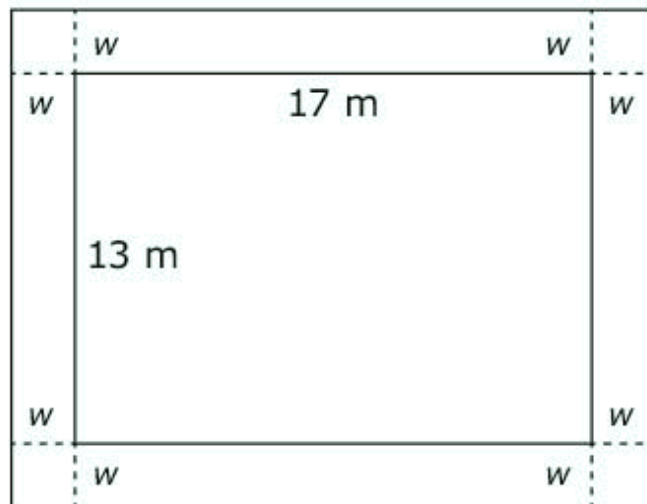
11. Find AB.



12. Find AB.



13. A rectangular garden measures 13 meters by 17 meters and has a cement walkway around its perimeter, as shown. The width of the walkway remains constant on all four sides. The garden walkway has a combined area of 396 square meters.



Part A:

Write an equation that could be used to help determine the width, w , of the walkway.

Part B: Determine the width, in meters, of the walkway.

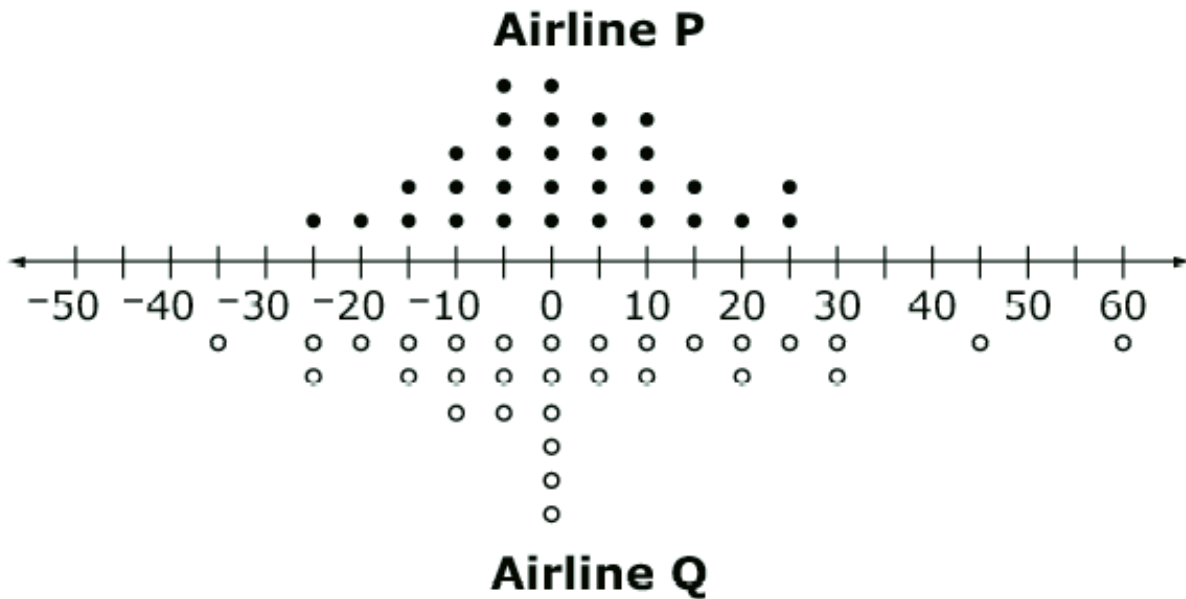
14. Which statement is correct about the values of x and y in the following equation?

$$7x + xy = xy + 21$$

- a. The equation is true for all ordered pairs (x, y) .
- b. There are no (x, y) pairs for which this equation is true.
- c. For each value x , there is one and only one value of y that makes the equation true.
- d. For each value of y , there is one and only one value of x that makes the equation true.

15. Jim can paint a house in 12 hours. Alex can paint the same house in 8 hours. Write an equation that can be used to find the time in hours, t , it would take Jim and Alex to paint the house together.

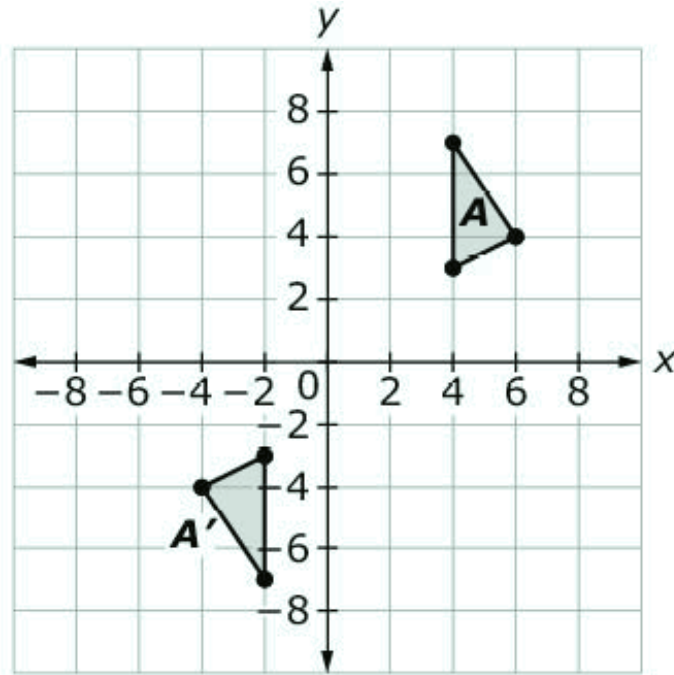
16. The dot plots below compare 30 flights made by two airlines and the number of minutes that they arrived before or after their scheduled arrival times.



- Negative numbers represent the number of minutes the flight arrived before its scheduled time.
- Positive numbers represent the number of minutes the flight arrived after its scheduled time.
- Zero indicates the flight at its scheduled time.

Assuming you want to arrive as close to the scheduled time as possible, from which airline should you buy your ticket? Use ideas of center and spread to justify your choice.

17. José and Tina are studying geometric transformations.



José is able to move triangle A to triangle A' using the following sequence of basic transformations:

1. Reflection across the x -axis
2. Reflection across the y -axis
3. Translation two units to the right

Tina claims that the same three transformations, done in any order, will always produce the same result. Explain why Tina's claim is incorrect.

18. Consider this function given in recursive form.

$$f(1) = -3$$
$$f(n) = 3f(n - 1); n \geq 1$$

Select the equivalent explicit function for $n \geq 1$.

- a. $f(n) = -3(n)$
- b. $f(n) = -1(3)^n$
- c. $f(n) = -3(n - 1)$
- d. $f(n) = -1(3)^{n-1}$

19. There is a traffic jam on a highway. From an aerial view, a reporter is trying to estimate the number of vehicles stuck in the traffic jam.

Select **all** information that will help the reporter make a reasonable estimate of the number of vehicles in the traffic jam.

- The cause of the traffic jam
- The average length of a vehicle
- The number of lanes on the highway
- The average distance between vehicles
- The average number of people in each vehicle
- The distance from the beginning to the end of the traffic jam

Factoring Polynomials

- Step 1: Ask yourself, “Is there something common (GCF) that can be factored out?”
- If the answer is yes, factor it out and be sure to include that factor in the final answer. Then proceed to step 2.
 - If the answer is no, proceed to step 2.
- Step 2: Determine what form the polynomial is in.
- If it is in the form of x^2+bx+c , find factors of c that add up to b .
 - If it is in the form of ax^2+bx+c , find factors of axc that add up to b and use the box method.
- Step 3: Write the factors found in Step 2. Be sure to include anything that was factored out in Step 1 as part of your final answer.

Factor each polynomial.

20. $x^2 + 4x + 3$

21. $5x^2 + 25$

22. $6x^2 + 11x - 10$

23. $9x^2 + 6x - 24$

24. $x^2 - 4x - 12$

25. $-8x^2 + 50$

26. $-12x^2 + 4x$

27. $x^2 - x - 30$

28. $x^2 + 7x - 18$

Solving Quadratic Equations

- Step 1: Set the equation equal to 0.
Step 2: FACTOR (using the steps in the previous section)
Step 3: Set each factor equal to 0 and solve.

Solve each quadratic equation.

29. $x^2 - 10x = -9$

30. $6x^2 = 15x$

31. $2x^2 - 70 = -4x$

32. $x^2 - 12x = -36$

33. $x^2 - 16 = -6x$

34. $2x^2 + 7 = -9x$