



**FAIRFAX COUNTY  
PUBLIC SCHOOLS**

**Falls Church High School  
Mathematics Department**

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Dear 2009-2010 Geometry Student,

Congratulations on your promotion to Geometry. Attached to this letter you will find a packet of materials for you to work on over the summer. This packet is designed to ensure that you can recall and apply many of the wonderful algebra, geometry skills that you have learned in the past few years. While Geometry is not an entirely new subject to all of you, it is strongly based on visualization. Your success in Geometry depends strongly on your ability to recall and apply the skills that you have learned in prior math courses.

This packet is due on the first day of class in September 2009. You will have the opportunity to ask questions about anything in it, and by the end of the first week of school you will take a quiz or test on the material in the packet. The test will count as a first quarter grade and will be used by your teacher to plan review and remediation as necessary.

If you need more review over the summer, there are many resources to be found at the library and on the Internet. The public libraries carry algebra. Many sites on the Internet have math help available.

You will need to get your own

- Scientific calculator for next year.
- Protractor, Ruler, Compass, Eraser
- Notebook paper with 3 ring binder or 3-5 subject spiral notebook

Geometry is fun and definitely different from anything you have studied before. As a Geometry student, we expect you to work hard and to take the initiative to find out about things that you don't understand. We hope you enjoy your summer and look forward to seeing you in August!

The Geometry Team

Name:

Direction:

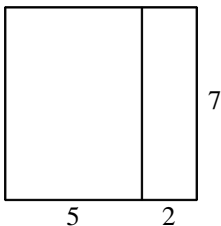
### Algebra I Review

1. Evaluate the expression  $-|-12|$

2. A man buys 7 shirts at \$16.50 each. Find his total bill.

3. You have \$40.00. You wish to buy a T-shirt costing \$14.50 and a pair of jeans costing \$23.95. There is a 5% sales tax on clothing. Do you have enough money to pay for both?

4. Write two expressions to describe the total area.

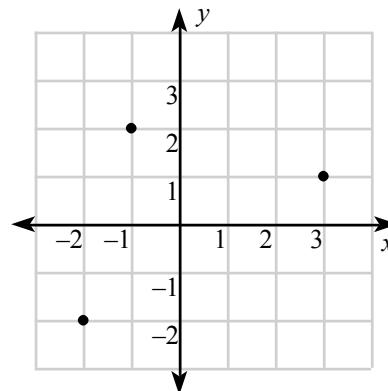


5. Remove parentheses by applying the Distributive Property.  $20x(3 - 2x)$

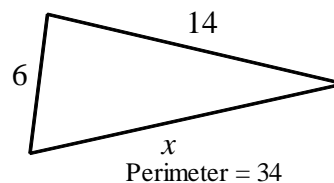
6. Simplify the expression  $3(2 - x) - 2(3 - x)$ .

7. A motorist travels 523 miles while using 16.2 gallons of gasoline. Find the gasoline consumption in miles per gallon to one decimal place.

8. Write the ordered pairs that are represented by the points in the coordinate plane below.

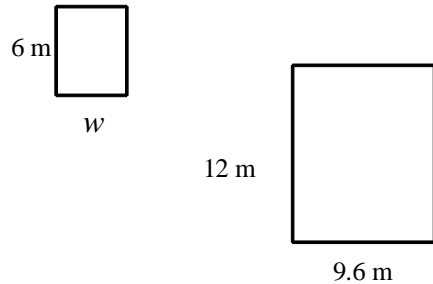


9. Use an addition equation to solve for  $x$ .



10. A 20 foot pole extends  $x$  feet below ground and 15 feet above ground. Write a linear equation that models the situation.

11. The two rectangles are similar. Find the width of the smaller rectangle.



12. Solve the equation:  $3x + 5 = 26$

13. Solve:  $-3n + 12 + n = 22$

14. Solve the equation:  $5n - 2(n - 2) = -11$

Simplify:

15.  $7\sqrt{6} + 3\sqrt{6} - 4\sqrt{6}$

16.  $\sqrt{112} + \sqrt{28}$

17.  $3\sqrt{7} - \sqrt{64} + 8\sqrt{112}$

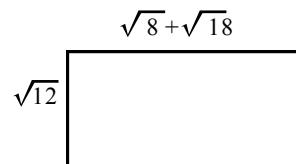
18. Perform the indicated operations and simplify the result.

$\sqrt{8}i + \sqrt{3}i$

19. Simplify the radical expression.

$\sqrt{\frac{20}{27}}$

20. Find the area of the rectangle.

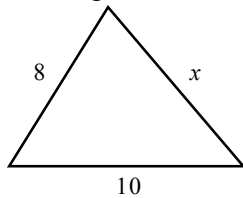


21. Solve:  $\sqrt{x-8} + 4 = -9$

## Introduction to Geometry

**The Geometric Mean of 2 numbers a and b is c means that  $c^2 = a * b$**

22. One side of a triangle is the geometric mean of the other two sides, as shown. Find the length of the side  $x$  (the mean).

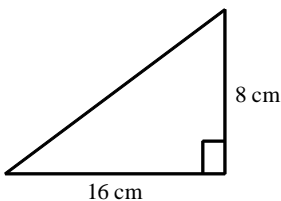


23. The geometric mean of  $x$  and 16 is 8. What is  $x$ ?

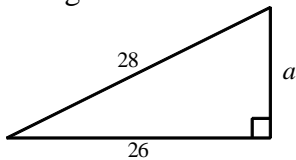
## Pythagorean Theorem

**If a, b, and c are the lengths of the sides of a right triangle, which c being the longest side (hypotenuse) then  $c^2 = a^2 + b^2$**

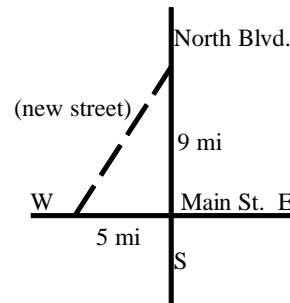
24. Given the right triangle below, what is the length of the hypotenuse?



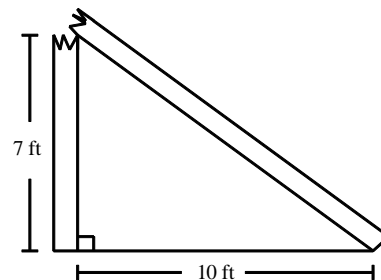
25. Find the length of the leg of this right triangle.



26. The city commission wants to construct a new street that connects Main Street and North Boulevard as shown in the diagram below. The construction cost has been estimated at \$110 per linear foot. Find the estimated cost for constructing the street. (1 mile = 5280 ft)

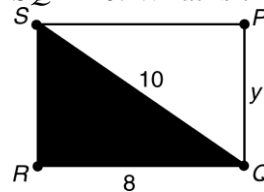


27. A telephone pole breaks and falls as shown.



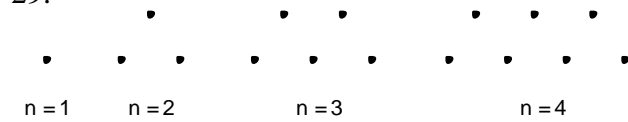
To the nearest foot, what was the original height of the pole?

28. Given: Rectangle  $PQRS$  with  $QR = 8$  and  $SQ = 10$ . What is the value of  $y$ ?



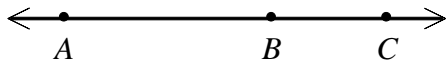
**Inductive Reasoning**

29.



$n$	1	2	3	4	5	6
$n$ th number	1	3	5	?	?	?

30. If  $AB = 18$  and  $AC = 28$ , find the length of  $\overline{BC}$ .



31. Let  $B$  be between  $C$  and  $D$ . Use  $CD = CB + BD$  to solve for  $m$ .  
 $CB = 2m - 25$   $BD = 5m - 10$   $CD = 21$

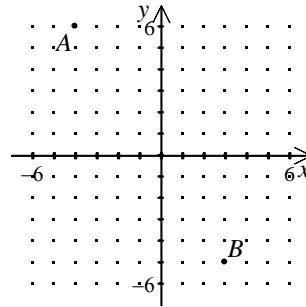
**Distance Formula or Length of a Segment**

Let  $A(x_1, y_1)$  and  $B(x_2, y_2)$ , the distance  $AB$

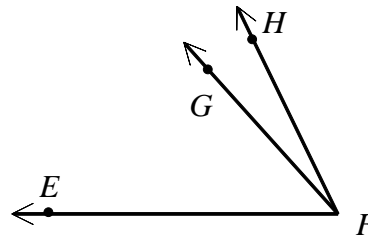
$$AB = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$$

32. Find the distance between the points  $(5, 5)$  and  $(9, 2)$ .

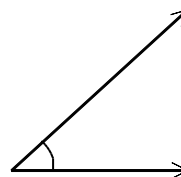
33. Find the length of  $\overline{AB}$ .



34.  $m\angle HFG = (2x + 6)^\circ$  and  $m\angle EFG = (10x - 2)^\circ$  and  $m\angle HFE = 64^\circ$ .  
 Find  $m\angle HFG$  and  $m\angle EFG$ .



35. Classify the angle as right, acute, or obtuse.



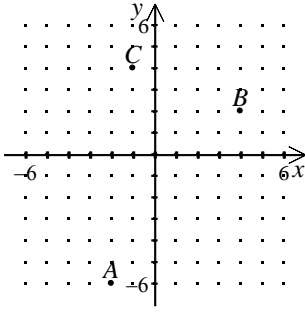
36. The measurement of angle  $B$  is  $90^\circ$ .  
 Classify angle  $B$  as an acute, right, or obtuse angle.

### Midpoint Formula

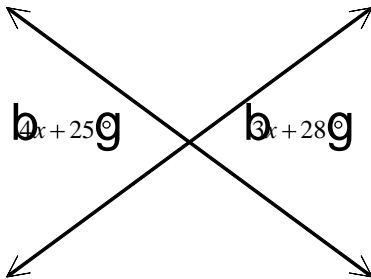
Let  $A(x_1, y_1)$  and  $B(x_2, y_2)$ , the midpoint  $M$

$$M\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$$

37. Find the length of the segment from point  $C$  to the midpoint of  $\overline{AB}$ .



38. Solve for  $x$ :



39. Write a definition for supplementary angles.

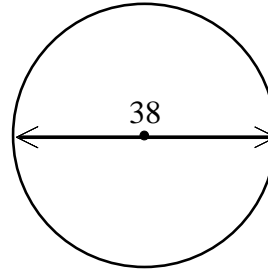
40. Define complementary angles.

41.  $\angle 1$  and  $\angle 2$  are supplementary angles  
 $\angle 1$  and  $\angle 3$  are vertical angles.  $m\angle 2 = 67^\circ$ .  
Find  $m\angle 3$

42. Find the perimeter and area of a rectangle with length 225 ft and width 30 ft.

43. Find the area of a circle with radius 50 cm. Use 3.14 for  $\pi$ .

44. Find the area and circumference of the circle. Use  $\pi = 3.14$ .



45. Find the area:

