


**Robbinsville High School**  
**Mathematics Department**  
155 Robbinsville-Edinburg Road  
Robbinsville NJ 08691

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Dear Students,

Welcome to Geometry! Attached you will find a summer packet for math reinforcement for the upcoming 2018-2019 school year. This packet should be completed and returned to school on the *first full day of school*. September is filled with review, but with completion of this packet, the review will come very naturally. The packet will be *collected* and *graded* as a **20-point homework grade** based on *completion* and *effort*.

To assist in your review and completion of this packet there are videos corresponding to each section of this packet. The videos are linked into this packet using QR codes that look like this:  In order to view the videos, simply download a QR scanner to your phone, use the scanner to scan the code, and that will directly link you to each video.

If you find yourself still confused on certain topics, it is suggested that you search for the topic on one of the following websites:

- ShowMe <http://www.showme.com>
- Khan Academy: <http://www.khanacademy.org/Math>
- Math TV: <http://www.mathtv.com>

We look forward to teaching you and getting to know you next year.

Have a great summer!

*Robbinsville High School Mathematics Department*

Name \_\_\_\_\_

Due Date: The first day back in your Geometry Class!

Directions: You must also show all work in the space provided to receive credit. Write your final answer on the line.

**Part 1: Algebra 1 Skills****Solve by Distribution:**

1.  $-3(x + 5) = 8x + 18$

1. \_\_\_\_\_

2.  $4(8 - p) - (7 - p) = 22$

2. \_\_\_\_\_

3.  $5(x - 4) - 1 = -7x + 3$

3. \_\_\_\_\_

**Solve by Cross Multiplication:**

4.  $\frac{x+1}{-3} = \frac{x-4}{5}$

4. \_\_\_\_\_

5.  $\frac{5}{x-1} = \frac{7}{x}$

5. \_\_\_\_\_

**Solve by Factoring:**



6.  $x^2 - 16x + 64 = 0$

6. \_\_\_\_\_

7.  $2x^2 = 9x + 5$

7. \_\_\_\_\_

**Solve by Factoring Two Perfect Squares:**



8.  $25y^2 - 49 = 0$

8. \_\_\_\_\_

9.  $16x^4 - 121x^2 = 0$

9. \_\_\_\_\_

**Solve by Using the Greatest Common Factor:**



10.  $2x^4 - 12x^2 = 0$

10. \_\_\_\_\_

11.  $3xy - 15y = 0$

11. \_\_\_\_\_

**Solve by Using the Quadratic Formula: (Round to the nearest tenth)**



12.  $3x^2 - 10x + 5 = 0$

12. \_\_\_\_\_

13.  $2x^2 - 3x - 11 = 0$

13. \_\_\_\_\_

**Solve by Using the Quadratic Formula: (Round to the nearest hundredth)**

14.  $-x^2 - 2x + 2 = 0$

14. \_\_\_\_\_

15.  $-4x^2 + 6x - 1 = 0$

15. \_\_\_\_\_

**Simplify:**



16.  $(2x^2 + 11xy - 10) + (3x^2 - 4x + 2) + (-x^2 - y - 4)$

16. \_\_\_\_\_

17.  $(2x^2 + 5x - x^3 + 1) - (9x^2 - 8x - x^3 + 7)$

17. \_\_\_\_\_

Foil:



18.  $(4a + 5c)(4a - 5c)$

18. \_\_\_\_\_

19.  $(w - 2)^2$

19. \_\_\_\_\_

**Solve each system:**

(Substitution method)



(Elimination Method)



20.  $y = -x + 3$   
 $y = x - 3$

20. \_\_\_\_\_

21.  $2x - y = 5$   
 $4x - 2y = 10$

21. \_\_\_\_\_

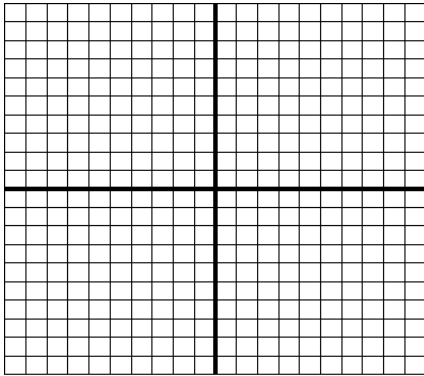
22.  $x + y = 0$   
 $x + y = 2$

22. \_\_\_\_\_

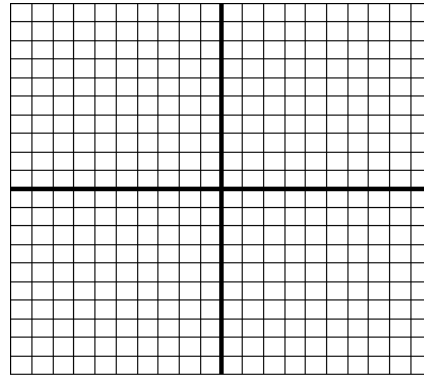
**Graph the Functions:**



23.  $y = -3x + 5$



24.  $y = \frac{3}{4}x - 2$



**Find the Slope.**



25. Find the slope of the line containing points (9, 4) and (5, 2)

25. \_\_\_\_\_

26. Find the slope of the line containing points (-2, 3) and (8, -15)

26. \_\_\_\_\_

**Word Problems: Set up and solve proportions. If necessary, then round answer to the nearest tenth.**

27. After 2 hours I had finished watching 5 episodes of my favorite show on Netflix. At that rate how long would it take me to watch 15 episodes?

27. \_\_\_\_\_



28. The ratio of boy to girl students at a certain school is 17:23. If there are 300 total students at that school how many boys attend that school?

28. \_\_\_\_\_



29. Suppose the model of a PS4 has a length of 50 mm and we know the actual length of the PS4 is 275 mm. What is the scale of the model?

29. \_\_\_\_\_

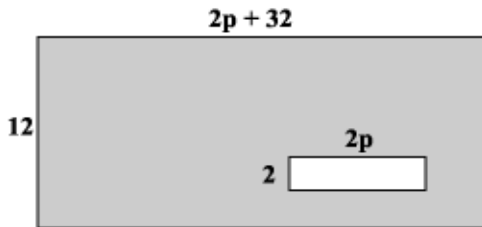
30. The blueprint of a skateboard ramp shows the length is 11.4 inches. If the scale on the blueprint is 1 inch = 6 feet, find the length of the actual skateboard ramp using a scale factor.

30. \_\_\_\_\_

**Part 2: Geometry Skills**

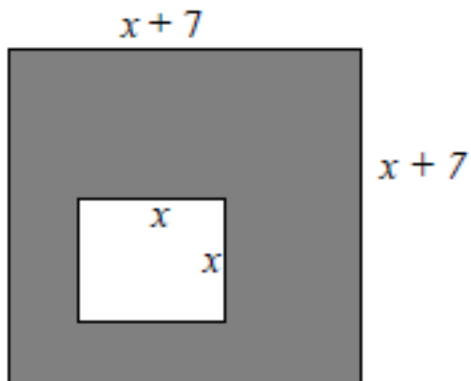
**Solve for the missing variable in each figure:**

31. What is the simplified expression for the area of the shaded region in the larger of these two rectangles?



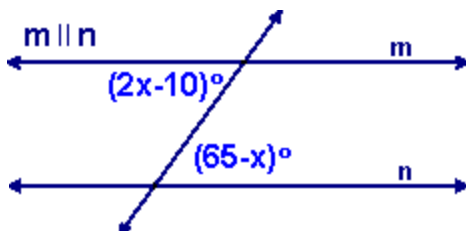
31. \_\_\_\_\_

32. What is the simplified expression for the area of the shaded region in the larger of these two rectangles?



32. \_\_\_\_\_

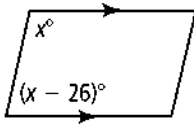
33.



33. \_\_\_\_\_

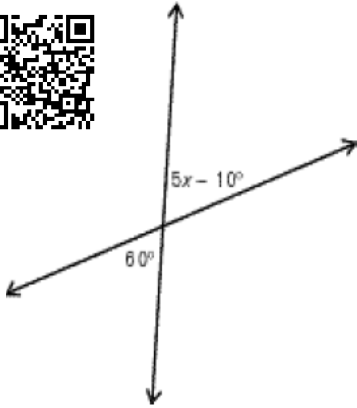


34.



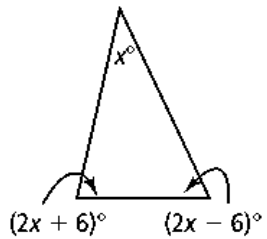
34. \_\_\_\_\_

35.



35. \_\_\_\_\_

36.



36. \_\_\_\_\_

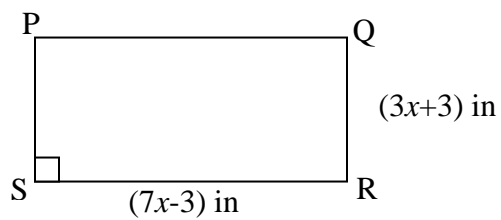
37. If the perimeter of rectangle PQRS is 40 inches.

a) Find the value of  $x$ .

b) Find the Area of the rectangle.

37a. \_\_\_\_\_

37b. \_\_\_\_\_



Solve each word problem using Pythagorean theorem. Keep answer in simplest radical form:

38. Joe Bean regularly takes a short cut across Mr. Wilson's lawn instead of walking on the sidewalk on his way home from school. Based on the picture below, how much distance is saved by Joe cutting across the lawn?

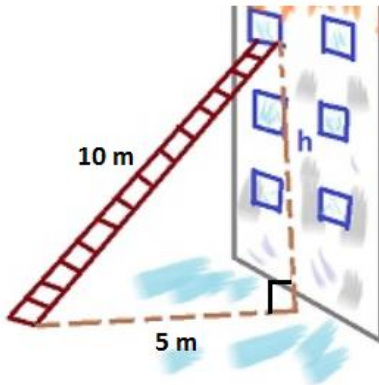


38. \_\_\_\_\_



39. Skylar leans a 10m ladder against a building. If she is 5m away from the base of the building, what height does the ladder reach on the building?

39. \_\_\_\_\_



40. Your new iPad is 7 inches tall and 6 inches long, what is the diagonal display of the iPad screen?

40. \_\_\_\_\_



41. Given the figure below in which  $\overleftrightarrow{AB}$  and  $\overleftrightarrow{CD}$  intersect at point X and  $m\angle 5 = 90^\circ$ . Refer to angles by numbers in answering.



a) Name a pair of vertical angles.

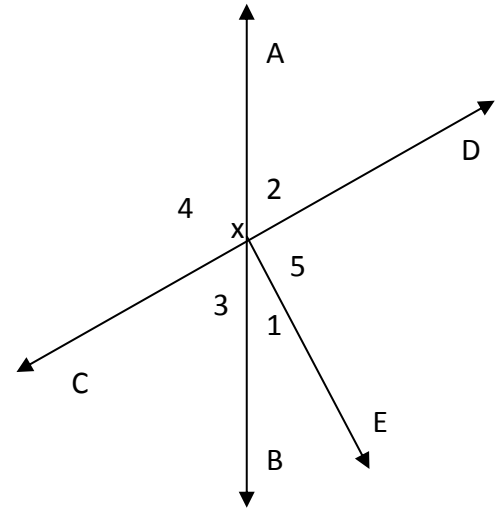
b) Is  $\angle 1$  vertical to  $\angle 2$ ? Explain.

c) Name an angle adjacent to  $\angle 2$ .

d) Are  $\angle 3$  and  $\angle 5$  supplementary?

e) Are  $\angle 2$  and  $\angle 4$  supplementary?

f) Explain why  $\angle 3$  and  $\angle 1$  are complementary.



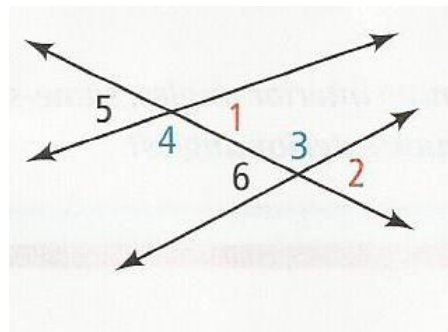
42. What type of special angles are each pair

$\angle 1$  and  $\angle 2$  \_\_\_\_\_

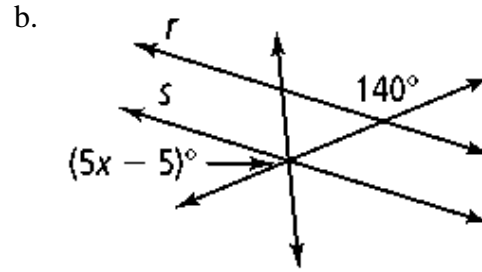
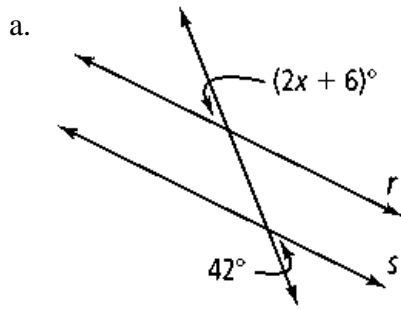
$\angle 3$  and  $\angle 4$  \_\_\_\_\_

$\angle 5$  and  $\angle 2$  \_\_\_\_\_

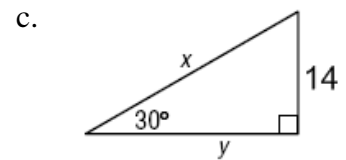
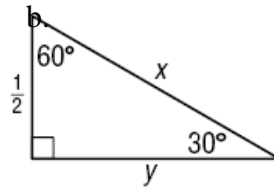
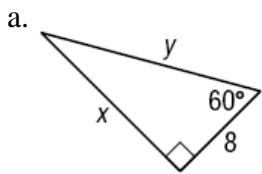
$\angle 4$  and  $\angle 6$  \_\_\_\_\_



43. Determine the value of  $x$  for which  $r \parallel s$ . Then find the measure of each labeled angle.

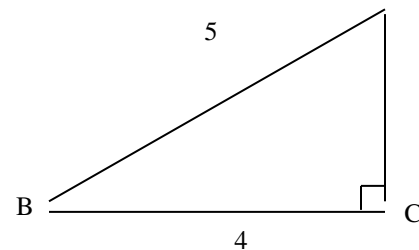


44. Find the value of  $x$  and  $y$  in each triangle.



45. Use the diagram to express the ratio as a fraction.

- |                     |                     |
|---------------------|---------------------|
| 1. $\sin A =$ _____ | 2. $\cos A =$ _____ |
| 3. $\cos B =$ _____ | 4. $\tan A =$ _____ |
| 5. $\tan B =$ _____ | 6. $\sin B =$ _____ |

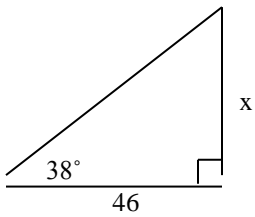


46. Complete using a trigonometric table or a scientific calculator.

- |                                  |                                  |
|----------------------------------|----------------------------------|
| 1. $\sin 5^\circ \approx$ _____  | 2. $\cos 60^\circ \approx$ _____ |
| 3. $\tan 45^\circ \approx$ _____ | 4. $\sin 59^\circ \approx$ _____ |
| 5. $\cos$ _____ $\approx 0.9455$ | 6. $\sin$ _____ $\approx 0.8746$ |
| 7. $\tan$ _____ $\approx 2.4751$ | 8. $\cos$ _____ $\approx .6428$  |

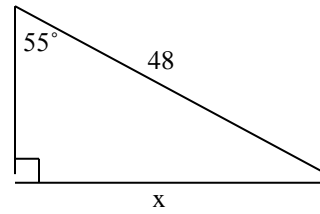
47. Use a scientific calculator or a trigonometric table to find the values of the variables. Find the lengths correct to the nearest tenth and angles to the nearest degree.

a.



$x \approx$  \_\_\_\_\_

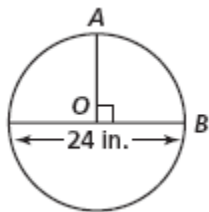
b.



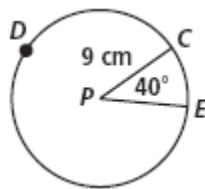
$x \approx$  \_\_\_\_\_

48. Find the length of each arc. Leave your answers in terms of  $\pi$ .

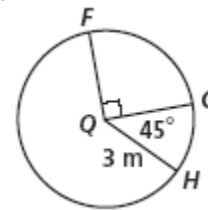
a.  $\widehat{AB}$



b.  $\widehat{CDE}$



c.  $\widehat{FH}$



49. Simplify each problem.

a.  $\sqrt[4]{48x^6}$

b.  $7\sqrt[3]{54} + \sqrt[3]{2} - \sqrt{50}$

c.  $(4 - \sqrt{5})(4 + \sqrt{5})$

d.  $\sqrt{\frac{20}{7}}$

50. Write each expression in exponential form.

a.  $\sqrt[3]{7}$

b.  $(\sqrt{6})^3$

c.  $(\sqrt[3]{5^2})^4$

d.  $\frac{1}{\sqrt[3]{2^5}}$