

Carteret High School
Math Department
Honors Geometry
Summer Project 2018



Solve each problem clearly and completely, while showing all work. You will have an opportunity to ask questions during the first week of school. There will be a test on the topics covered in this project sometime during the second week of school.

For more information, please contact:

Mrs. Melissa Jones

Assistant Superintendent of Schools

Supervisor of Math

mjones@carteretschools.org 732-541-8960 ext 6003

Student Name: _____

Teacher: _____

Evaluate the expression.

1. $\frac{-2c}{6d}$ if $c = -3$ and $d = 1$.

2. $5|a - 5| - 7|b + 2|$ if $a = 4$ and $b = 3$.

3. Katie said that if $a = 5$ the expression $3|a - 8| + 4$ would have the value of -5 . Is she correct? Explain.

Solve the equation.

4. $2g - 7 = 21$

5. $-3(c + 4) = 12$

6. Marc was solving $-8(d - 3) = 10$. He rewrote the equation as $-8d + 24 = 10$. What property did he use? Is he correct? Explain.

Solve the inequality.

7. $4 + \frac{d}{3} > -7$

8. $4z + 3 \geq 8z - 5$

Name the polygon.

9. A polygon with the vertices $A(-2, 1)$, $B(4, 1)$, $C(2, -1)$, and $D(-4, -1)$.

Write two points that satisfy the equation.

10. $y = x - 5$

11. Describe how to graph and locate the quadrant for the point $(3, -1)$.

Solve the system of equations.

12.
$$\begin{aligned} y &= -3x \\ x + 2y &= 10 \end{aligned}$$

$$-5x + 3y = -11$$

13. $5x - 4y = 8$

14. Explain how you would use graphing to solve a system of equations.

Simplify.

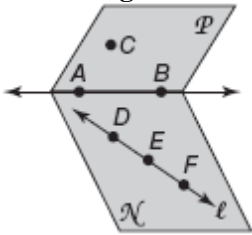
15. $\sqrt{50} \cdot \sqrt{2}$

16. $\sqrt{\frac{196}{64}}$

17. $\sqrt{12a^4b^6}$

18. $\frac{\sqrt{7x}}{\sqrt{32}}$

Use the figure below to answer the following questions.

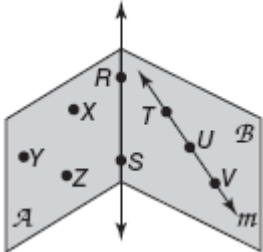


19. What is another name for line l ?

20. Name three points on plane P .

21. Name three noncoplanar points.

Use the figure below to answer the following questions.

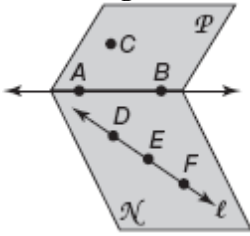


22. What is another name for line m ?

23. Name three points on plane B .

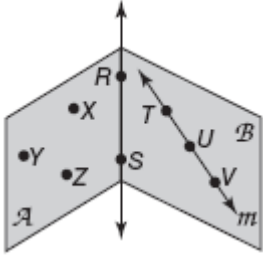
24. Name three noncollinear points.

Use the figure below to answer the following questions.



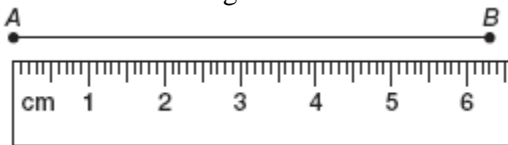
25. Name the intersection of planes P and N .

Use the figure below to answer the following questions.

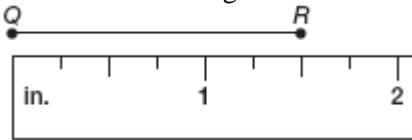


26. Name the intersection of planes A and B .

27. What is the length of \overline{AB} ?

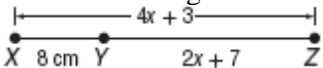


28. What is the length of \overline{QR} ?



29. Find the length of \overline{DE} if D is between points C and E , $CD = 6.5$ centimeters, and $CE = 13.8$ centimeters.

30. Find the length of \overline{XZ} .



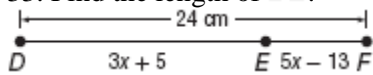
Use the polygons to answer the following questions.



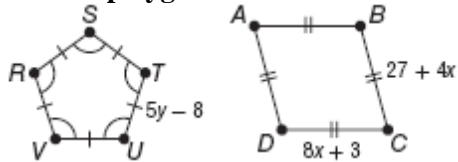
31. Find the length of each side of polygon RST .

32. Find the length of \overline{LO} if O is between points L and M , $LM = 18.6$ centimeters, and $OM = 12.9$ centimeters.

33. Find the length of \overline{DE} .



Use the polygons to answer the following questions.



34. Find the length of each side of polygon $ABCD$.

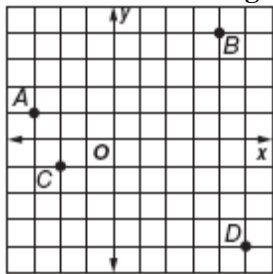
35. A square has a side length of 2.3 feet. What is the area of the square?

36. A triangle has an area of 24 square meters. The base is two meters longer than the height. What is the length of the base of the triangle?

37. The area of a circle is equal to the area of a square measuring 5 centimeters on each side. Find the radius of the circle.

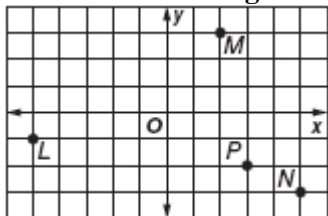
38. A circle has a circumference of 6 cm. Find the diameter of the circle.

Use the coordinate grid to answer the following questions.



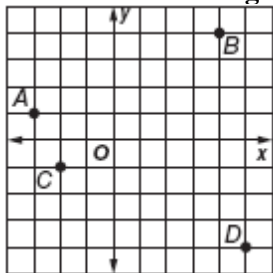
39. Find the distance between A and B .

Use the coordinate grid to answer the following questions.



40. Find the distance between L and M .

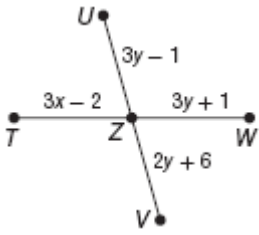
Use the coordinate grid to answer the following questions.



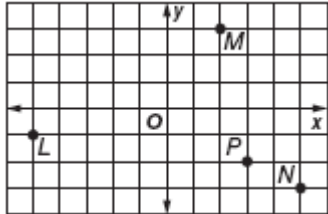
41. Find the coordinates of the midpoint of \overline{CD} .

42. Find the coordinates of a point E if C is the midpoint of \overline{AE} .

43. Find the value of x and y if \overline{UV} bisects \overline{TW} and $UV = 40$.



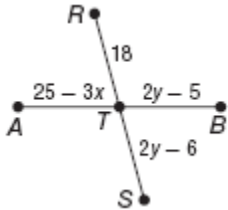
Use the coordinate grid to answer the following questions.



44. Find the coordinates of the midpoint of \overline{MN} .

45. Find the coordinates of a point Q if P is the midpoint of \overline{NQ} .

46. Find the value of x if \overline{RS} bisects \overline{AB} and $RS = 36$.



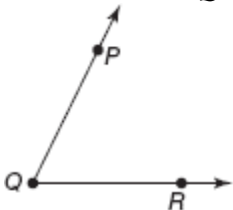
47. The vertices of a triangle are located at $P(0, 0)$, $Q(8, 6)$, and $R(-3, 4)$. What is the perimeter of this triangle?

48. **Bonus** Find the dimensions of a rectangle whose length is 3 more than twice its width and has a perimeter of 30 centimeters.

49. The vertices of a triangle are located at $P(0, 6)$, $Q(8, 12)$, and $R(3, -3)$. What is the perimeter of this triangle?

50. **Bonus** Find the lengths of the sides of a triangle whose perimeter is 37. The measure of the first side of the triangle is 8 less than the second side, and the second side is twice the length of the third side.

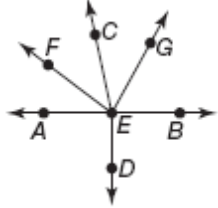
51. Measure $\angle PQR$. Then classify $\angle PQR$ as *right*, *acute*, or *obtuse*.



52. Measure $\angle ABC$. Then classify $\angle ABC$ as *right*, *acute*, or *obtuse*.

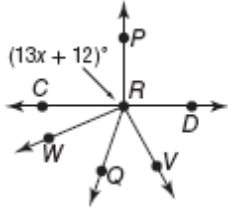


In the figure, \overrightarrow{EA} and \overrightarrow{EB} are opposite rays and \overrightarrow{EC} bisects $\angle FEG$.



53. Find the value of x if $m\angle FEG = 82$, and $m\angle FEC = 5x + 11$.

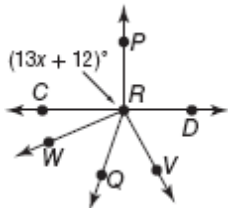
In the figure, \overrightarrow{RC} and \overrightarrow{RD} are opposite rays and \overrightarrow{RQ} bisects $\angle WRV$.



54. Find the value of y if $m\angle WRQ = 48$ and $m\angle QRV = 7y + 6$.

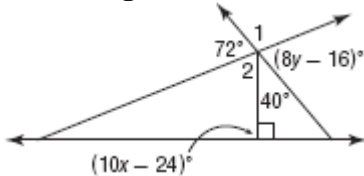
55. If $m\angle AED = 16y + 10$, find the value of y so that $\overline{ED} \perp \overline{AB}$.

In the figure, \overrightarrow{RC} and \overrightarrow{RD} are opposite rays and \overrightarrow{RQ} bisects $\angle WRV$.



56. Find the value of x so that $\overline{CR} \perp \overline{PR}$.

Use the figure below to answer the following questions.



57. Find the value of y .

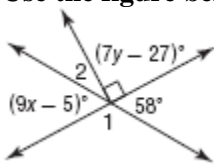
58. Find $m\angle 1$.

59. Find $m\angle 2$.

60. Find the value of x .

61. Two angles, $\angle 1$ and $\angle 2$, are supplementary. Angle 1 is an acute angle. What type of angle is $\angle 2$?

Use the figure below to answer the following questions.



62. Find the value of x .

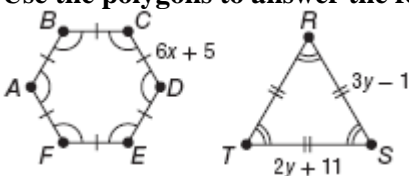
63. Find $m\angle 1$.

64. Find $m\angle 2$.

65. Find the value of y .

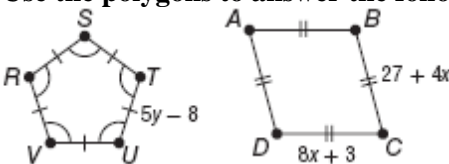
66. Two angles, $\angle A$ and $\angle B$, form a linear pair. Angle B is an obtuse angle. What type of angle is $\angle A$?

Use the polygons to answer the following questions.



67. Name polygon $ABCDEF$ by its sides. Then classify it as *convex* or *concave* and *regular* or *not regular*.

Use the polygons to answer the following questions.



68. Name polygon $RSTUV$ by its sides. Then classify it as *convex* or *concave* and *regular* or *not regular*.

69. Stephanie wants to transfer the soil from a rectangular pot measuring 4 inches \times 5 inches \times 3 inches into a cylindrical pot. The soil in both pots should be leveled to the top. What should be the volume of the cylindrical pot?

70. Nadia wants to fill her rectangular fish tank. The tank measures 2 feet wide, 1 foot long, and 1.5 feet high. The water level in her fish tank needs to be 0.25 foot from the top. She uses a bucket that holds 1.25 cubic feet of water. How many buckets of water does Nadia need to fill the fish tank?