Monroe Township High School
Monroe Township, New Jersey

Dynamics of Geometry
SUMMER PREPARATION PACKET 2025-2026

Geometry is a fast-paced, rigorous course that will provide you with the fundamental tools of geometric understanding that will support you in all future advanced mathematics courses. Since you will be taking Geometry after successful completion of Algebra I, the **Dynamics of Geometry Preparation Packet** contains review material of the algebraic concepts, skills, and procedures that should be mastered <u>BEFORE</u> entering Geometry in the fall.

Essentially, this packet provides a review of the major algebra topics as well as a preview of geometric topics. The sections are based on the Achieve ADP Algebra I End-of-Course Exam Content Standards and the Common Core State Standards (CCSS).

Alternate online resources are available at:
- http://www.khanacademy.org/
- http://www.wolframalpha.com/examples/Math.html
- http://tinyurl.com/youtube-mthsGeometry

This practice problem packet is the only formal review of the concepts, procedures, and skills that you will have before beginning your geometry course. Your teacher will expect you to have mastered all topics included here.

This collection of problems will identify those concepts that you have mastered as well as those you will need to practice and review. You are expected to seek extra help immediately on those concepts with which you have not demonstrated proficiency.   Be resourceful – use the **online resources provided on the webpage**! You are expected to seek extra help immediately on those concepts with which you have not demonstrated proficiency. Be resourceful – use the online resources!

Problems here are very representative of the types of items you will need to have mastered BEFORE geometry… so we strongly encourage that you include it in your summer festivities! Good luck and enjoy! ☺

Name: _____

Solve each equation given in #1-5. Write your answer in the blank provided. Leave answer as an <u>improper fraction.</u>

1. $3x - 4 = 17$ ANSWER:_____

2. $-5(2x - 8) = 80$ ANSWER:_____

3. $\dfrac{1}{2}(4x - 16) = 84$ ANSWER:_____

4. $7x - 2 = 3x + 14$ ANSWER:_____

5. $6x - 2 + 4x + 14 = 180$ ANSWER:_____

Determine the <u>area</u> and <u>perimeter</u> of each figure described in #6-7. Do not forget your units.
<mark>Area = (length) x (width)</mark>   <mark>Perimeter = Sum of the Sides</mark>

6. RECTANGLE with length 3.6 cm and width 4.2 cm   AREA:_____

                                                                        PERIMETER:_____

7. SQUARE with sides of length 9 mm   AREA:_____

                                                       PERIMETER:_____

Using the given information, determine <u>area</u> and <u>circumference</u> for #8-9. Leave your answer in terms of π.
$$A = \pi r^2 \qquad\qquad C = 2\pi r$$

8. Area and circumference of a circle with radius 9 inches.   AREA:_____

                                                                    CIRCUMFERENCE:_____

9. Area and circumference of a circle with diameter 12 centimeters.   AREA:_____
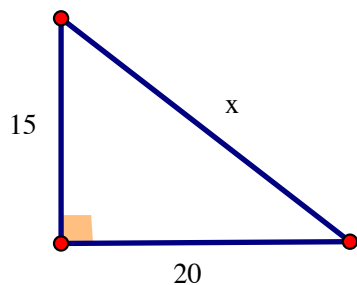
                                                                             CIRCUMFERENCE:_____

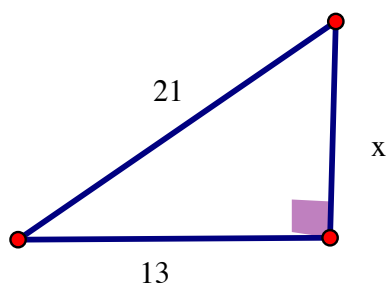**Use the Pythagorean Theorem to determine the missing side in questions 10-12. Leave in radical form.**
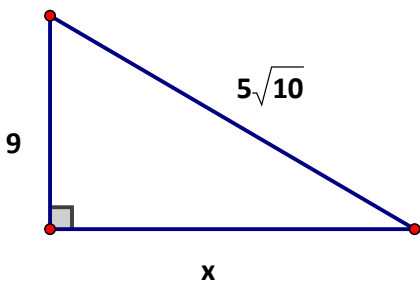
$$a^2 + b^2 = c^2$$

10.

15

x

20

x = _____

11.

21

x

13

x = _____

12.

9

$5\sqrt{10}$

x

x = _____

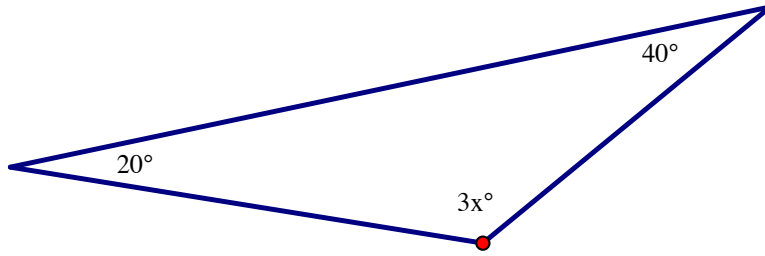13. Find the slope of the line containing (-2, -8) and (-1, 0).

SLOPE:_____

14. Find the slope of the line perpendicular to the line containing (-3, 2) and (4, -1).

SLOPE:_____

15. The complement of a $60°$ angle is_____.

16. The supplement of a $100°$ angle is _____.

17. Find x and the measure of the missing angle.
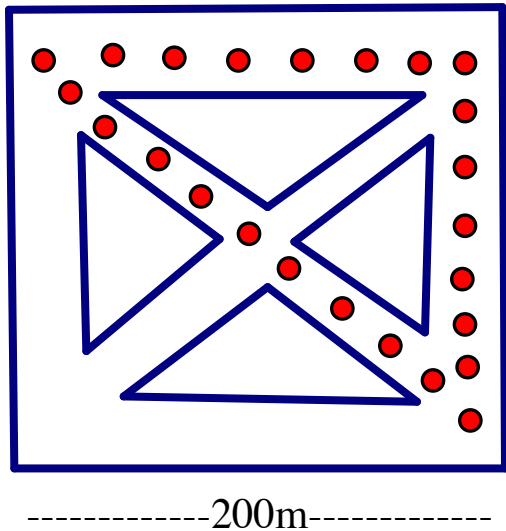
40°

20°

3x°

x = _____

Angle = _____

18. State the difference between a line and a line segment. You may write sentences or draw diagrams.

Predict the next number in the sequence given in #19-20.

19. -5, -2, 4, 13, _____

20. $48, 16, \dfrac{16}{3}, \dfrac{16}{9},$ _____

21. Everyday, Michael goes for a run through the park. The park is shaped like a square. He follows the path shown by the points. About how far does Michael run?


-------------200m-------------

22. Julia wants to paint two rectangular walls of her bedroom. One bedroom wall is 15 feet long and 8 feet high. The other wall is 12 feet long and 8 feet high. She wants to put two coats of paint on the walls. She knows 1 gallon of paint will cover about 350 square feet of a wall. Will one gallon of paint be enough? Show all of your work and explain your answer below.

23. Triangle ABC is shown in the coordinate-plane. The triangle will be rotated 180 degrees clockwise around the point (0, 0) to create triangle A'B'C'. Draw the new triangle A'B'C' on the coordinate plane.
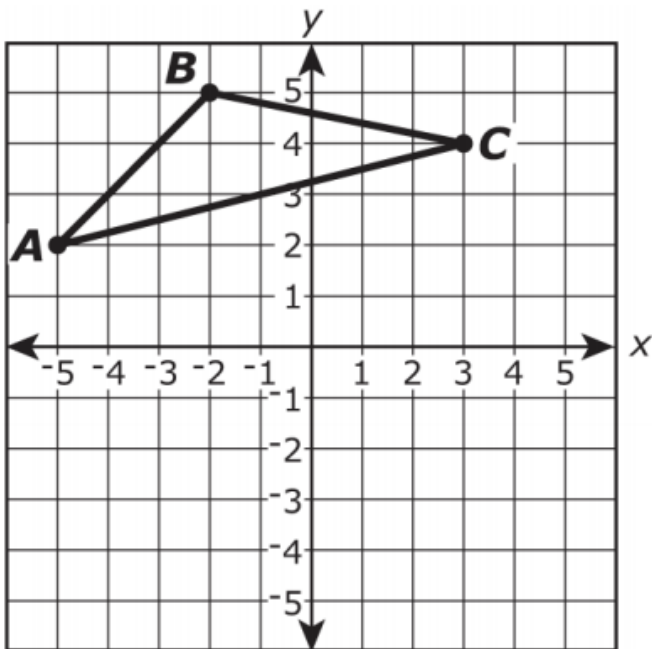
24. Triangle ABC is show in the xy-plane. The triangle will be reflected over the y-axis. Draw the new triangle A'B'C' on the coordinate plane.
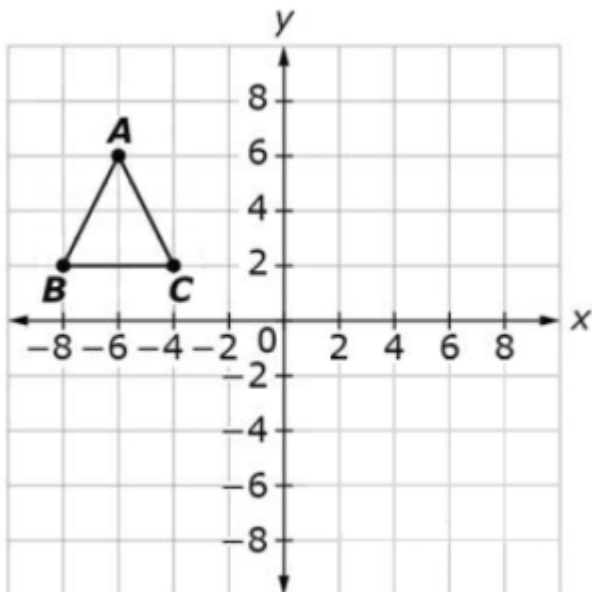
25. Using the diagram below, describe the transformation that occurs from triangle ABC to triangle A'B'C' by answering the questions below.
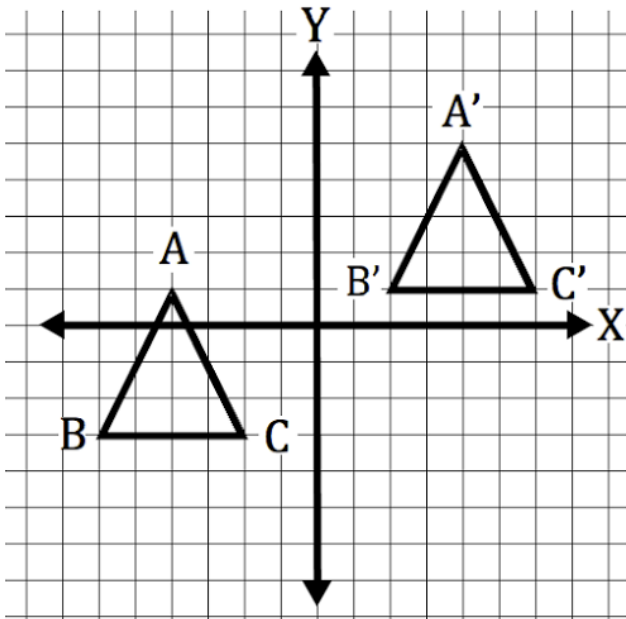
a) What kind of transformation occurred?

b) How do you know?

c) Write a rule using arrow notation depicting the transformation.

26. Simplify the following radicals. Leave your answer in simplest radical form.

a) $\sqrt{72}$

b) $\sqrt{40}$

c) $\sqrt{288}$

d) $\sqrt{800}$