Coventry High School
Math Department

# Geometry Summer Packet

# 2024 - 2025

The problems in this packet are designed to help you review topics from Algebra I and beyond that are important to your success in Geometry. The topics covered in this packet should be addressed and reviewed before entering Geometry. Examples have been provided in each section to help you get started and refresh your memory of these concepts.

It is advised that you do all of the work for each problem on this packet before completing the Google Form.

Please go to **https://forms.gle/QXYX3oeR1XQX975U6**

***(upper/lowercase matters)*** to submit these answers.

*****Please note that you cannot submit your answers on the google form until the form opens on *August 1, 2024.******

This packet is **due on the first day of school** and will count as one of your first grades of the school year!

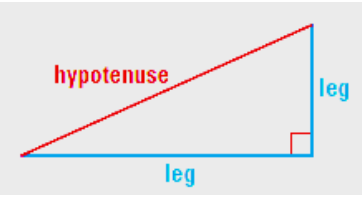
While it is not required, it is strongly recommended that students buy a calculator for their personal use throughout the school year. Although a scientific calculator is sufficient in this course, the purchase of a TI – 83 or TI-84 CE graphing calculator will be the calculator to use during your high school experience.

Name:_____ Period: _____

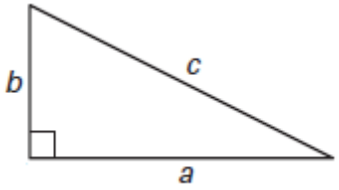
# Topic 1: Right Triangles

**Notes:**

In a right triangle, the sides that form the right angle are the *legs* of the triangle. The side opposite the right angle is the *hypotenuse* of the triangle.



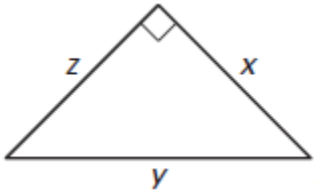

**Example: Identify the legs and hypotenuse in the triangles below.**



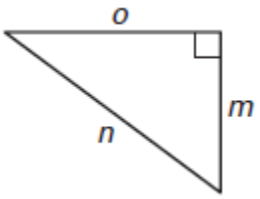

Side a: Leg
Side b: Leg
Side c: Hypotenuse

**Problem Set: Identify the legs and hypotenuse in the triangles below.**

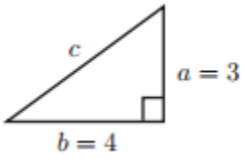
1)




2)



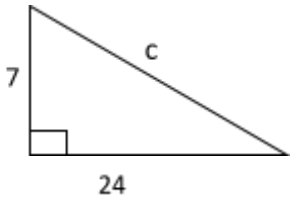

**Example: Use the Pythagorean Theorem $a^2+b^2=c^2$ to determine the missing side.**



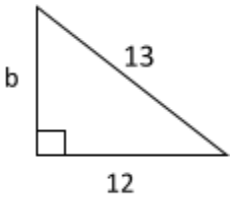

$$\begin{aligned} a^2+b^2 &= c^2 \\ 3^2+4^2 &= c^2 \\ 9+16 &= c^2 \\ 25 &= c^2 \\ 5 &= c \end{aligned}$$

**Problem Set: Use the Pythagorean Theorem $a^2+b^2=c^2$ to determine the missing side.**

3)




4)



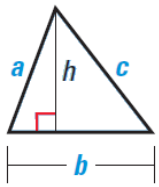
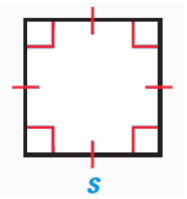
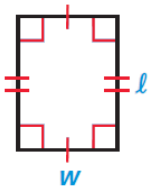
Name:_____ Period:_____

# Topic 2: Perimeter & Circumference

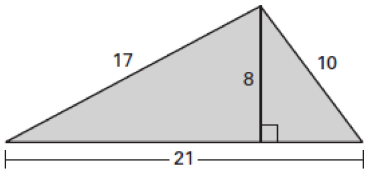
**Notes:**

Perimeter is the distance around the outside of an object. It is measured in linear units (inches, meters, centimeters, etc.)

**Perimeter / Circumference Formulas:**

| Triangle | Square | Circle | Rectangle |
|---|---|---|---|
|   |   |   |   |
| $P = a + b + c$ | $P = 4s$ | $C = 2\pi r$ | $P = 2l + 2w$ |

**Examples: Find the perimeter**

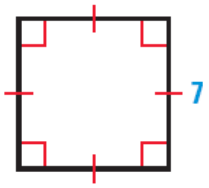



Add all the **outer sides**. Since 8 is the height of the triangle and not the length of one of the sides, we do not use it to find the perimeter.

17 + 10 + 21 = 48 units

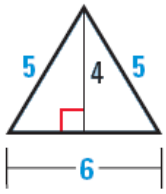
**Problem Set: Find the perimeter or circumference. Use π = 3.14. DO NOT ROUND!**

1) (this is a square)



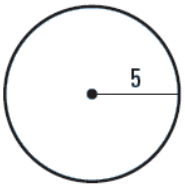

P = _____

2)



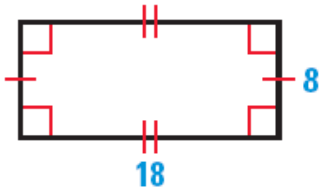

P = _____

3)



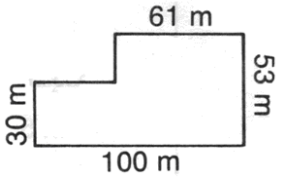

C = _____

4) (this is a rectangle)



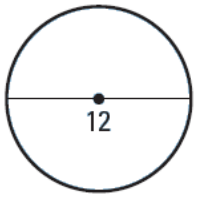

P = _____

5)



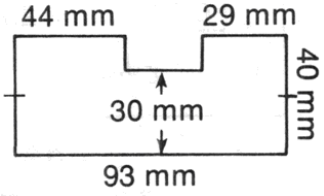

P = _____

6)



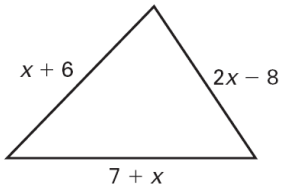

C = _____

7)




P = _____

8) The perimeter of the triangle is 73. Solve for x.




x = _____

Name:_____ Period: _____

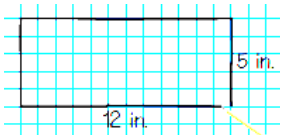
# Topic 3: Area

**Notes:**

Area is a quantity expressing the two-dimensional size of a surface. It is measured in square units; square inches ($in^2$), square centimeters ($cm^2$), square miles ($mi^2$). Think of area as the amount of floor tiles needed to cover a floor.

**Example:**

Find the area of the rectangle.



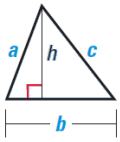

$A = lw$ Area formula for a rectangle

$A = (12)(5)$ Plug in appropriate values

$A = 60in^2$ Evaluate

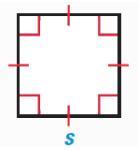
**Area Formulas:**

Triangle




$A = \frac{1}{2}bh$

Square

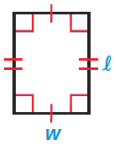



$A = s^2$

Circle


$A = \pi r^2$

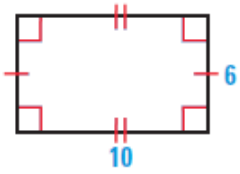
Rectangle



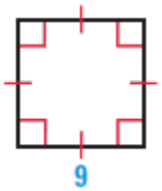

$A = lw$

**Problem Set: Find the area of the figure. Use π = 3.14. DO NOT ROUND!**

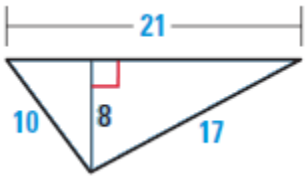
1) (this is a rectangle)




2) (this is a square)

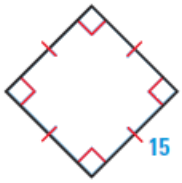



3)

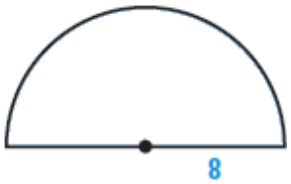



4)


5) (this is a square)




6)



Name:_____ Period:_____

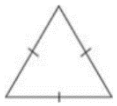
# Topic 4: Classify Triangles

**Notes and Examples:**

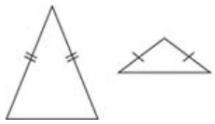
Triangles can be classified either according to their sides or according to their angles.

The types of triangles classified by their *sides* are the following:

- **Equilateral triangle:** A triangle with all three sides equal in measure. The slash marks indicate equal measure.



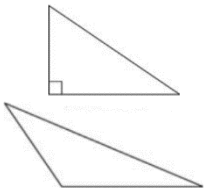
- **Isosceles triangle:** A triangle in which at least two sides have equal measure.



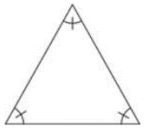
- **Scalene triangle:** A triangle with all three sides of different measure

The types of triangles classified by their *angles* include the following:

- **Right triangle:** A triangle that has a right angle in its interior.
- **Obtuse triangle:** A triangle having an obtuse angle (greater than 90° but less than 180°) in its interior.

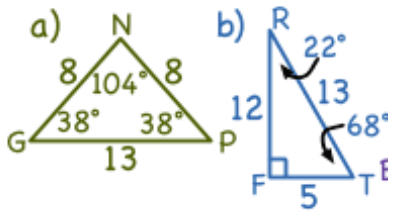


- **Acute triangle:** A triangle having all acute angles (less than 90°) in its interior.
- **Equiangular triangle:** A triangle having all angles of equal measure.



**Problem Set – Classify each triangle by its sides *and* its angles.**

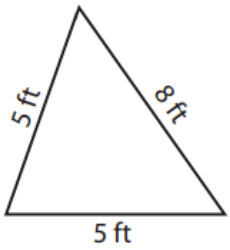
**Example:**



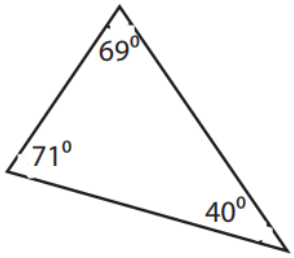

Obtuse Isosceles Triangle

Right Scalene Triangle

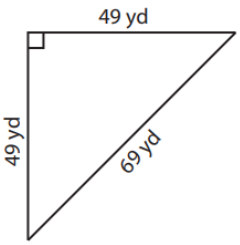
**1.**



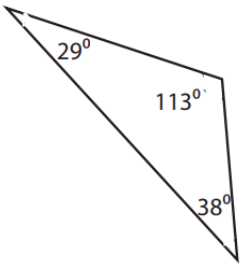

**2.**



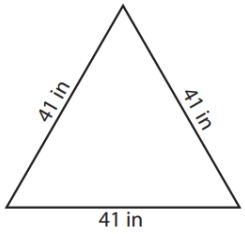

**3.**




**4.**

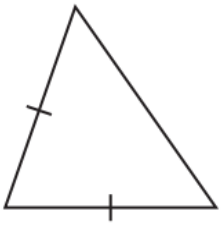



**5.**

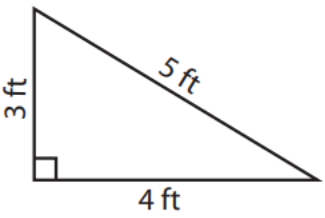



**6.**

**7.**



**8.**



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## Topic 5: Solving Equations

**Examples: Solve for x.**

| | |
|---|---|
| $15x+20+5x+8=-5-7$ | Comb. Like Terms |
| $20x+28=-12$ | Subtract 28. |
| $-28=-28$ | Simplify. |
| $\frac{20x}{20}=\frac{-40}{20}$ | Divide by 20. |
| $x=-2$ | Simplify. |

| | |
|---|---|
| $7(x-3)=8x+2$ | Distribute. |
| $7x-21=8x+2$ | Subtract $7x$. |
| $-7x=-7x$ | Simplify. |
| $-21=x+2$ | Subtract 2. |
| $-2=-2$ | Simplify. |
| $-23=x$ | |

| | |
|---|---|
| $x^2-2=34$ | Add 2. |
| $+2=+2$ | Simplify. |
| $x^2=36$ | Square Root |
| $\sqrt{x^2}=\sqrt{36}$ | |
| $x=\pm 6$ | |

**Problem Set - Solve for x. Show all work. (Some answers may be decimals).**

1) $12+x=5$

2) $12=-3x$

3) $9x-1=44$

4) $2x-6=4x-14$

5) $5x-2-3=25$

6) $2x-7+8x=-5+18$

7) $\frac{4}{5}x=8$

8) $\frac{1}{3}x-4=7$

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9) $3(x+7)-2x=23$

10) $0.25x-0.35=1.15$

11) $\frac{1}{4}x+2=-\frac{1}{2}$

12) $-2x+\frac{1}{2}=-2$

13) $x^2=49$

14) $x^2+4=40$

15) $\frac{1}{2}(x+8)=5(x-1)$

16) $6-15q=11q-46$

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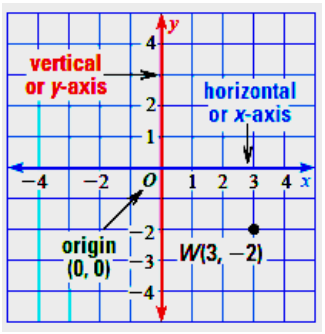
# Topic 6: Plotting Points

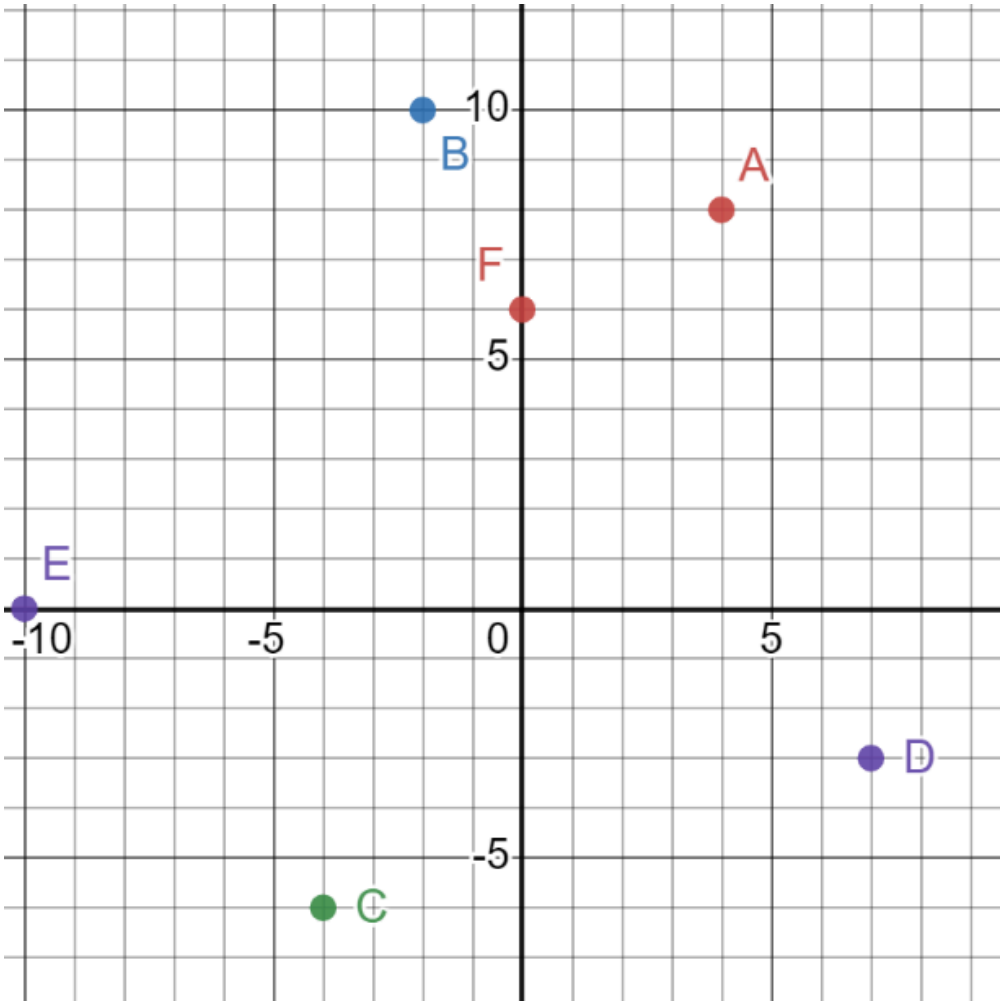
## Notes & Examples




In two dimensions, plot the points on the coordinate plane. The coordinate plane is made-up of the horizontal *x-axis* and the vertical *y-axis*. Each point in the coordinate plane corresponds to an ordered pair of real numbers. For example, the ordered pair *W*(3, -2), has an *x*-coordinate of 3 and a *y*-coordinate of -2. It would be represented by the following:

**Problem Set: Name the coordinates of each of the following points:**

A: _____ B: _____ C: _____ D: _____ E: _____ F: _____



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## Topic 7: Simplify Radicals

**Notes:**

A square root is in simplest form, when there are no perfects square factors in the radicand. The radicand is the number under the radical symbol. There also cannot be any fractions in the radicand or any radicals in the denominator of a fraction. To add or subtract square roots, the radicand need to be the same. To multiply square roots, multiply the coefficients, multiply the radicands, and then simplify.

**Examples: Simplify.** See here for additional help! https://youtu.be/cw3mp8oNASk

1) $\sqrt{144} = \sqrt{12^2}$
$= 12$

2) $\sqrt{75} = \sqrt{25}\sqrt{3}$
$= \sqrt{5^2}\sqrt{3}$
$= 5\sqrt{3}$

3) $\sqrt{6} + 4\sqrt{6}$
$= 5\sqrt{6}$

4) $2\sqrt{27} - 5\sqrt{3}$
$= 2\sqrt{9}\sqrt{3} - 5\sqrt{3}$
$= 2\sqrt{3^2}\sqrt{3} - 5\sqrt{3}$
$= 2 * 3\sqrt{3} - 5\sqrt{3}$
$= 6\sqrt{3} - 5\sqrt{3}$
$= \sqrt{3}$

5) $\left(2\sqrt{15}\right)\left(5\sqrt{3}\right)$
$= \left(2 * 5\sqrt{15 * 3}\right)$
$= \left(10\sqrt{45}\right)$
$= \left(10\sqrt{9 * 5}\right)$
$= \left(10\sqrt{3^2 * 5}\right)$
$= \left(10 * 3\sqrt{5}\right)$
$= \left(30\sqrt{5}\right)$

**Problem Set: Simplify each radical.**

**1)** $\sqrt{64}$

**2)** $\sqrt{72}$

**3)** $2\sqrt{36}$

**4)** $6\sqrt{12}$

**5)** $3\sqrt{7} - 2\sqrt{7}$

**6)** $3\sqrt{8} + 5\sqrt{2}$

**7)** $\left(5\sqrt{6}\right)\left(2\sqrt{3}\right)$

**8)** $\left(\sqrt{8}\right)\left(5\sqrt{3}\right)$