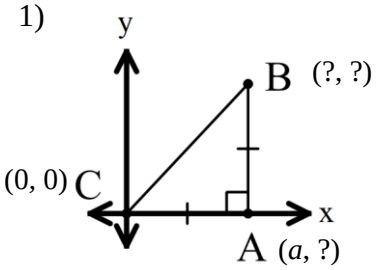
Formal Geometry **4.7 Worksheet**

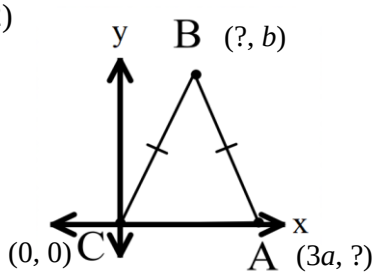
Do all work on your own paper!

For #1 – 3, find the missing coordinates for each triangle.

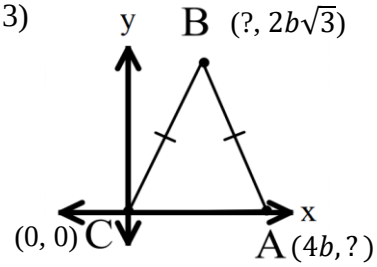
1)



2)



3)



For #4 – 6, classify each triangle as scalene, isosceles, or equilateral. Provide evidence for your decision.

4) $X(-5,9); Y(2,1); Z(-8,3)$ 5) $A(7,6); Y(5,1); Z\ (9,1)$ 6) $P(3,-2); Q(1,-4); R(3,-4)$

For #7 – 8: Given ΔXYZ with $X(0,0); Y(2h,2h); Z(4h,0)$.

7) Find the slope of each side of the triangle. Is the triangle a right triangle? Explain your reasoning.

8) Classify the triangle as scalene, isosceles, or equilateral. Provide evidence for your decision.

For #9 – 10: Given ΔABC with $A(0,0); B(a,b); C(2a,0)$.

9) Find the slope of each side of the triangle. Is the triangle a right triangle? Explain your reasoning.

10) Classify the triangle as scalene, isosceles, or equilateral. Provide evidence for your decision.

11) A right triangle has vertices at (0, 0) and $(a,0)$. Which options below could be the coordinates of the third vertex? Choose all that apply.

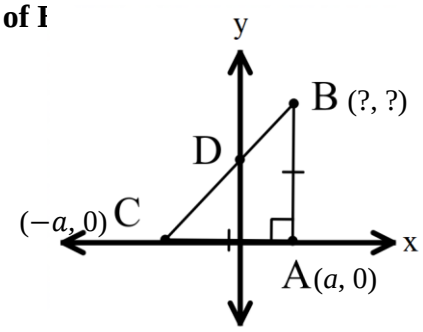
A) $(0,a)$ B) $(-a,0)$ C) (a,a) D) $((0,-a)$ F) $(a,-a)$ G) $(-a,-a)$

For #12 – 14: ΔACB is an isosceles right triangle. Point *D* is the midpoint of I

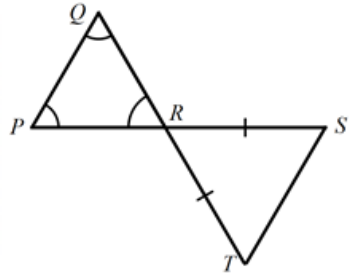
12) Find the coordinates of point B.

13) Find the coordinates of point D.

14) Find the slopes of AC and AB. Explain how these slopes support that ΔACB is a right triangle.



15) Find the measure of $\angle S$.



Answers:

1) $A(a,0); B(a,a)$ 2) $A(3a,0); B(1.5a,b)$ 3) $A(4b,0); B(2b,2b\sqrt{3})$

4) Scalene 5) Isosceles 6) Isosceles

7) slope of $XY = 1$; slope of $YZ = -1$; slope of $XZ = 0$. Thus, the triangle is a right triangle, because two sides have slopes that are opposite reciprocals, and so $XY \perp YZ$, forming a right angle.

8) The triangle is isosceles, because $XY = 2h\sqrt{2}; YZ = 2h\sqrt{2}$ and $XZ = 4h$.

9) slope of $AB = \frac{b}{a}$; slope of $BC = -\frac{b}{a}$; slope of $AC = 0$. Thus, the triangle is a not right triangle, because none of the sides have slopes that are opposite reciprocals, and so no sides are perpendicular.

10) The triangle is isosceles, because $AB = \sqrt{a^2+b^2}, BC = \sqrt{a^2+b^2}$, and $AC = 2a$.

11) A, C, D, and F 12) $(a,2a)$ 13) $(0,a)$

14) slope of $AC = 0$; slope of $AB =$ undefined. All horizontal lines have a slope of 0; all vertical lines have a slope of undefined. Any vertical line is perpendicular to any horizontal line if the lines are coplanar, and so the triangle has a right angle.

15) 60°