

Show all your work.

1. Find all possible points P on the x -axis so that the line through $A(1, 2)$ and P is perpendicular to a line through $B(8, 3)$ and P .

2. Given $\triangle ABC$ with $A(0, 4)$, $B(8, -2)$, and $C(7, 5)$.

- a) Find the equations of the perpendicular bisectors of the three sides. Be sure to circle your answers.

- b) Show that all three perpendicular bisectors intersect at the same point.

- c) What type of triangle is $\triangle ABC$?

3. You are considering leasing a new Volkswagen! You can rent the car for \$350 per month and the cost of gas and oil is 38 cents per mile.

a) Write an equation for the cost per month (C) to drive your Volkswagen if you drive M miles per month.

b) Estimate the cost per month of driving your Volkswagen if you drive 950 miles per month.

4. Each of the lines shown below passes through $(2, 1)$ and forms a triangle with the x -axis and the y -axis. Find the area of each triangle. Which triangle has the smallest area?

