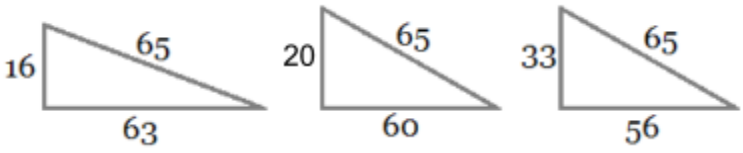
Lesson 3.4: Perpendicular Lines via Pythagorean Theorem

Targets:

1. I understand how to use the Pythagorean Theorem to prove that two lines are perpendicular on the coordinate plane.

Warm Up

1. Which of the following triangles are right triangles? Do not use a protractor.



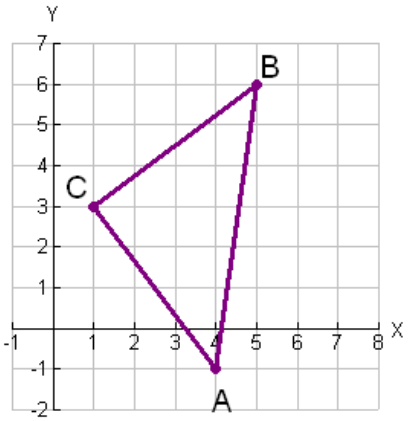
2. What did you do to determine if they were right triangles or not?

Practice 1

1. Determine whether this is a right triangle or not?

2. What did you do to determine?

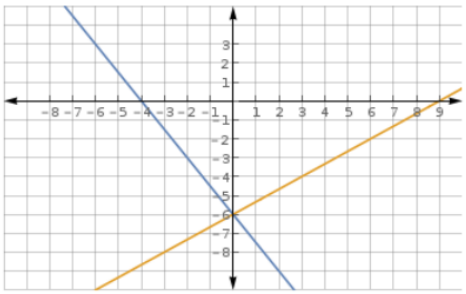
3. What does this mean about angle C?



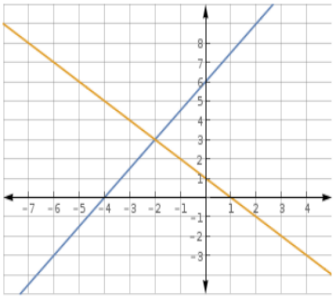
Practice 2

For each of the following, determine whether the two lines are perpendicular. Support your findings with the calculations you used.

1. Are these line perpendicular?



2. Are these lines perpendicular?



Practice 3

The points $O(0,0)$, $A(-4,1)$, $B(-3,5)$, and $C(1,4)$ are the vertices of parallelogram $OABC$. Is this parallelogram a rectangle? Support your answer.

Exit Ticket

1. Carlos thinks that the segment having endpoints $A(0,0)$ and $B(8,4)$ is perpendicular to the segment with endpoints $A(0,0)$ and $C(2,-4)$. Do you agree?
   Use calculations to support your answer.

2. Draw to lines that are perpendicular to each other on the coordinate plane provided. Show the calculations that verify the lines are perpendicular.