**Lesson 1.3 – Obtuse Triangle Investigation**

* Learning Goals: Investigate connections between primary trigonometric ratios of acute angles and obtuse angles. Determine the values of the sine ratio, cosine ratio, and tangent ratio for obtuse angles.



*Recall*

Angles can be divided into three groups based on their measure:

Today we will look at sin, cos and tan ratios for obtuse angles. Can we draw a right triangle with one obtuse angle? Explain.

Instead, we use a Cartesian coordinate system to think about trigonometric ratio:

Two angles are **supplementary** if they add to 180°



Complete the investigation at <http://msrouhani.wikispaces.com/file/view/3025%20Obtuse%20Angles.swf>

Complete the worksheet as you answer the questions along the way:

**Page 2:** Copy down the answers in the table (after you move the point D).



* What do you notice about the values of sin(∠ABD) and sin(∠CBD)?
* What about the values cos(∠ABD) and cos(∠CBD) or the value of tan(∠ABD) and tan(∠CBD)?

**Page 3:** After completing the activity, copy the answers below



**Page 4:** After completing the activity, copy the answers below

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**Page 5**

What are the coordinates of the point A in this graph? ( \_\_\_\_\_, \_\_\_\_\_ )

How do the values of x and y relate to the adjacent and opposite sides of the triangle?

**Page 6:** Express the trig ratios for the angle θ in terms of x, y, and r







**Page 7:** Drag point P to form acute angles. Drag the point P to form an obtuse angle.

* What do you notice about the three trig ratios? Why does this occur?

**Page 8:**



**Practice: Continue to complete the rest of the pages in the online activity.**