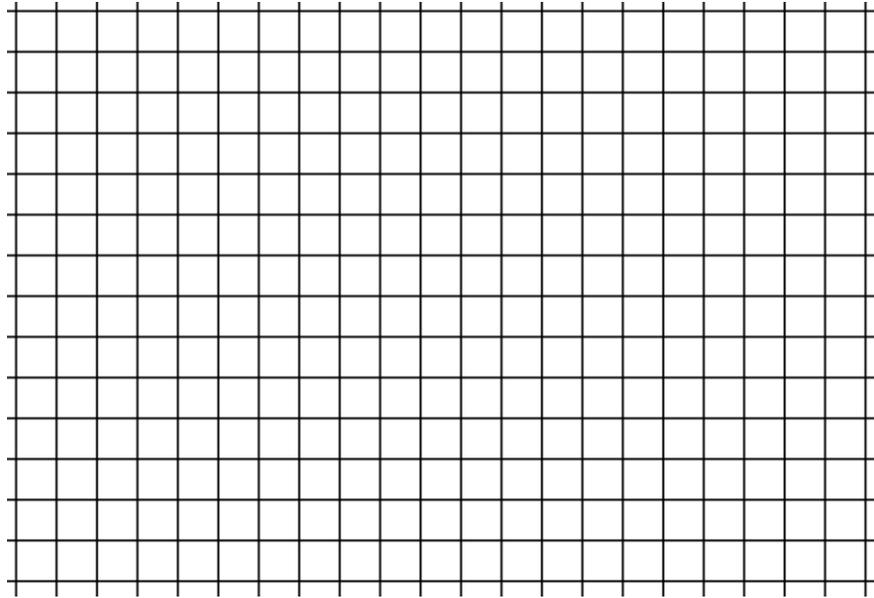


(1.3) Investigating Trigonometric Ratios of Obtuse Angles

What is an **Obtuse Angle**? Draw an example.

Part A: Investigating Trigonometric Ratios using Point $P(x, y)$

1. On the grid below, draw a point $P(x, y)$ in Quadrant I of a coordinate grid as show on page 17 of the textbook. Label the sides and vertices as given.



2. In the right triangle PBA, how can you find the **length of side r** ?

3. Find the length of side r .

4. How could you find the **measure of angle A**?

5. Calculate the measure of **angle A**.

MAP 4C

6. Use the values of x , y , and r , to state the following trigonometric ratios for the acute angle A :

a) $\sin A$

b) $\cos A$

c) $\tan A$

7. On the same grid, draw another point $P(x, y)$ that is in the second quadrant. That is the x value is negative and the y value is still positive. Label as shown on page 17 of the textbook.

8. In the new triangle PAB , the angle between the negative x axis and r is angle PAB . What is the measure of this angle?

9. Angle A is now labeled from the positive x axis to r . What is the measure of angle A ?

10. Is the x -coordinate positive or negative?

11. Is the y -coordinate positive or negative?

12. Can the r value be negative? Why?

13. Using these new x , y , and r values, determine the following trigonometric ratios for the obtuse angle A .

a) $\sin A$

b) $\cos A$

c) $\tan A$

14. Use a calculator to determine the trigonometric ratios for each angle in the chart below:

	Angle Measure	$\sin A$	$\cos A$	$\tan A$
Acute $\angle A$				
Obtuse $\angle A$				

SUMMARIZE:

	Acute $\angle A$	Obtuse $\angle A$
Quadrant Which quadrant angle A in?		
x value Is the x -coordinate negative or positive?		
y value Is the y -coordinate negative or positive?		
sin A What is the ratio of sin A using x , y and r ? Is sin A negative or positive?		
cos A What is the ratio of cos A using x , y and r ? Is cos A negative or positive?		
tan A What is the ratio of tan A using x , y and r ? Is tan A negative or positive?		