Name: _____

Date: _____

7-1 Reteach to Build Understanding

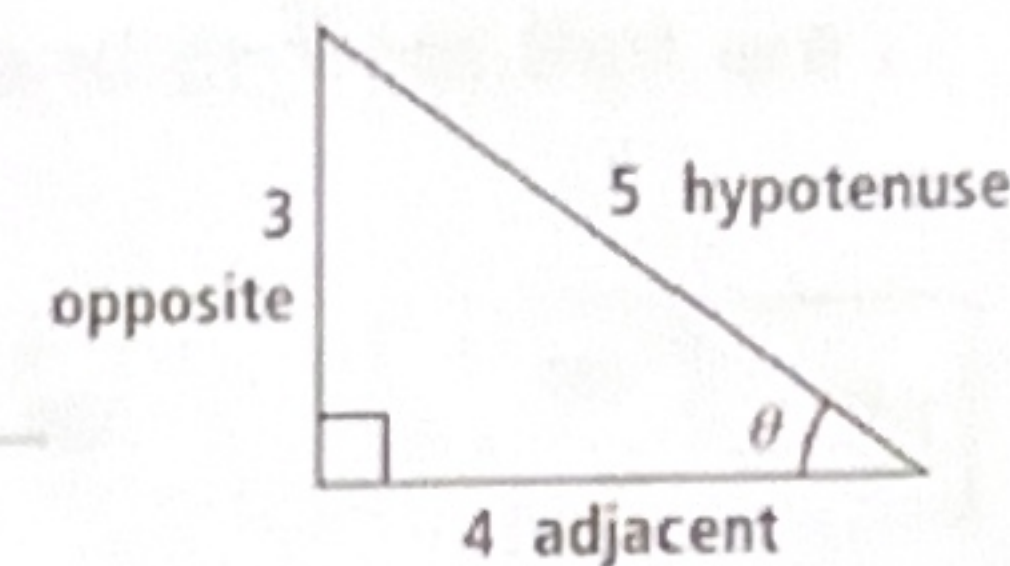Trigonometric Functions and Acute Angles

Grade 10

1. Write the six trigonometric ratios for θ.

$\sin \theta = \dfrac{\text{opposite}}{\text{hypotenuse}} = \underline{3/5}$ $\csc \theta = \dfrac{\text{hypotenuse}}{\text{opposite}} = \underline{5/3}$

$\cos \theta = \dfrac{\text{adjacent}}{\text{hypotenuse}} = \underline{4/5}$ $\sec \theta = \dfrac{\text{hypotenuse}}{\text{adjacent}} = \underline{5/4}$

$\tan \theta = \dfrac{\text{opposite}}{\text{adjacent}} = \underline{3/4}$ $\cot \theta = \dfrac{\text{adjacent}}{\text{opposite}} = \underline{4/3}$

2. A 100-ft piece of rope is attached to the top of a flagpole. The other end of the rope is secured to the ground 80 ft away from the bottom of the pole. The angle formed by the rope and the ground measures 35°. Arthur set up the equation for this situation as $\cos 35 = \frac{x}{100}$. What mistake did Arthur make? What is the correct equation?   he used the wrong trig. ratio

the equation should be $\sin 35 = \dfrac{x}{100}$

3. Based on the cosecant ratio shown, we know that $a = 20$ and $c = 29$.

$\csc \theta = \dfrac{\text{hypotenuse}}{\text{opposite}} = \dfrac{29}{20} = \dfrac{c}{a}$

So, if $a = 20$ and $c = 29$, what is the value of b?

Use the Pythagorean Theorem $(a^2 + b^2 = c^2)$ to solve for the unknown side b. Then, complete the table with each ratio.

$(20)^2 + b^2 = (29)^2$

$400 + b^2 = 841$

$b^2 = 841 - 400$

$\sqrt{b^2} = \sqrt{441}$

$b = 21$

	Trigonometric Ratio	Side Name Ratio	Numeric Ratio
$\sin \theta$	$\dfrac{\text{opposite}}{\text{hypotenuse}}$	$\dfrac{a}{c}$	$\dfrac{20}{29}$
$\cos \theta$	$\dfrac{\text{adjacent}}{\text{hypotenuse}}$	$\dfrac{b}{c}$	$\dfrac{21}{29}$
$\tan \theta$	$\dfrac{\text{opposite}}{\text{adjacent}}$	$\dfrac{a}{b}$	$\dfrac{20}{21}$
$\csc \theta$	$\dfrac{\text{hypotenuse}}{\text{opposite}}$	$\dfrac{c}{a}$	$\dfrac{29}{20}$
$\sec \theta$	$\dfrac{\text{hypotenuse}}{\text{adjacent}}$	$\dfrac{c}{b}$	$\dfrac{29}{21}$
$\cot \theta$	$\dfrac{\text{adjacent}}{\text{opposite}}$	$\dfrac{b}{a}$	$\dfrac{21}{20}$

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BACCALAUREATE SCHOOLS

Name: _____

2 Reteach to Build Understanding

Angles and the Unit Circle

Date: _____

Grade 10

1. Fill in the missing information regarding the radians and degrees that are equivalent. Remember, $180° = 2\pi$.

Solve for radians:

$$\frac{(number\ of\ degrees)}{180} = \frac{x}{\pi}$$
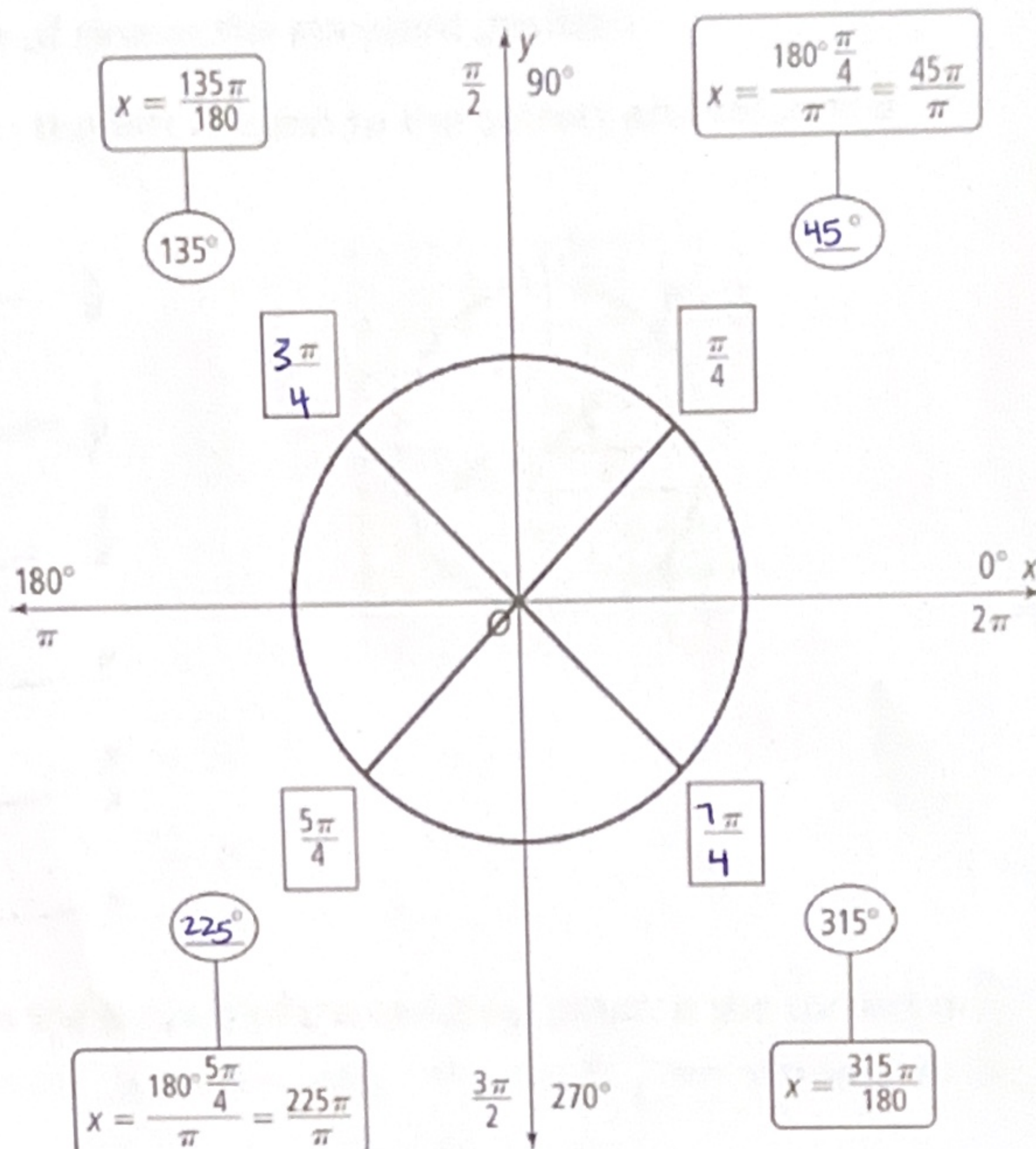
$$180x = (number\ of\ degrees)\pi$$

$$x = \frac{(number\ of\ degrees)\pi}{180}$$

Solve for degrees:

$$\frac{x}{180} = \frac{(radians)}{\pi}$$

$$180(number\ of\ radians) = x\pi$$

$$x = \frac{180(radians)}{\pi}$$

$x = \frac{135\pi}{180}$ ⟶ 135°

$\frac{3\pi}{4}$

$\frac{\pi}{2}$ 90°

$x = \frac{180°\frac{\pi}{4}}{\pi} = \frac{45\pi}{\pi}$ ⟶ 45°

$\frac{\pi}{4}$

180° π — 0° x / 2π

Ø

$\frac{5\pi}{4}$

$\frac{7\pi}{4}$

225° — $x = \frac{180°\frac{5\pi}{4}}{\pi} = \frac{225\pi}{\pi}$

$\frac{3\pi}{2}$ 270°

315° — $x = \frac{315\pi}{180}$

2. Denzel was asked to find the angles of rotation of a reference angle that is 25° with a terminal side that lies in Quadrant IV. He drew the angle shown and concluded that that the answers were 205° and −155°. Where did he make his mistake? *drew angle in quadrant III*
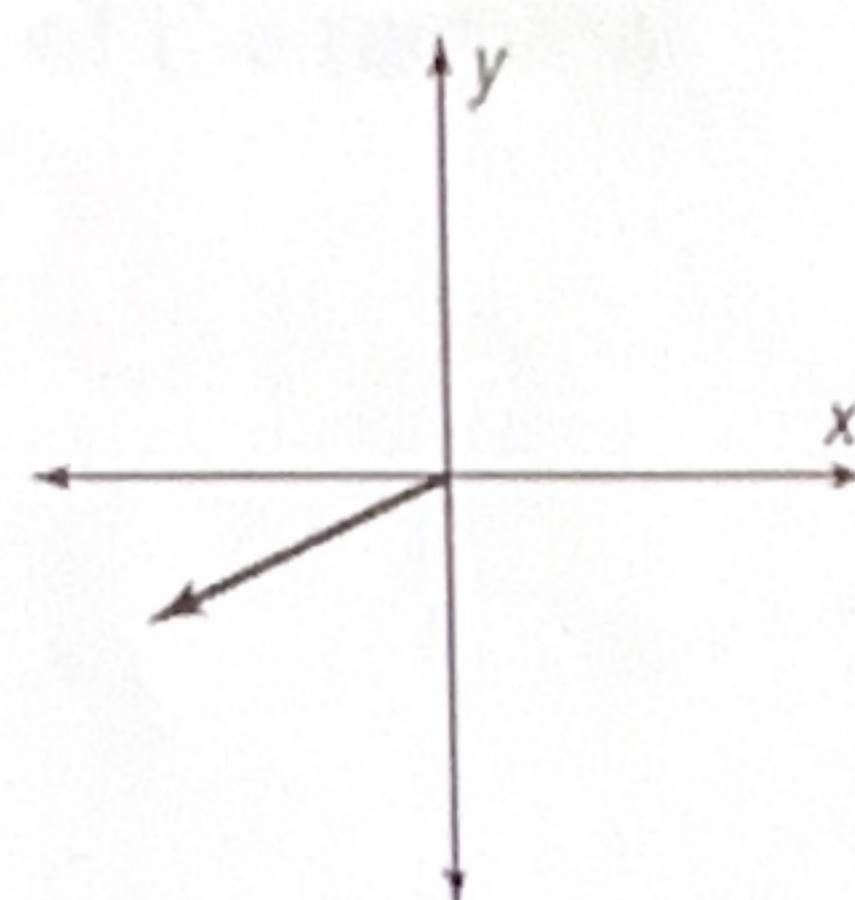
3. A bicycle has wheels with a diameter of 622 mm. The bicycle rolls forward and the wheel turns $\frac{5\pi}{6}$ radians. How many millimeters forward did the bicycle move?

Distance $= \left(\frac{5\pi}{6}\right)(622) = \left(\frac{15.708}{6}\right)(622)$

$= (2.618)(622) = 1628.396$ ___ mm

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Reteach to Build Understanding

Trigonometric Functions and Real Numbers

Date: _____

Grade 10

A unit circle is a circle with a radius r of 1 unit. For every point $P(x, y)$ on the unit circle, the value of r is 1. Therefore, for an angle θ with terminal point (x, y), x is the value of cosine, and y is the value of sine in the standard position.

1. Draw a line from the terms in the left column to the correct answer in the right-hand column.

Left column	Right column
$\sin \theta$	$\dfrac{x}{y}$
$\cos \theta$	$\dfrac{1}{y}$
$\tan \theta$	$\dfrac{1}{x}$
$\csc \theta$	y
$\sec \theta$	$\dfrac{y}{x}$
$\cot \theta$	x
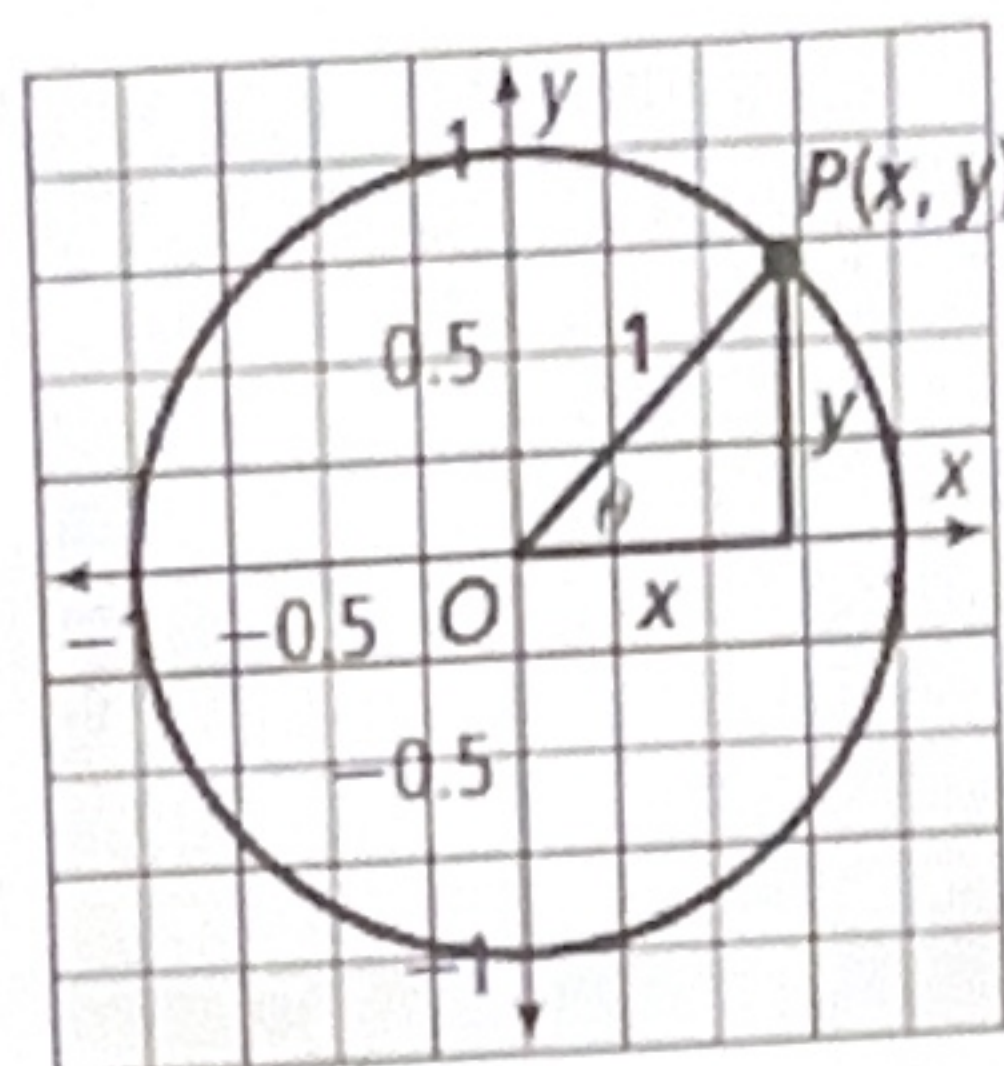
2. Amaya says that the $\sin \theta$ is the x-value of the terminal point. Is she correct or incorrect? Explain. incorrect, y is the value of sin θ, the terminal point is labelled (cos θ, sin θ) or (x,y)

3. Find the values of each trigonometric ratio when coordinates of the terminal point are (0.6, 0.8).

a. $\sin \theta = y =$ _0.8_

b. $\cos \theta =$ _x_ $= 0.6$

c. $\tan \theta = \dfrac{y}{x} =$ _0.8/0.6_ $= 4/3 = 1.33$

d. $\csc \theta = \dfrac{1}{y} =$ _1/0.8_ $= 5/4 = 1.25$

e. $\sec \theta = \dfrac{1}{x} =$ _1/0.6_ $= 5/3 = 1.67$

f. $\cot \theta = \dfrac{x}{y} =$ _0.6/0.8_ $= 3/4 = 0.75$