LESSON MAKER PRO

Where Rays Land

Angles in standard position

HIGH SCHOOL · PC.T.1.1

PC.T.1.1 "Draw and recognize angles in standard position using radian measure, and determine the quadrant of the terminal side."

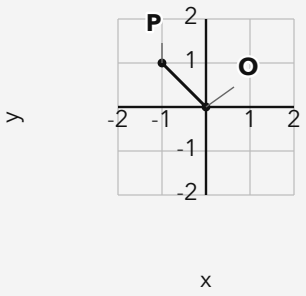
NAME _____ DATE _____

FIND THE TERMINAL SIDE

Start on the positive x-axis and turn counterclockwise for a positive angle. Each pi/2 radians takes you to the next axis. Use the terminal ray to name its quadrant.

WORKED EXAMPLE

The ray from O through P is a terminal side. Find its angle in [0, 2pi) and its quadrant.



1. P is left of and above O, so the ray is in Quadrant II.
2. The horizontal and vertical distances are equal, so the reference angle is pi/4.
3. Subtract from pi: pi - pi/4 = 3pi/4.

Answer: 3pi/4 radians, Quadrant II

PRACTICE 4 problems

1 Sketch pi/6 in standard position. Name its terminal quadrant.

ANSWER _____

2 Sketch 5pi/6 in standard position. Name its terminal quadrant.

ANSWER _____

3 Sketch 4pi/3 in standard position. Name its terminal quadrant.

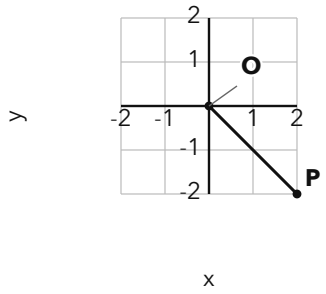
ANSWER _____

4 Sketch 11pi/6 in standard position. Name its terminal quadrant.

ANSWER _____

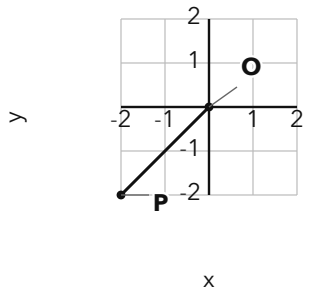
APPLY IT Show your work

1 A game avatar starts facing right and turns counterclockwise to the ray from O through P. Find its turn in [0, 2pi) and its quadrant.



ANSWER _____

2 A music app dial starts pointing right and turns counterclockwise to the ray from O through P. Find its turn in [0, 2pi) and its quadrant.



ANSWER _____

CHALLENGE One step up

A pointer turns 17pi/4 radians counterclockwise from the positive x-axis. Find its angle in [0, 2pi), one negative coterminal angle, and its terminal quadrant.

WORK SPACE AND ANSWER

ANSWER KEY

Where Rays Land

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Sketch pi/6 in standard position. Name its terminal quadrant.	**A ray pi/6 counterclockwise from the positive x-axis, in Quadrant I.**
2	Sketch 5pi/6 in standard position. Name its terminal quadrant.	**A ray 5pi/6 counterclockwise from the positive x-axis, in Quadrant II.**
3	Sketch 4pi/3 in standard position. Name its terminal quadrant.	**A ray 4pi/3 counterclockwise from the positive x-axis, in Quadrant III.**
4	Sketch 11pi/6 in standard position. Name its terminal quadrant.	**A ray 11pi/6 counterclockwise from the positive x-axis, in Quadrant IV.**

PART 2 · APPLY IT

1. **7pi/4 radians, Quadrant IV** The ray is in Quadrant IV with a pi/4 reference angle. Subtract pi/4 from 2pi.
2. **5pi/4 radians, Quadrant III** The ray is in Quadrant III with a pi/4 reference angle. Add pi/4 to pi.

CHALLENGE

pi/4 radians, -7pi/4 radians, Quadrant I

Accept QI, QII, QIII, and QIV for quadrant names. In the challenge, accept any angle less than 0 that differs from 17pi/4 by a whole multiple of 2pi.