

Name: _____

Date: _____

ROTATIONS AND ANGLE TERMINOLOGY COMMON CORE ALGEBRA II



In this unit we will be studying the three basic **trigonometric functions**. These functions are based on the geometry of a circle and rotations around its center. Sometimes the trigonometric functions are known as **circular functions**. In this introductory lesson we introduce some basic terminology and concepts concerning angles. Some of the terminology is specified below.

Standard Position: An angle is said to be drawn in standard position if its vertex is at the origin and its initial ray points along the positive x -axis.

Positive and Negative Rotations: A rotation is said to be positive if the initial ray is rotated counter-clockwise to the terminal ray and said to be negative if the initial ray is rotated clockwise to the terminal ray.

Coterminal Angles: Any two angles drawn in standard position that share a terminal ray.

Reference Angles: The positive acute angle formed by the terminal ray and the x -axis.

Exercise #1: For each of the following angles, given by the Greek letter **theta**, draw a rotation diagram and identify the quadrant that the terminal ray falls in.

(a) $\theta = 145^\circ$

(b) $\theta = 320^\circ$

(c) $\theta = 72^\circ$

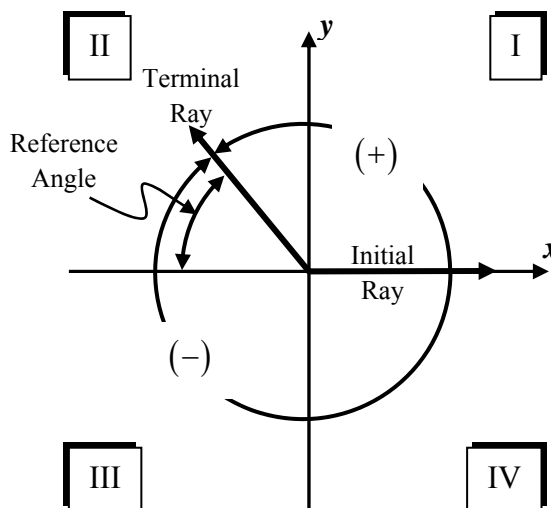
(d) $\theta = -210^\circ$

(e) $\theta = 250^\circ$

(f) $\theta = -310^\circ$

(g) $\theta = 460^\circ$

(h) $\theta = -400^\circ$



Exercise #2: In which quadrant would the terminal ray of an angle drawn in standard position fall if the angle measures 860° ?

- (1) I (3) III
(2) II (4) IV
-

Exercise #3: Give a negative angle that is coterminal with each of the following positive angles, **alpha**.

- (a) $\alpha = 90^\circ$ (b) $\alpha = 330^\circ$ (c) $\alpha = 120^\circ$ (d) $\alpha = 210^\circ$

Exercise #4: Coterminal angles drawn in standard position will always have measures that differ by an integer multiple of

- (1) 90° (3) 180°
(2) 360° (4) 720°
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Exercise #5: For each of the following angles, **beta**, draw a rotation diagram and then state **beta's** reference angle, β_r .

- (a) $\beta = 160^\circ$ (b) $\beta = 300^\circ$ (c) $\beta = 210^\circ$ (d) $\beta = 78^\circ$

- (e) $\beta = -110^\circ$ (f) $\beta = -280^\circ$ (g) $\beta = 605^\circ$ (h) $\beta = -410^\circ$



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**ROTATIONS AND ANGLE TERMINOLOGY
COMMON CORE ALGEBRA II HOMEWORK**

FLUENCY

1. For each of the following angles, draw a rotation diagram and then state the quadrant the terminal ray of the angles falls within.

(a) $\theta = 135^\circ$

(b) $\theta = 300^\circ$

(c) $\theta = -110^\circ$

(d) $\theta = -310^\circ$

(e) $\theta = 85^\circ$

(f) $\theta = 560^\circ$

2. For each of the following angles, draw a rotation diagram and determine the reference angle.

(a) $\alpha = 245^\circ$

(b) $\alpha = 290^\circ$

(c) $\alpha = 130^\circ$

(d) $\alpha = -242^\circ$

(e) $\alpha = 475^\circ$

(f) $\alpha = -432^\circ$



3. Give two angles that are coterminal with each of the following angles. Make one of the coterminal angles positive and one negative.

(a) $\theta = 105^\circ$

(b) $\theta = 220^\circ$

(c) $\theta = 80^\circ$

(d) $\theta = -245^\circ$

4. When drawn in standard position, which of the following angles is coterminal to one that measures 130° ?

(1) 430°

(3) 850°

(2) -70°

(4) 730°

5. Which of the following angles, when drawn in standard position, would *not* be coterminal with an angle that measures 270° ?

(1) -90°

(3) 630°

(2) 990°

(4) 720°

6. Which of the following angles would *not* have a reference angle equal to 30° ?

(1) 210°

(3) 120°

(2) -330°

(4) -30°

REASONING

7. Angles are a measurement of rotation about a point. Are two coterminal angles the same rotation? Explain your answer. Diagrams are helpful.

