# Algebra 2 Trigonometry - Angles Name:

Special Triangle Review

30 – 60 – 90

5

60

8

2

1

30

1

45 – 45 – 90

7

45

5

1

45

1

1

**Angle** – Two rays with a common endpoint (vertex)

 One of the rays is the initial side and the other is the terminal side of the angle

Terminal side

vertex

Initial side

**Standard position of an angle**

vertex at the origin

initial side is on the positive *x*-axis

positive angles are counter-clockwise

negative angles are clockwise

Sketch each angle in standard position.

Find the measure of each angle in standard position.

20

60

25

**Coterminal Angles** - Two angles in standard position that have the same terminal side.

 Finding coterminal angles

Ex: Find an angle that is coterminal with

Ex: Find a positive and negative angle that are coterminal with

Find the coterminal angle between and

**Using a Unit Circle**

 When we want to use a variable to represent the size of an angle we will usually use Greek letters for the variable.

 Here are some Greek letters we will use: theta

 alpha

 beta

 On a unit circle: the *x*-coordinate

 the *y*-coordinate

Find the *exact* value for the sine and cosine of each angle.

Find the *approximate* value for the sine and cosine of each angle. (using a calculator)

 MODE: RADIANS DEGREE

**Quadrants**

II

I

IV

III

**Radian Measure for Angles**

 central angle

 intercepted arc

 1 radian = the central angle where the intercepted arc = 1 radius

 radians

0 or 2 radians

 radians

 radians

**Converting between Radians and Degrees**

 To convert degree measure to radian measure: multiply by

 To convert radian measure to degree measure: multiply by

or by solving the proportion:

Examples (converting from degrees to radians)

 radians

 radians

 radians

 radians

Examples (converting from radians to degrees)

Find the radian measure for each angle on your unit circle (plate)

Use the unit circle to find the sine and cosine of an angle with radian measure.

 Ex: find the sine and cosine of the angle radians.

 (*x*-coordinate)

 (*y*-coordinate)

*s*

**Length of an Arc**

  **where *ϴ* is the central angle in radians**

*ϴ*

*r*

Ex: Find the length *s* in each.

15 cm

*s*

*s*

6 inches

 or inches

 cm

**Coterminal Angles with Radian measure ( becomes )**

 Ex: Find an angle that is coterminal with the angle

 Ex: Find an angle that is coterminal with the angle

Draw an angle in standard position. Then find the sine and cosine to the nearest hundredth.

 Ex: change mode to RADIANS

 Ex: