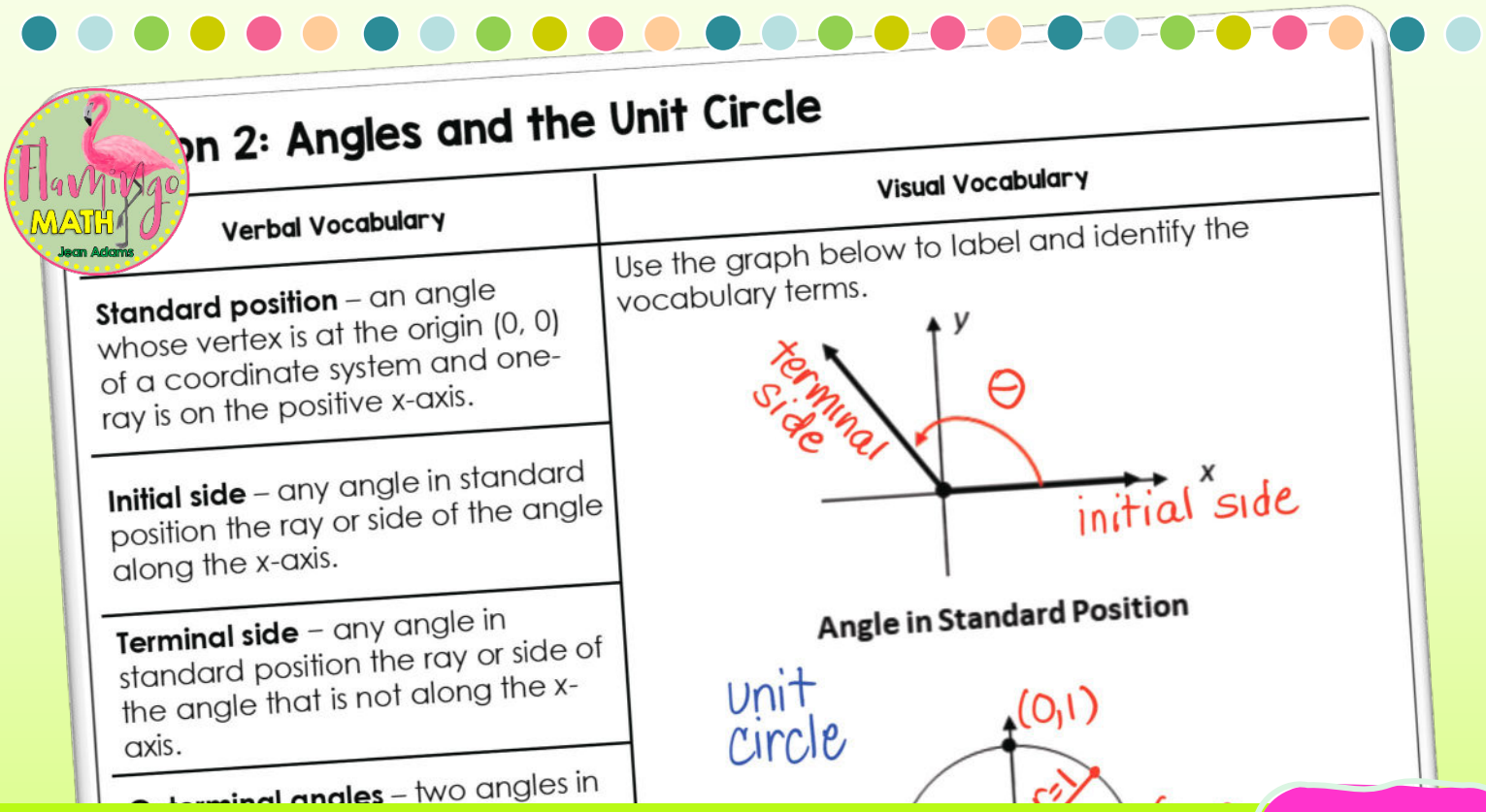
Algebra 2 Honors

Angles and the Unit Circle



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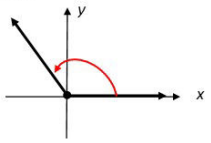
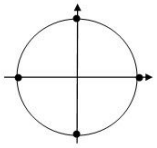
Lesson II.2: Angles and the Unit Circle

Verbal Vocabulary	Visual Vocabulary
Standard position – an angle whose vertex is at the origin (0, 0) of a coordinate system and one-ray is on the positive x-axis.	Use the graph below to label and identify the vocabulary terms.
Initial side – any angle in standard position the ray or side of the angle along the x-axis.	
Terminal side – any angle in standard position the ray or side of the angle that is not along the x-axis.	
Coterminal angles – two angles in standard position that have the same terminal side.	
Unit circle – the circle whose radius is 1 unit and its center is at the origin of the coordinate plane, points on the circle are related to periodic functions.	



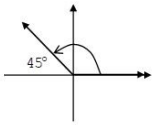
Angle in Standard Position



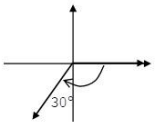
Measuring Angles in Standard Position

EX #1: Find the measure of the angles below.

A. Counter-clockwise rotation



B. Clockwise rotation



C. One full rotation = 360°, how many degrees in

One-quarter of a rotation? _____

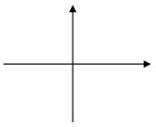
One-half of a rotation? _____

Three-quarters of a rotation? _____

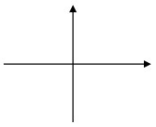
Sketching an Angle in Standard Position

EX #2: Sketch each angle in standard position.

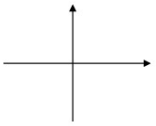
A. 85°



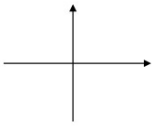
B. −320°



C. 210°



D. −135°

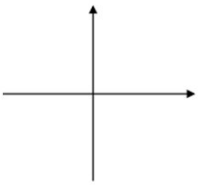


Coterminal Angles

*Two angles in standard position are **coterminal angles** if they have the same terminal side.*

EX #3: Finding coterminal angles

A. Sketch the angles 135° and −225°

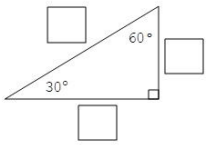


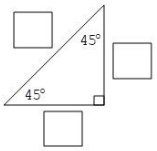
B. Find another angle coterminal with 198°.

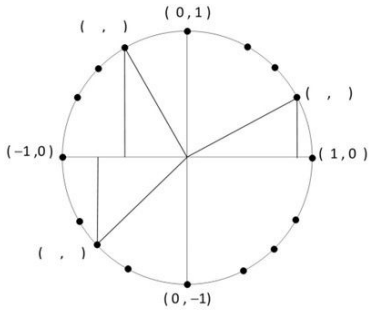
C. Are angles with measures 40° and 680° coterminal?

Angles on a Unit Circle

Use the special triangle ratios to find the coordinates for each angle in the unit circle below.







Cosine and Sine of an Angle

EX #4: Draw the angle. Then find the cosine and sine of each angle.

A. 135°

B. 150°

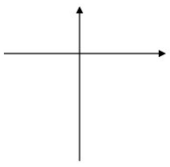
C. 120°

D. 30°

Finding Exact Values of Cosine and Sine

EX #5: Find the exact values for $\cos(-120°)$ and $\sin(-120°)$.

1. Sketch angle.
2. Draw right triangle.
3. Find length of each side.
4. Use ratios.



EX #6: Use a calculator, to find the decimal values for:

	$\cos(135°)$	$\sin(135°)$

NOTES

Name _____ Date_____

11.2

Angles and the Unit Circle Practice

Problems 1 – 8, sketch each angle in standard position.

1. 120°	**2.** 90°	**3.** −60°	**4.** −135°
5. 240°	**6.** −300°	**7.** 75°	**8.** −225°

Problems 9 – 16, find the measure of an angle between 0° and 360° coterminal with each given angle.

9. −225°	**10.** 390°	**11.** −25°	**12.** −160°
13. −48°	**14.** 425°	**15.** −13	

Problems 17 – 22, find the exact coordinates of the point where the terminal side of the given angle intersects the unit circle. Then find the decimal equivalents. Round your answer to the nearest hundredth.

17. 150°	**18.** 120°
19. 225°	**20.** −60°
21. −90°	**22.** 720°

Problems 23 – 26, for each angle θ, find the values of $\cos\theta$ and $\sin\theta$. Round your answers to the nearest hundredth.

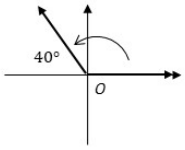
23. 35°	**24.** 180°
25. −100°	**26.** 152°

Problems 27 – 30, complete the following statements with positive or negative as an answer.

19. In Quadrant I ,	**20.** In Quadrant II ,
$\sin\theta =$ _____	$\sin\theta =$ _____
$\cos\theta =$ _____	$\cos\theta =$ _____

Practice Sets

Lesson Warm-Ups

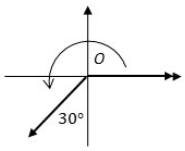


3. Find the measure of an angle between 0° and 360° that is coterminal to 420°.

Name _____ Date _____ Period _____

Lesson 11.2: Angles and the Unit Circle **Warm-Up #2**

1. Find the measure of the angle in standard position.



2. Sketch the angle 150° in standard position.

3. Find the measure of an angle between 0° and 360° that is coterminal to 475°.

Form A

1. Find the counter-clockwise measure of $\angle AOB$.
2. Find the clockwise measure of $\angle AOB$.
3. Find another angle that is coterminal to 140°.
4. Sketch the angle for 210°. Draw the right triangle associated with the sketch.

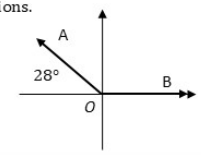
Grade:

11.2 Angles and the Unit Circle **Form B**

Name _____

Date _____ Period _____

Questions #1-3: Use the graph below to answer the questions.



1. Find the counter-clockwise measure of $\angle AOB$.
2. Find the clockwise measure of $\angle AOB$.
3. Find another angle that is coterminal to 124°.
4. Sketch the angle for 120°. Draw the right triangle associated with the sketch.

Grade:

Daily Lesson Quiz