Teacher DeLaMora **Subject** Algebra 2 **Dates** 4/27-5/1 (Week 2) **7-12 Weekly Planner** *Welcome to our Distance Learning Classroom!*

Student Time Expectation per day: 30 minutes

Content Area & Materials	Learning Objectives	Tasks	Check-in Opportunities	Submission of Work for Grades
Digital (If you can work digitally, please do. It will help us all safe ☺) Khan Academy (KA) Access Code: **G2Z9QPT5** EdPuzzle (EP) Access Code: **WEFOBEC**	Suggested Order / Pacing • Angles of Rotation/ Reference Angles and Arc Length (Monday) • Radians/Conversion (Tuesday) • Triangle on a Coordinate Plane (Wednesday) • Building the Unit Circle (Thursday-Friday)	• Students are to complete the assigned **Khan Academy and EdPuzzle Assignments.**	Mrs. De La Mora is available during the office hours at the times indicated below. • 12:00 – 2:00 pm Monday-Friday • Remind App CODE: 9b69ee • adelamora@tusd.net	• KA assignments will be recorded with the highest scores attained
Hard Copy (Please only use this if you do not have technology available) • Notes + Examples • Assignments Do these assignments ONLY if you do not have digital access.	Suggested Order / Pacing • Angles of Rotation/ Reference Angles and Arc Length (Monday) • Radians/Conversion (Tuesday) Triangle on a Coordinate Plane (Wednesday) • Building the Unit Circle (Thursday-Friday)	• Students are to **read** the lesson and examples provided • On a separate sheet of paper for each assignment, **complete** ALL problems showing your work.	Mrs. De La Mora is available during the office hours at the times indicated below. • 12:00 – 2:00 pm Monday-Friday • Remind App CODE: 9b69ee • adelamora@tusd.net	• Group your work together for your math class IN ORDER, and with the following labels clearly displayed: Student Name: Teacher Name: Class Name/Subject: Period: Assignment Week # • Assignments will be scored on accuracy.
Scheduled, *if possible,* • Discussion	Zoom classes can be held during tutoring hours. Schedule your meetings by visiting the class website: **kimballmath.wordpress.com** Discussions will revolve around discovery and application of concepts assigned for the week.			
Scaffolds & Supports	KA assignments can often be re-tried to improve learning. Videos are utilized to demonstrate not only key concepts, but also frequent points of errors, helping students avoid pitfalls.			

Teacher Office Hours *2 hours daily (all classes):* • Contact • Platform	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
	12:00 – 2:00 pm	12:00 – 2:00 pm	12:00 – 2:00 pm	12:00 – 2:00 pm	12:00 – 2:00 pm

Student Name:
Teacher Name: De La Mora
Class Name/Subject: Algebra 2
Period:
Assignment Week #: 2

NOTES: Complete all work on a separate sheet of paper. Include the heading provided on each worksheet you turn in. Show all work.

Monday

*Answer **exactly**, using a **simplified radical** if needed.*

Do not convert to decimals unless the problem starts with a decimal. Round your answer to the nearest hundredth.

Main Ideas/Questions	Notes
Angles in Standard Form (90°, 180°, 0°, 270°, θ)	• An angle on the coordinate plane is in standard form when the vertex is on the origin and one lay lies on the positive x-axis. • The ray on the x-axis is called the initial side. • The other ray is called the terminal side. • Counterclockwise rotations result in positive angle measures. • Clockwise rotations result in negative angle measures. • One full revolution = 360°
Drawing Angles	Directions: Sketch an angle with the given measure in standard position. **1.** 75° **2.** -160° **3.** 430°
Coterminal Angles (90° $\left(\frac{\pi}{2}\right)$, -270° $\left(-\frac{3\pi}{2}\right)$)	Angles in standard position with the same terminal side are **coterminal angles.** Give two coterminnal angles for each given angle, one positive and one negative: **10.** 65°: $65+360=\boxed{425°}$; $65-360=\boxed{-295°}$ **11.** 540°: $540-360=\boxed{180°}$; $180-360=\boxed{-180°}$ **12.** $\frac{13\pi}{18}$: $\frac{13\pi}{18}+2\pi=\boxed{\frac{49\pi}{18}}$; $\frac{13\pi}{18}-2\pi=\boxed{\frac{-23\pi}{18}}$ **13.** $\frac{14\pi}{9}$: $\frac{14\pi}{9}+2\pi=\boxed{\frac{32\pi}{9}}$; $\frac{14\pi}{9}-2\pi=\boxed{\frac{-4\pi}{9}}$
Reference Angles (θ, Reference Angle)	For an angle θ in standard form, the **reference angle** is the positive acute angle form by the terminal side and the x-axis. Sketch and find the reference angles for each angle: **14.** 225°: $225-180=\boxed{45°}$ **15.** -310°: $-310+360=\boxed{50°}$ **16.** $\frac{2\pi}{3}$ (120°): $\pi-\frac{2\pi}{3}=\boxed{\frac{\pi}{3}}$

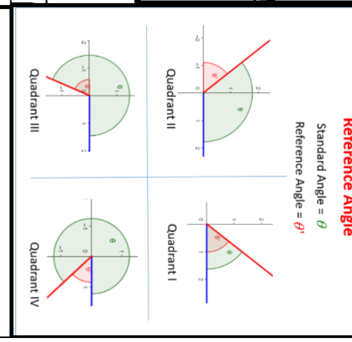
Directions: Sketch each angle. Then give two coterminal angles (one positive and one negative) and the reference angle.

13. 115°
Coterminal ∠'s: $115+360=\boxed{475°}$; $115-360=\boxed{-245°}$
Reference ∠: $180-115=\boxed{65°}$

14. 350°
Coterminal ∠'s: $350+360=\boxed{710°}$; $350-360=\boxed{-10°}$
Reference ∠: $360-350=\boxed{10°}$

17. $\frac{5\pi}{18}$ (50°)
Coterminal ∠'s: $\frac{5\pi}{18}+2\pi=\boxed{\frac{41\pi}{18}}$; $\frac{5\pi}{18}-2\pi=\boxed{\frac{-31\pi}{18}}$
Reference ∠: $\boxed{\frac{5\pi}{18}}$

18. $-\frac{11\pi}{9}$ (-220°)
Coterminal ∠'s: $-\frac{11\pi}{9}+2\pi=\boxed{\frac{7\pi}{9}}$; $-\frac{11\pi}{9}-2\pi=\boxed{\frac{-29\pi}{9}}$
Reference ∠: $\pi-\frac{7\pi}{9}=\boxed{\frac{2\pi}{9}}$



Tuesday

Radians vs. Degrees (θ = 1 radian)	A **radian** is a unit of angle measure based on arc length. One radian is defined as the measure of a the angle formed when the radius is equivalent to the length of the intercepted arc. Recall that the circumference of a circle is $2\pi r$, therefore: 360° = 2π radians; 180° = π radians
	Converting Degrees → Radians: Radians = Degrees $\cdot\left(\frac{\pi \text{ radians}}{180}\right)$ **Converting Radians → Degrees:** Degrees = Radians $\cdot\left(\frac{180}{\pi \text{ radians}}\right)$
Degrees → Radians	Directions: Convert each measure to radians. **4.** 30°: $30\cdot\frac{\pi}{180}=\frac{30\pi}{180}=\boxed{\frac{\pi}{6}}$ **5.** 150°: $150\cdot\frac{\pi}{180}=\frac{150\pi}{180}=\boxed{\frac{5\pi}{6}}$ **6.** -220°: $-220\cdot\frac{\pi}{180}=\frac{-220\pi}{180}=\boxed{\frac{-11\pi}{9}}$
Radians → Degrees	Directions: Convert each measure to radians. **7.** $\frac{4\pi}{3}$: $\frac{4\pi}{3}\cdot\frac{180}{\pi}=\frac{720}{3}=\boxed{240°}$ **8.** $-\frac{5\pi}{36}$: $\frac{-5\pi}{36}\cdot\frac{180}{\pi}=\frac{-900}{36}=\boxed{-25°}$ **9.** $\frac{7\pi}{4}$: $\frac{7\pi}{4}\cdot\frac{180}{\pi}=\frac{1260}{4}=\boxed{315°}$

*Answer **exactly**, using a **simplified fractions.***

Remember to cross cancel to simplify fractions.

Watch the signs!

Directions: Convert each measure to radians.

1. 225°: $225\cdot\frac{\pi}{180}=\frac{225\pi}{180}=\boxed{\frac{5\pi}{4}}$

2. 20°: $20\cdot\frac{\pi}{180}=\frac{20\pi}{180}=\boxed{\frac{\pi}{9}}$

3. -255°: $-255\cdot\frac{\pi}{180}=\frac{-255\pi}{180}=\boxed{\frac{-17\pi}{12}}$

Directions: Convert each measure to degrees.

7. $\frac{23\pi}{12}$: $\frac{23\pi}{12}\cdot\frac{180}{\pi}=\frac{4140}{12}=\boxed{345°}$

8. $-\frac{31\pi}{36}$: $\frac{-31\pi}{36}\cdot\frac{180}{\pi}=\frac{-5580}{36}=\boxed{-155°}$

9. $\frac{\pi}{12}$: $\frac{\pi}{12}\cdot\frac{180}{\pi}=\frac{180}{12}=\boxed{15°}$

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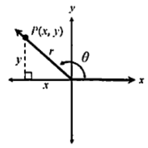
Wednesday

Ratios must be exact answers. ***Do not convert to decimals.***

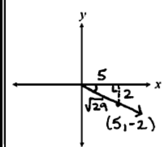
Trig Functions



Let θ be an angle in standard form and $P(x, y)$ be a point on the terminal side of θ. The distance from P to the the origin, r, can be found using the formula: $x^2 + y^2 = r^2$ (The Pythagorean Theorem).

$\sin\theta = \frac{y}{r}$	$\cos\theta = \frac{x}{r}$	$\tan\theta = \frac{y}{x}$
$\csc\theta = \frac{r}{y}$	$\sec\theta = \frac{r}{x}$	$\cot\theta = \frac{x}{y}$

17. $P(5, -2)$ is a point on the terminal side of θ in standard form. Find the exact values of the trigonometric functions of θ:



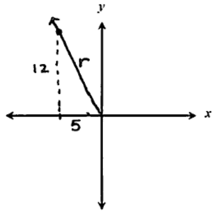
$5^2 + 2^2 = r^2$
$25 + 4 = r^2$
$29 = r^2$

$x = 5$
$y = -2$
$r = \sqrt{29}$

$\sin\theta = \frac{-2}{\sqrt{29}} = \frac{-2\sqrt{29}}{29}$	$\cos\theta = \frac{5}{\sqrt{29}} = \frac{5\sqrt{29}}{29}$	$\tan\theta = -\frac{2}{5}$
$\csc\theta = -\frac{\sqrt{29}}{2}$	$\sec\theta = \frac{\sqrt{29}}{5}$	$\cot\theta = -\frac{5}{2}$

19. (-5, 12)

$5^2 + 12^2 = r^2$
$25 + 144 = r^2$
$169 = r^2$
$13 = r$

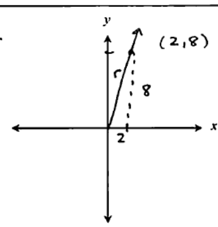


$x = -5$
$y = 12$
$r = 13$

$\sin\theta = \frac{12}{13}$	$\csc\theta = \frac{13}{12}$
$\cos\theta = \frac{-5}{13}$	$\sec\theta = -\frac{13}{5}$
$\tan\theta = -\frac{12}{5}$	$\cot\theta = \frac{-5}{12}$

20. (2, 8)

$2^2 + 8^2 = r^2$
$4 + 64 = r^2$
$68 = r^2$
$2\sqrt{17} = r$



$x = 2$
$y = 8$
$r = 2\sqrt{17}$

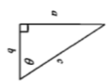
$\sin\theta = \frac{8}{2\sqrt{17}} = \frac{4\sqrt{17}}{17}$	$\csc\theta = \frac{2\sqrt{17}}{8} = \frac{\sqrt{17}}{4}$
$\cos\theta = \frac{2}{2\sqrt{17}} = \frac{\sqrt{17}}{17}$	$\sec\theta = \frac{2\sqrt{17}}{2} = \sqrt{17}$
$\tan\theta = \frac{8}{2} = 4$	$\cot\theta = \frac{2}{8} = \frac{1}{4}$

Answer ***exactly****, using a* ***simplified fractions.***

Label all the sides of the triangle Opposite, Adjacent, and Hypotenuse.

Use Pythagorean theorem to find the missing side.

TRIGONOMETRIC FUNCTIONS



- A **trigonometric function** is a function whose rule is defined by a trigonometric ratio.
- A **trigonometric ratio** compares the lengths of two sides of the triangle.
- The Greek letter θ (theta) is used to represent the measure of an acute angle in a right triangle.

SINE	COSINE	TANGENT
$\sin\theta = \frac{opp}{hyp} = \frac{a}{c}$	$\cos\theta = \frac{adj}{hyp} = \frac{b}{c}$	$\tan\theta = \frac{opp}{adj} = \frac{a}{b}$

RECIPROCAL FUNCTIONS

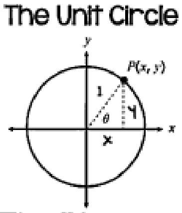
COSECANT $\left(\frac{1}{\sin\theta}\right)$	SECANT $\left(\frac{1}{\cos\theta}\right)$	COTANGENT $\left(\frac{1}{\tan\theta}\right)$
$\csc\theta = \frac{hyp}{opp} = \frac{c}{a}$	$\sec\theta = \frac{hyp}{adj} = \frac{c}{b}$	$\cot\theta = \frac{adj}{opp} = \frac{b}{a}$

Remember SOH CAH TOA for life!

Thursday

Round your answer to the nearest hundredth.

The Unit Circle



A unit circle is a circle with a radius of 1 unit.

Because the value of r is 1 for each point $P(x, y)$ on the circle, the sine, cosine, and tangent values for θ are defined as:

$\sin\theta = \frac{y}{1} = y$	$\cos\theta = \frac{x}{1} = x$	$\tan\theta = \frac{y}{x}$

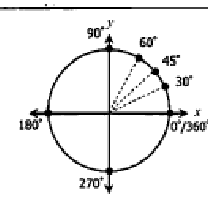
**** The coordinates of P can be written as** $(\cos\theta, \sin\theta)$ ******

Special Angles

The following angles are used frequently with the unit circle:
0°, 30°, 45°, 60°, 90°, 180°, 270°, and 360°

Because the terminal side of 0°, 90°, 180° and 270° angles lie on an axis, they are called **quadrantal angles.**

Memorize these values!*



It's important you understand how to build it.

Look for patterns. Make sense of how the values are determined.

<table>
<tr><td>Student Name:
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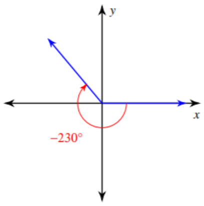
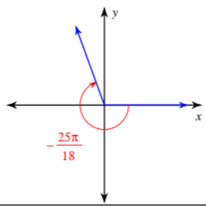
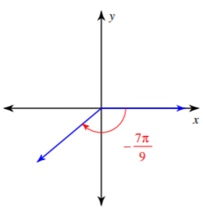
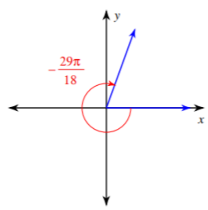
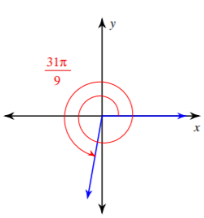
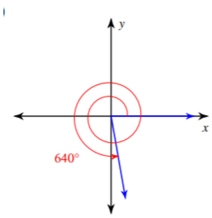
Period:
Assignment Week #: 2</td><td>Complete all work on a separate sheet of paper. Show all work. Include the heading provided on each worksheet you turn in.</td></tr>
<tr><th>Monday</th><th>Tuesday</th></tr>
<tr><td>Find the reference angle for each.



</td><td>Convert the angle $\theta = \frac{8\pi}{9}$ radians to degrees.
Express your answer exactly.</td></tr>
<tr><td>Find the reference angle for each.



</td><td>Convert the angle $\theta = -\frac{19\pi}{5}$ radians to degrees.
Express your answer exactly.</td></tr>
<tr><td>Find the reference angle for each.



</td><td>Convert the angle $\theta = -310°$ to radians.
Express your answer exactly.</td></tr>
<tr><td>Find a coterminal angle between $0°\ and\ 360°$.
Not multiple choice, find a cot. angle for each.
a.) $-330°$
b.) $640°$
c.) $-435°$</td><td>Convert the angle $\theta = \frac{17\pi}{18}$ radians to degrees.
Express your answer exactly.</td></tr>
<tr><td>Find a coterminal angle between $0°\ and\ 360°$.
Not multiple choice, find a cot. angle for each.
a.) $-442°$
b.) $285°$
c.) $-545°$</td><td>Convert the angle $\theta = \frac{257\pi}{360}$ radians to degrees.
Express your answer exactly.</td></tr>
<tr><td rowspan="2">Find a coterminal angle between $0\ and\ 2\pi$.
Not multiple choice, find a cot. angle for each.
a.) $\frac{11\pi}{3}$
b.) $\frac{15\pi}{4}$
c.) $-\frac{19\pi}{12}$
d.) $-\frac{35\pi}{18}$</td><td>Convert the angle $\theta = -35°$ to radians.
Express your answer exactly.</td></tr>
<tr><td>Convert the angle $\theta = 100°$ to radians.
Express your answer exactly.</td></tr>
</table>

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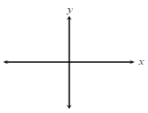
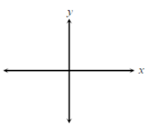
Wednesday

$P\ (5,-2)$ is a point on the terminal side of θ in standard form. Find the exact values of the trigonometric functions of θ:



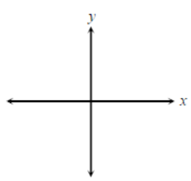
$\sin\theta =$	$\cos\theta =$	$\tan\theta =$
$\csc\theta =$	$\sec\theta =$	$\cot\theta =$

$P\ (3,2)$ is a point on the terminal side of θ in standard form. Find the exact values of the trigonometric functions of θ:



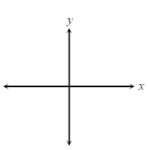
$\sin\theta =$	$\cos\theta =$	$\tan\theta =$
$\csc\theta =$	$\sec\theta =$	$\cot\theta =$

$P\ (-1,-1)$ is a point on the terminal side of θ in standard form. Find the exact values of the trigonometric functions of θ:



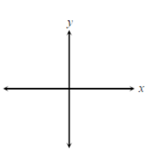
$\sin\theta =$	$\cos\theta =$	$\tan\theta =$
$\csc\theta =$	$\sec\theta =$	$\cot\theta =$

$P\ (-3,6)$ is a point on the terminal side of θ in standard form. Find the exact values of the trigonometric functions of θ:



$\sin\theta =$	$\cos\theta =$	$\tan\theta =$
$\csc\theta =$	$\sec\theta =$	$\cot\theta =$

$P\ (-3,-2)$ is a point on the terminal side of θ in standard form. Find the exact values of the trigonometric functions of θ:



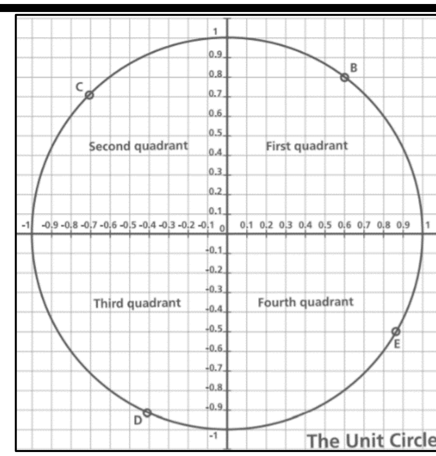
$\sin\theta =$	$\cos\theta =$	$\tan\theta =$
$\csc\theta =$	$\sec\theta =$	$\cot\theta =$

Thursday/Friday

The unit circle –

A circle whose center is at (0,0) and whose radius is 1 Any point on the circumference of the circle can be described by an ordered pair (x,y). The coordinates of

B are (0.6, 0.8)



1.) What are the coordinates of C, D, and E?

C = ________________,

D = ________________,

E = ________________.

2.) In which quadrant are both x and y positive?
3.) In which quadrant is x negative and y positive?
4.) In which quadrant is x positive and y negative?
5.) In which quadrant is x negative and y negative?

Draw an angle of 30° in standard position on the unit circle (see above). Mark the initial ray and the terminal ray, Label it Q. Label the point where the terminal ray meets the circumference as θ.

1.) What are the coordinates of θ?

Drop a perpendicular from Q to the x-axis to construct a right-angled triangle, centered at (0, 0).

2.) What is the length of the hypotenuse?
3.) What is the length of the opposite?
4.) What is the length of the adjacent?

Using trigonometric ratios, (not a calculator), calculate the sin 30°, cos 30°and the tan 30°.

5.) sin 30° =________
6.) cos 30° =________
7.) tan 30° =________

Compare these with the values of the x and y coordinates of Q.

8.) What do you notice about the x and y coordinates of Q and the trigonometric functions sin 30°, cos 30° and tan 30°?