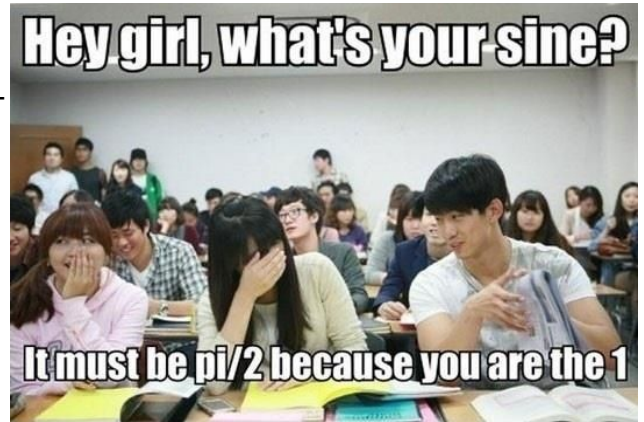


8.8 - Applications of Trig Functions

1. The geese population in a certain area fluctuates periodically between a maximum of 600 geese and a minimum of 350 geese. This population cycle repeats every 5 years. Write a sine function to model the geese population when time is measured in years.
2. The average monthly temperature in Greenville varies periodically with a maximum of 69°F and a minimum of 41°F. A complete cycle repeats every year. Write a cosine function to model the temperature in Greenville when time is measured in months.
3. The function $f(x) = -33\cos\left(\frac{\pi}{6}x\right) + 40$ models the height of a rider on a Ferris wheel, where x represents time in minutes. Determine the maximum and minimum height the rider reaches, and determine the amount of time it takes for the rider to complete a full revolution.
4. A Ferris wheel has a diameter of 92 m and makes a complete revolution every 8 minutes. The wheel starts turning when a rider is at its lowest point, 9 m above the ground. Write a cosine function to model the rider's height above the ground when time is measured in minutes.
5. The function $f(x) = 1.3\cos(4\pi x) + 88.7$ models the altitude of the midday sun at Venus's equator, where x represents time in years. Determine the maximum and minimum altitude the sun reaches, and determine the amount of time it takes for the sun to complete a full cycle.
6. When an appliance is plugged into an outlet, voltage fluctuates between positive and negative values. In Barbados, the voltage fluctuates between 163 volts and -163 volts with a frequency of 50 cycles per second. Write a sine function to model the voltage when time is measured in seconds.

Name _____

Math 3 Unit 8: Trigonometry



May 7 <ul style="list-style-type: none">• Angles in degrees HW: worksheet 8.1	May 8 <ul style="list-style-type: none">• Angles in radians HW: worksheet 8.2	May 9 <ul style="list-style-type: none">• Right triangle trig HW: worksheet 8.3	May 10 <ul style="list-style-type: none">• Unit circle• Exact values of sine and cosine HW: worksheet 8.4	May 11 <ul style="list-style-type: none">• QUIZ!!• Exact values of all trig functions HW: worksheet 8.5
May 14 <ul style="list-style-type: none">• Graphs of sine and cosine HW: worksheet 8.6	May 15 <ul style="list-style-type: none">• Equations of sine and cosine HW: worksheet 8.7	May 16 <ul style="list-style-type: none">• QUIZ!!• Applications of trig functions HW: worksheet 8.8	May 17 <ul style="list-style-type: none">• Review for test HW: finish review	May 18 <ul style="list-style-type: none">• TEST!!!

8.1 - Angles and Their Measures in Degrees

Draw each angle in standard position.

1. 120°

2. -240°

3. 550°

4. -270°

5. 300°

6. 40°

7. -400°

8. -100°

Find one positive and one negative coterminal angle that corresponds to the given angle.

9. 55°

10. -40°

11. -1600°

12. 415°

Determine an angle between 0° and 360° that is coterminal to the given angle.

13. 665°

14. -70°

15. -640°

16. 1190°

8.7 - Equations of Sine and Cosine Worksheet

1. $y = -4\cos 4x + 7$

Amplitude: _____

Period: _____

Frequency: _____

Vertical Shift: _____

2. $y = 6\sin \frac{1}{3}x - 4$

Amplitude: _____

Period: _____

Frequency: _____

Vertical Shift: _____

3. $y = \sin x + 2$

Amplitude: _____

Period: _____

Frequency: _____

Vertical Shift: _____

4. $y = \frac{1}{2}\cos \frac{4}{3}x$

Amplitude: _____

Period: _____

Frequency: _____

Vertical Shift: _____

5. $y = -2\cos 8x - 4$

Amplitude: _____

Period: _____

Frequency: _____

Vertical Shift: _____

6. $y = -\sin 3x + 1$

Amplitude: _____

Period: _____

Frequency: _____

Vertical Shift: _____

7. Given an amplitude of 7, a period of 4π , and a vertical shift down 3 units, write the equation of the sine function.

8. Given an amplitude of 3, a frequency of $\frac{1}{\pi}$, and a vertical shift up 7 units, write the equation of the cosine function.

9. Given an amplitude of 7456, a period of $\frac{\pi}{46}$, and a vertical shift up 81903 units, write the equation of the sine function.

8.6 - Graphs of Sine and Cosine

Determine the amplitude, period, frequency, vertical shift, and equation for each graph below.

A

B

C

D

	Amplitude	Period	Frequency	Vertical Shift	Equation
A					
B					
C					
D					

8.2 - Angles and Their Measures in Radians

Convert angle in degrees to radians.

1. 18°

2. 150°

3. 330°

4. -270°

Convert each angle in radians to degrees.

5. $\frac{\pi}{9}$

6. $\frac{3\pi}{4}$

7. $\frac{11\pi}{6}$

8. $-\frac{25\pi}{18}$

Draw each angle in standard position.

9. $\frac{5\pi}{6}$

10. $-\frac{\pi}{4}$

11. $\frac{10\pi}{3}$

12. $-\frac{7\pi}{6}$

13. π

14. $-\frac{2\pi}{3}$

15. $-\frac{7\pi}{3}$

16. $\frac{11\pi}{6}$

8.3 - Right Triangle Trig

Solve for the variable.

1.

2.

3.

4.

5.

6.

7. The flagpole casts a shadow 40 feet long when the measurement of the angle of elevation to the sun is 31° . How tall is the flagpole?

8. A submarine dives at an angle of depression of 15° . It travels a horizontal distance of 1500 feet during the dive. What is the depth of the submarine after the dive?

9. Sally is standing a distance away from a skyscraper that is 780 feet tall. Marcie is between Sally and the skyscraper. The angle of elevation from Sally's position to the top of the skyscraper is 42° . The angle of elevation from Marcie's position to the top of the skyscraper is 71° . How far is Sally from Marcie?

Use the unit circle to determine the exact value of each trigonometric function.

1. $\sin 225^\circ =$

2. $\cos 150^\circ =$

3. $\tan 60^\circ =$

4. $\sin \frac{\pi}{6} =$

5. $\sec \frac{2\pi}{3} =$

6. $\cot \frac{5\pi}{3} =$

7. $\tan 90^\circ =$

8. $\cos \pi =$

9. $\csc \frac{3\pi}{4} =$

10. $\sin 2\pi =$

11. $\cos -30^\circ =$

12. $\sec 585^\circ =$

13. $\cot 180^\circ =$

14. $\sin \frac{\pi}{2} =$

15. $\cos 270^\circ =$

16. $\sec \frac{7\pi}{6} =$

8.5 - Exact Values of Trig Functions

Complete the unit circle

....said no teacher ever.

Turn the page to get to homework 8.4

(Like I would really give you a day without homework. Puh-lease)

8.4 - Exact Values of Sine and Cosine worksheet

Complete the unit circle.

Use the unit circle to determine the exact value of each trigonometric function.

1. $\sin 45^\circ =$

2. $\cos 0 =$

3. $\sin -210^\circ =$

4. $\cos \frac{3\pi}{4} =$

5. $\sin \frac{4\pi}{3} =$

6. $\cos 240^\circ =$

7. $\sin \frac{8\pi}{3} =$

8. $\cos -90^\circ =$

9. $\sin -855^\circ =$

10. $\cos 570^\circ =$

11. $\sin 270^\circ =$

12. $\cos -\frac{\pi}{3} =$

13. $\sin -3\pi =$

14. $\cos \frac{11\pi}{6} =$