There are MANY more questions on this test prep/review than will be on your test. The test is planned for Wednesday, February 27th. Although many questions here are multiple choice, that will probably not be the case for your test. Be sure you can DO the problems, not just guess correctly. If you have any questions about this review, be sure to ask your teacher ASAP. Good Luck! Mrs. Kramer 😊

14.3.1 (Geometry): I can use right triangle trig ratios (sine, cosine, tangent) to find missing side lengths and angle measurements.

1. (1 point) Find the length of $x$.

   ![Diagram](image)

   a. 33.8  
   b. 48.3  
   c. 84.3  
   d. 72.0

2. (1 point) The line of sight from a small boat to the light at the top of a 35-foot lighthouse built on a cliff 25 feet above the water makes a $25^\circ$ angle with the water. To the nearest foot, how far is the boat from the cliff?

   ![Diagram](image)

   a. 141 feet  
   b. 128 feet  
   c. 27 feet  
   d. 75 feet
3. (1 point) Find the measure of \( x \) in the right triangle.

\[
\begin{align*}
8 & \quad 21 \\
x & \\
\end{align*}
\]

a. 22.4°  b. 67.6°  c. 20.9°  d. 69.1°

4. (1 point) Find the angle measure to the nearest tenth of a degree: \( \theta = \tan^{-1} 7.9321 \)

a. 7.2°  b. 82.8°  c. 1.4°  d. 0.1°

5. (1 point) Find the angle measure to the nearest tenth of a degree: \( \theta = \sin^{-1} 0.2026 \)

a. 0.2°  b. 11.7°  c. 78.3°  d. 1.4°

6. (1 point)

\[
\begin{align*}
x & \quad 9 \\
20° & \\
\end{align*}
\]

Not drawn to scale

a. 3.3  b. 3.1  c. 24.7  d. 8.5

7. (1 point) Which of the following is NOT true for all values of \( \theta \)?

a. \( \cos \theta = \cos (90 + \theta) \)  
   c. \( \tan \theta = \frac{\sin \theta}{\cos \theta} \)

b. \( (\cos \theta)^2 + (\sin \theta)^2 = 1 \)  
   d. \( \sin \theta = \cos (90 - \theta) \)

8. (1 point) Fill in the blank: \( \frac{\sin 4^\circ}{\cos 4^\circ} = \tan \) __________

9. (1 point)

\[
\begin{align*}
19 & \quad 11 \\
x & \\
\end{align*}
\]

Not drawn to scale

a. 30  b. 60  c. 70  d. 85
10. (1 point)
A large totem pole in the state of Washington is 100 feet tall. At a particular time of day, the totem pole casts a 249-foot-long shadow. Find the measure of \( \angle A \) to the nearest degree.

\[
\frac{\text{adjacent}}{\text{opposite}} = \frac{249}{100}
\]

a. 68\(^\circ\)  

b. 45\(^\circ\) 

c. 35\(^\circ\)  

d. 22\(^\circ\)

11. (1 point)
Write the ratios for \( \sin A \) and \( \cos A \).

\[
\frac{\text{opposite}}{\text{hypotenuse}} = \sin A = \frac{4}{5}
\]

\[
\frac{\text{adjacent}}{\text{hypotenuse}} = \cos A = \frac{3}{5}
\]

a. \( \sin A = \frac{3}{5}, \cos A = \frac{4}{5} \)  

b. \( \sin A = \frac{4}{5}, \cos A = \frac{3}{5} \)  

c. \( \sin A = \frac{3}{4}, \cos A = \frac{4}{5} \)  

d. \( \sin A = \frac{3}{5}, \cos A = \frac{4}{3} \)

12. (1 point)
What is the value of \( \sin 43^\circ \) to the nearest ten-thousandth?

a. 0.9325  

b. 0.7314  

c. 1.4663  

d. 0.682

13. (1 point)
What is \( \cos B \) for the triangle shown?

\[
\frac{\text{adjacent}}{\text{hypotenuse}} = \cos B = \frac{8}{17}
\]

a. \( 8 \)  

b. \( 15 \)  

c. \( 8 \)  

d. \( 17 \)
14. (3 points)
An airplane is flying at an altitude of 11,000 feet. The pilot wants to make a smooth final descent to the runway at an angle of depression of 5°. How far from the runway should the pilot begin the descent? (3 pts: 1 point for a diagram, 1 pt for correct setup, 1 pt for correct answer)

15. (3 points)
A wheelchair ramp is to be built with a slope $\frac{3}{28}$. What angle will the ramp make with the horizontal? (3 pts: 1 point for a diagram, 1 pt for correct setup, 1 pt for correct answer)

16. (1 point)
Fill in the blank: $\sin 81^\circ = \cos _____$

13.2.1 (Geometry): I can use sine and cosine to determine points around a unit circle.

17. (1 point)
Find the exact value of $\sin 120^\circ$.

a. $\sin = \frac{\sqrt{3}}{2}$

b. $\sin = -\frac{\sqrt{3}}{2}$

c. $\sin = \frac{1}{2}$

d. $\sin = -\frac{1}{2}$

18. (1 point)
Find the exact value of $\sin \left(-\frac{4\pi}{3} \text{ radians}\right)$.

a. $\frac{1}{2}$

b. $\sqrt{3}$

c. 1

d. $\frac{\sqrt{3}}{2}$

19. (1 point)
Find the exact value of $\cos \left(-\frac{7\pi}{4} \text{ radians}\right)$.

a. $\frac{\sqrt{2}}{2}$

b. $\frac{1}{2}$

c. $\frac{\sqrt{3}}{2}$

d. $-\frac{1}{2}$

20. (1 point)
Is $\cos 314^\circ$ positive, negative, or zero?

a. Positive

b. Negative

c. Zero

21. (1 point)
What is the value of $\sin 390^\circ$?

22. (4 points)
Explain how to find the exact value of $\sin 600^\circ$ using your unit circle.

23. (1 point)
Find the exact value of $\cos 30^\circ$. 
24. (1 point)
Find the exact value of sin (-225°).

25. (1 point)
Is sin 331° positive, negative, or zero?

26. (1 point)
On the unit circle below, approximate the location of \( P = (\cos 320°, \sin 320°) \)

13.3.2 (Geometry): I can convert degrees to radians and vice versa

27. (1 point)
Convert 320° to radians.
   a. \( \frac{16\pi}{9} \)  b. \( \frac{9\pi}{16} \)  c. \( \frac{9}{16\pi} \)  d. \( \frac{16}{9\pi} \)

28. (1 point)
Convert \( \frac{3\pi}{5} \) radians to degrees.
   a. 108° \( \pi \)  b. \( \frac{\pi}{300} \)  c. 108°  d. 1.88°

29. (1 point)
Find the degree measure of an angle of 4.23 radians.
   a. 62°  b. 242°  c. 118°  d. 28°

30. (1 point)
Find the radian measure of an angle of 110°.
   a. \( \frac{11}{18\pi} \)  b. \( \frac{11\pi}{18} \)  c. \( \frac{18}{11\pi} \)  d. \( \frac{18\pi}{11} \)
31. (1 point)
What is $100^\circ$ in radians?

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

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

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

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

32. (1 point)
Determine whether the function shown below is or is not periodic. If it is, find the period.

- a. periodic; about 6
- b. periodic; about 3
- c. periodic; about 12
- d. not periodic

33. (1 point)
Find the period and the amplitude of the periodic function.

- a. 1, 1
- b. 1, 0.5
- c. 2, 0.5
- d. 0.5, 2

34. (1 point)
Find the amplitude of the periodic function.

Find the period of the graph shown below.

A particular sound wave can be graphed using the function $y = -3 \sin x$. Find the amplitude and period of the function.

An electromagnetic wave is modeled with the function $y = \frac{3}{2} \sin \frac{1}{4} \theta$. Sketch a graph of this function.
Unit Circle and Radians Quick Check
Answer Section

1. ANS: B  PTS: 1  REF: 14-3 Right Triangles and Trigonometric Ratios
   OBJ: 14-3.1 Finding the Lengths of Sides in a Right Triangle

2. ANS: B  PTS: 1  REF: 14-3 Right Triangles and Trigonometric Ratios
   OBJ: 14-3.1 Finding the Lengths of Sides in a Right Triangle

3. ANS: B  PTS: 1  REF: 14-3 Right Triangles and Trigonometric Ratios
   OBJ: 14-3.2 Finding the Measures of Angles in a Right Triangle

4. ANS: B  PTS: 1  REF: 14-3 Right Triangles and Trigonometric Ratios
   OBJ: 14-3.2 Finding the Measures of Angles in a Right Triangle

5. ANS: B  PTS: 1  REF: 14-3 Right Triangles and Trigonometric Ratios
   OBJ: 14-3.2 Finding the Measures of Angles in a Right Triangle

6. ANS: C  PTS: 1  REF: 8-3 The Tangent Ratio
   OBJ: 8-3.1 Using Tangents in Triangles

7. ANS: A  PTS: 1

8. ANS: 4 degrees

9. ANS: B  PTS: 1  REF: 8-3 The Tangent Ratio
   OBJ: 8-3.1 Using Tangents in Triangles

10. ANS: D  PTS: 1  REF: 8-3 The Tangent Ratio
    OBJ: 8-3.1 Using Tangents in Triangles

11. ANS: A  PTS: 1  REF: 8-4 Sine and Cosine Ratios
    OBJ: 8-4.1 Using Sine and Cosine in Triangles

12. ANS: D  PTS: 1  REF: 10-6 Trigonometric Ratios
    OBJ: 10-6.1 To find and use trigonometric ratios  DOK: DOK 1

13. ANS: A  PTS: 1  REF: 10-6 Trigonometric Ratios
    OBJ: 10-6.1 To find and use trigonometric ratios  DOK: DOK 1

14. ANS:
    125,731 feet

    PTS: 3

15. ANS:
    6°

    PTS: 3

16. ANS: 9 degrees

    PTS: 1

17. ANS: B  PTS: 1  REF: 13-2 Angles and the Unit Circle
    OBJ: 13-2.2 To find coordinates of points on the unit circle  DOK: DOK 2

18. ANS: D  PTS: 1  REF: 13-3 Radian Measure
    OBJ: 13-3.1 Using Radian Measure

19. ANS: A  PTS: 1  REF: 13-3 Radian Measure
    OBJ: 13-3.1 To use radian measure for angles  DOK: DOK 2

20. ANS: A  PTS: 1

21. ANS:
22. ANS: 
   \[ 600 - 360 = 240^\circ, \text{ so find 240 degrees on the unit circle. The value of sine is the y-coordinate at that point, so} \]
   \[ \sin 600^\circ = -\frac{\sqrt{3}}{2} \]

23. ANS: 
   \[ \frac{\sqrt{3}}{2} \]

24. ANS: 
   \[ \frac{\sqrt{2}}{2} \]

25. ANS: B  PTS: 1

26. ANS: 
   Located in quadrant 4

27. ANS: A  PTS: 1  REF: 13-3 Radian Measure
OBJ: 13-3.1 Using Radian Measure

28. ANS: C  PTS: 1  REF: 13-3 Radian Measure
OBJ: 13-3.1 Using Radian Measure

29. ANS: B  PTS: 1  REF: 13-3 Radian Measure
OBJ: 13-3.1 Using Radian Measure

30. ANS: B  PTS: 1  REF: 13-3 Radian Measure
OBJ: 13-3.1 To use radian measure for angles  DOK: DOK 1

31. ANS: B  PTS: 1

32. ANS: A  PTS: 1  REF: 13-1 Exploring Periodic Data
OBJ: 13-1.1 Identifying Periodic Functions

33. ANS: C  PTS: 1  REF: 13-1 Exploring Periodic Data
OBJ: 13-1.2 Finding the Amplitude of a Periodic Function

34. ANS: A  PTS: 1  REF: 13-1 Exploring Periodic Data
OBJ: 13-1.2 Finding the Amplitude of a Periodic Function

35. ANS: B  PTS: 1  REF: 13-4 The Sine Function
OBJ: 13-4.1 Interpreting Sine Functions

36. ANS: A  PTS: 1  REF: 13-4 The Sine Function
OBJ: 13-4.1 Interpreting Sine Functions

37. ANS:
PTS: 1  REF: 13-4 The Sine Function  OBJ: 13-4.2 Graphing Sine Functions