Secondary 2H **Name**_____ **Desk** _____
Unit 9 **UNIT 9 TEST REVIEW**
Score _____

Determine which quadrant….

1. What quadrant(s) is tangent negative?	2. What quadrant(s) is cosine positive?
3. What quadrant(s) is sine positive and cosine negative?	4. What quadrant does $350°$ fall in?
5. What quadrant does $-268°$ fall in?	6. What quadrant does $154°$ fall in?
7. What quadrant does $-400°$ fall in?	8. What quadrant does $634°$ fall in?

Determine the exact value of each expression without using a calculator.

9. $\sin(90°) =$	10. $\cos(240°) =$	11. $\tan(-315°) =$
12. $\cot(180°) =$	13. $\sec(150°) =$	14. $\csc(270°) =$
15. $\sin(225°) =$	16. $\cos(300°) =$	17. $\tan(450°) =$

Find the unknown angle if $0° \leq \theta < 90°$

18. $\sin\theta = \frac{\sqrt{3}}{2}$	19. $\cos\theta = \frac{\sqrt{2}}{2}$	20. $\tan\theta = \sqrt{3}$
21. $\cos\theta = \frac{\sqrt{3}}{2}$	22. $\sin\theta = \frac{1}{2}$	23. $\tan\theta = 1$

Find a positive and negative coterminal angle of the given angle.

24. $500°$	25. $-480°$

Determine the reference angle of the following angles.

26. $267°$	27. $-147°$

Simplify each expression.

28. $(1-\sin\theta)(1+\sin\theta)$	29. $(\cos x - \sin x)^2 + (\cos x + \sin x)^2$
30. $\frac{\tan\theta}{\sin\theta}$	31. $\sin y + \sin y \cot^2 y$
32. $\frac{\sin^2 x}{\cos^2 x} + \sec x \cos x$	33. $\tan x + \cot x$
34. $\cos(-x)\sin x \csc(-x)$	35. $\sin^2 x\,(1+\cot^2 x)$
36. $\cot(-x)\sin(-x)$	37. $\frac{\sec\theta\tan\theta}{\csc\theta}$
38. $\frac{\sin 65}{\cos 25}$	39. $\frac{1-\sin^2\theta}{\cos(-\theta)}$

Verify the following trig identities.

40. $\cos(\theta - 90°) = \cos\theta\tan\theta$	41. $1 + \sec x \sin x \tan x = \sec^2 x$
42. $\tan x \cos x + \csc x \sin^2 x = 2\sin x$	43. $\frac{\cos^2 y + \tan^2 y + \sin^2 y}{\cos^2 y} = 1$
44. $\frac{\sin\theta}{1-\sin\theta} + \frac{\sin\theta}{1+\sin\theta} = 2\tan\theta\sec\theta$	45. $\sec x\,(\sec x - \cos x) = \tan^2 x$
46. $\sec y + \tan y = \frac{\cos y}{1-\sin y}$	

Solve each equation for $0° \leq \theta < 360°$

47. $2\cos x + 1 = 0$	48. $2\sin\theta + \sqrt{3} = 0$
49. $2\sin^2\theta + 1 = 3\sin\theta$	50. $3\sin\theta = 5$

Use the angle sum or difference identity to find the exact value of each. (NO CALCULATOR)

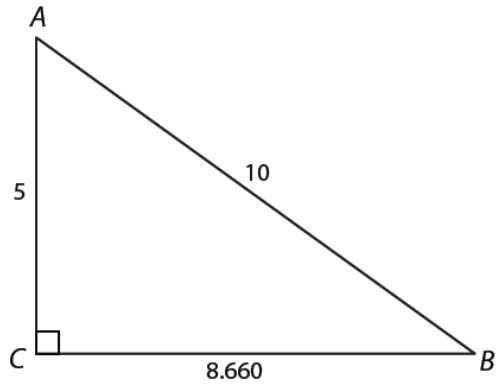
51. $\sin 15°$	52. $\cos 75°$
53. $\sin 165°$	54. $\tan 105°$

Use the angle sum or difference identities to simplify the expression. (NO CALCULATOR)

55. $\sin 90° \sin 60° - \cos 90° \cos 60°$	56. $\sin 23° \cos 15° + \sin 15° \cos 23°$
57. $\cos(270° - \theta)$	58. $\sin(180° - \theta)$

CALCULATOR PORTION:

59. Find $\sin A$, $\cos A$, and $\tan A$. Round to the nearest thousandth.



60. A right triangle has a side length of $a = 8$ and $b = 4$. Find the angle measurements and the length of the hypotenuse. Then, find the sine, cosine, and tangent for angles A and B (across from sides a and b, respectively).

61. A right triangle has a side length of $a = 4$ and a hypotenuse of 8. Find the angle measurements of A and B. Then, find the sine, cosine, and tangent for both angles.

63. A monument is 75 meters high. At an information booth, an observer notices the angle of elevation to the top of the monument is 36°. How far is the observer from the base of the building?

64. A bluebird on a 30-meter-tall flagpole spots a worm on the ground below. The angle of depression from the bluebird to the worm is 25°. How far away from the base of the flagpole is the worm?

BONUS QUESTION: If $0° < \theta < 90°$ and $\sin\theta = \frac{2}{9}$, find $\cos\theta$ using a Pythagorean identity.