Right-triangle trigonometry Worksheet

Geometry and Trigonometry

Name _____ Date _____

Warm-up

1. Opposite 9, adjacent 9. Find $\tan\theta$.

2. Know: hypotenuse. Want: side adjacent to θ. Which ratio?
   (A) Tangent (B) Cosine (C) Sine

3. Which ratio uses opposite and hypotenuse?
   (A) Cosine (B) Sine (C) Tangent

4. $\theta = 60°$, hypotenuse 28. Find the adjacent side.

5. $\theta = 30°$, hypotenuse 16. Find the opposite side.

Practice

6. $\sin\theta = \dfrac{5}{13}$. Find $\tan\theta$.

7. $\theta = 45°$, adjacent 14. Find the opposite side.

8. Opposite 6, hypotenuse 10. Find $\cos\theta$.

9. $\theta = 30°$, opposite 8. Find the hypotenuse.

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10. In a right triangle with acute angles A and B, $\sin A$ equals...
    (A) 1 (B) $\tan B$ (C) $\sin B$ (D) $\cos B$

11. $\theta = 60°$, adjacent 10. Find the opposite. Leave it with a square root.

12. Opposite 2, adjacent 2. Find the angle.
    (A) 90° (B) 30° (C) 60° (D) 45°

Challenge

13. Calculate: $\sin^2\theta + \cos^2\theta$ for $\sin\theta = \dfrac{3}{5}$ and $\cos\theta = \dfrac{4}{5}$.

14. A 8 m ladder makes a 60° angle with the ground. How far is the foot from the wall, in meters?

15. $\tan\theta = \dfrac{8}{15}$ where the hypotenuse is 17. Find $\sin\theta$.

16. You stand 40 m from a building. The angle up to the top is 45°, and your eyes are at 1 m. How tall is it, in meters?

17. A kite on 116 m of string makes 30° with the ground. How high is it, in meters?

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Right-triangle trigonometry Worksheet: Answer Key

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1. $\dfrac{9}{9}$
   Opposite over adjacent.
2. (B) Cosine
   CAH.
3. (B) Sine
   SOH.
4. 14
   $\cos 60^\circ = \dfrac{1}{2}$.
5. 8
   $\sin 30^\circ = \dfrac{1}{2}$.
6. $\dfrac{5}{12}$
   The third side is 12.
7. 14
   $\tan 45^\circ = 1$, so both legs are equal.
8. $\dfrac{8}{10}$
   Adjacent is 8, from the Pythagorean theorem.
9. 16
   $\dfrac{1}{2} = \dfrac{8}{h}$.
10. (D) $\cos B$
    The side opposite A is adjacent to B.
11. $10\sqrt{3}$
    $\tan 60^\circ = \sqrt{3}$.
12. (D) 45°
    Tangent is 1.
13. 1
    $\dfrac{9}{25} + \dfrac{16}{25}$. It's always 1, which is the Pythagorean theorem in disguise.
14. 4
    $\cos 60^\circ = \dfrac{x}{8}$.
15. $\dfrac{8}{17}$
    Opposite 8, adjacent 15, so the hypotenuse is 17.

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16. 41

    $\tan 45° = 1$, so the height above your eyes is 40. Add 1.

17. 58

    $\sin 30° = \dfrac{h}{116}$.

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