Right Triangle Trigonometry and Early Applications

Right-triangle trig, applied angle problems, and the first real-world trig models.

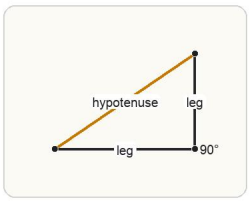
Name _____ Date _____

32 main | 2-up grid | 12 pages | visible side quests

Completion Reward

Shown here as a small pack artifact, not a preview destination.

1. In a right triangle, what is the hypotenuse?



The hypotenuse is the side opposite the 90-degree angle, so it is determined by the right angle, not by horizontal or vertical position.

A. The shorter leg
B. The side next to the chosen angle only
C. The side opposite the right angle
D. The vertical leg

1.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

1.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

1.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

1.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

1.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

2. Relative to an acute angle, what does opposite mean?

A. The hypotenuse only
B. The side touching the angle and the right angle
C. The shortest side
D. The side across from that angle

2.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

2.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

2.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

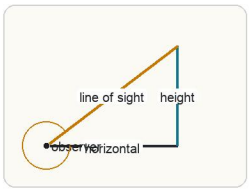
2.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

2.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

3. What is an angle of elevation?



Measure upward from a horizontal line of sight to the object being viewed.

A. An angle measured downward from a horizontal line of sight
B. An angle measured upward from a horizontal line of sight
C. The right angle in a triangle
D. Any angle greater than 90 degrees

3.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

3.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

3.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

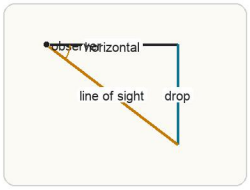
3.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

3.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

4. What is an angle of depression?



Measure downward from a horizontal line of sight to the object below the viewer.

A. An angle measured downward from a horizontal line of sight
B. An angle measured upward from the ground
C. The smallest angle in any triangle
D. The angle opposite the hypotenuse

4.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

4.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

4.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

4.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

4.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

5. Why is a 3-4-5 triangle useful in trig practice?

A. It always has 45-degree angles.
B. It gives exact side ratios in a right triangle.
C. It is the only right triangle.
D. It makes tangent undefined.

5.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

5.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

5.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

5.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

5.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

6. If one acute angle in a right triangle is 37 degrees, what is the other acute angle?

A. 53 degrees
B. 37 degrees
C. 43 degrees
D. 90 degrees

6.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

6.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

6.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

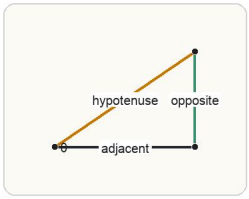
6.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

6.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

7. Which ratio matches sin(theta)?



Label the sides relative to theta first, then build the ratio using the side across from theta and the hypotenuse.

A. adjacent / hypotenuse
B. opposite / adjacent
C. opposite / hypotenuse
D. adjacent / opposite

7.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

7.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

7.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

7.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

7.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

8. Which ratio matches cos(theta)?

A. opposite / hypotenuse
B. adjacent / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

8.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

8.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

8.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

8.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

8.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

9. Which ratio matches tan(theta)?

A. adjacent / opposite
B. opposite / adjacent
C. opposite / hypotenuse
D. hypotenuse / adjacent

9.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

9.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

9.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

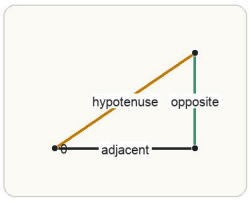
9.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

9.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

10. If you know an angle of elevation, the opposite side, and the adjacent side, which ratio is usually most direct?



If the known sides are opposite and adjacent to the angle, tangent uses exactly those two lengths with no extra conversion.

A. sine
B. cosine
C. tangent
D. secant

10.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

10.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

10.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

10.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

10.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

11. If you know the opposite side and the hypotenuse, which trig ratio is most direct?

A. sine
B. cosine
C. tangent
D. cotangent

11.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

11.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

11.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

11.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

11.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

12. Which situation uses an angle of elevation?

A. Looking up at the top of a building from the ground
B. Looking down from a cliff to the beach
C. Measuring a right angle in a room
D. Comparing two horizontal distances

12.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

12.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

12.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

12.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

12.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

13. Which situation uses an angle of depression?

A. Looking up at a plane from the ground
B. Measuring the interior angle of a triangle
C. Finding the slope of a line
D. Looking down from a lighthouse to a boat

13.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

13.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

13.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

13.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

13.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

14. What is the best first step in a right-triangle application problem?

A. Take a reciprocal immediately.
B. Assume the angle is 45 degrees.
C. Sketch and label the triangle with the known sides and angles.
D. Ignore the words and use tangent.

14.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

14.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

14.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

14.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

14.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

15. A student chooses cosine when the known sides are opposite and adjacent. What is the mistake?

A. Cosine uses opposite and adjacent, so there is no mistake.
B. They should have used secant instead.
C. Cosine uses adjacent and hypotenuse, so tangent is the direct ratio.
D. They should have used no trig ratio at all.

15.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

15.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

15.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

15.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

15.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

16. In a 3-4-5 right triangle, if the side opposite theta is 3, find sin(theta). Enter as a decimal. Answer with a number.

16.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

16.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

16.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

16.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

16.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

17. In a 3-4-5 right triangle, if the side adjacent to theta is 4, find cos(theta). Enter as a decimal. Answer with a number.

17.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

17.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

17.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

17.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

17.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

18. In a 3-4-5 right triangle, if opposite = 3 and adjacent = 4, find tan(theta). Enter as a decimal. Answer with a number.

18.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

18.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

18.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

18.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

18.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

19. A right triangle has legs 6 and 8. What is the hypotenuse? Answer with a number.

19.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

19.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

19.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

19.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

19.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

20. In a 3-4-5 right triangle, what acute angle has opposite side 3 and hypotenuse 5? Answer to the nearest degree.

20.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

20.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

20.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

20.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

20.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

21. In a 3-4-5 right triangle, what acute angle has opposite side 4 and hypotenuse 5? Answer to the nearest degree.

21.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

21.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

21.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

21.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

21.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

22. A ladder makes a 45-degree angle with the ground and reaches 10 feet horizontally from the wall. How high does it reach? Answer to the nearest foot.

22.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

22.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

22.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

22.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

22.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

23. A ramp rises 3 feet over a horizontal run of 12 feet. What is tan(theta) for the angle of elevation? Enter as a decimal. Answer with a number.

23.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

23.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

23.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

23.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

23.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

24. Which student correctly uses SOHCAHTOA for opposite = 6 and hypotenuse = 10?

A. Student B: cos(theta) = 6 / 10.
B. Student A: sin(theta) = 6 / 10.
C. Student C: tan(theta) = 10 / 6.
D. Student D: sec(theta) = 6 / 10.

24.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

24.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

24.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

24.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

24.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

25. If opposite = 7 and hypotenuse = 25, write sin(theta). Answer as an equation.

25.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

25.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

25.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

25.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

25.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

26. If adjacent = 12 and hypotenuse = 13, write cos(theta). Answer as an equation.

26.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

26.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

26.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

26.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

26.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

27. If opposite = 5 and adjacent = 12, write tan(theta). Answer as an equation.

27.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

27.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

27.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

27.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

27.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

28. If one acute angle is theta in a right triangle, state the other acute angle. Answer as an expression.

28.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

28.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

28.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

28.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

28.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

29. A ladder leans at 60 degrees and has length 12. Write an equation relating the height h to the given values. Answer as an equation.

29.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

29.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

29.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

29.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

29.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

30. A ramp makes a 30-degree angle with the ground and rises 4 feet. Write an equation relating the horizontal run x to the given values. Answer as an equation.

30.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

30.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

30.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

30.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

30.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

31. A cable is 15 feet long and makes a 53-degree angle with the ground. Write an equation relating the horizontal distance d to the given values. Answer as an equation.

31.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

31.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

31.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

31.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

31.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

32. From a point 20 feet from a tree, the angle of elevation to the top is 45 degrees. Write an equation relating the height h to the given values. Answer as an equation.

32.1. If the legs of a right triangle are 3 and 4, the hypotenuse is:

A. 5
B. 6
C. 7
D. 8

32.2. Relative to angle A, the opposite side is:

A. the side across from angle A
B. the longest side always
C. the side next to angle A
D. the hypotenuse only

32.3. sin(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite

32.4. cos(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / adjacent

32.5. tan(theta) equals:

A. adjacent / hypotenuse
B. opposite / hypotenuse
C. opposite / adjacent
D. hypotenuse / opposite