

Right Triangles and Trigonometry Foundations

Pythagorean theorem, triangle parts, and basic sine, cosine, tangent reasoning.

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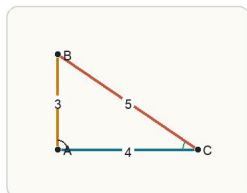
32 main 2-up grid 13 pages visible side quests

Completion Reward



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1. In the right triangle, which side is the hypotenuse?



In any right triangle, the hypotenuse is the side across from the 90-degree angle and is always the longest side.

- A. The side labeled 3
- B. The side labeled 4
- C. The side labeled 5
- D. The side opposite theta

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

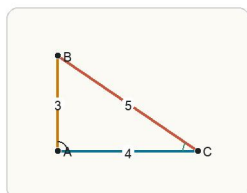
1.4. $\cos(\theta)$ equals:

- 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. Which ratio equals $\sin(\theta)$?



Relative to theta, sine compares the side across from the angle to the hypotenuse.

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

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

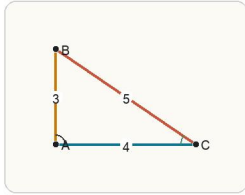
2.4. $\cos(\theta)$ equals:

- 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. Which ratio equals $\cos(\theta)$?



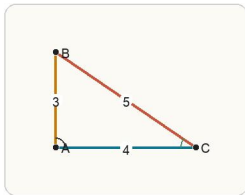
Relative to theta, cosine compares the side next to the angle with the hypotenuse.

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

3.3. $\sin(\theta)$ equals:

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

4. Which ratio equals $\tan(\theta)$?



Relative to theta, tangent compares the side across from the angle to the leg next to the angle.

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

4.3. $\sin(\theta)$ equals:

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

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

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

3.4. $\cos(\theta)$ equals:

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

4.1. 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

3.5. $\tan(\theta)$ equals:

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

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

4.5. $\tan(\theta)$ equals:

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

5. In any triangle, what is true about the side opposite the larger angle?

- A. It is shorter.
- B. It is always 1.
- C. It is longer.
- D. It must be horizontal.

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. In a right triangle, which side is the hypotenuse?

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

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. Relative to an acute angle in a right triangle, which side is called the opposite side?

- A. The longest side always
- B. The side that touches the angle and is not the hypotenuse
- C. Any side with positive slope
- D. The side across from the angle

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 side lengths form a right triangle?

- A. 5, 12, 13
- B. 4, 5, 6
- C. 2, 3, 4
- D. 6, 7, 8

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 statement about $\tan(\theta)$ is true?

- A. It always includes the hypotenuse.
- B. It can only be less than 1.
- C. It is opposite/adjacent.
- D. It equals adjacent/opposite.

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. Which ratio equals $\sin(\theta)$ in a right triangle?

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

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. Which ratio equals $\cos(\theta)$ in a right triangle?

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

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 ratio equals $\tan(\theta)$ in a right triangle?

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

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. In a 5-12-13 right triangle, θ is adjacent to the side of length 12. What is $\cos(\theta)$?

- A. 12/13
- B. 5/13
- C. 12/5
- D. 13/12

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

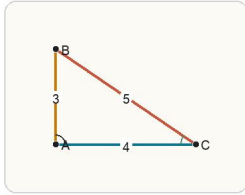
13.4. $\cos(\theta)$ equals:

- 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. Relative to angle theta, which side is opposite?



The opposite side is the side directly across from the chosen acute angle, not just whichever side is drawn vertically.

- A. The side labeled 4
- B. The side labeled 5
- C. The side labeled 3
- D. The right angle

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. You know the lengths of both legs of a right triangle and want the hypotenuse. What should you do next?

- A. Use triangle similarity.
- B. Use the Pythagorean theorem.
- C. Add the legs directly.
- D. Use the area formula.

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

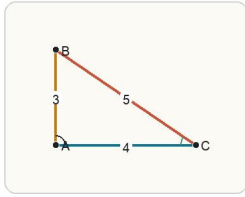
15.4. $\cos(\theta)$ equals:

- 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. A student says $\tan(\theta) = \text{adjacent} / \text{opposite}$. What is the mistake?



If a student swaps opposite and adjacent, the ratio changes. Tangent is opposite divided by adjacent, not the other way around.

- A. Tangent is opposite / adjacent, so they reversed the ratio.
- B. Tangent should use the hypotenuse instead.
- C. Tangent is always 1.
- D. Tangent should be added, not divided.

16.3. $\sin(\theta)$ equals:

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

17. A student says the hypotenuse is also the adjacent side for every acute angle. What is wrong?

- A. The hypotenuse is opposite every acute angle.
- B. The adjacent side is the non-hypotenuse side that touches the chosen angle.
- C. Adjacent and opposite are the same side.
- D. The hypotenuse changes when the angle changes.

17.3. $\sin(\theta)$ equals:

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

18. A student labels the same side as opposite for two different acute angles in the same right triangle. Why is that a problem?

- A. Opposite sides never change names.
- B. Only the hypotenuse can be opposite.
- C. Opposite and adjacent depend on which acute angle is chosen.
- D. Right triangles have only one acute angle.

18.3. $\sin(\theta)$ equals:

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

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

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

16.4. $\cos(\theta)$ equals:

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

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

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

17.4. $\cos(\theta)$ equals:

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

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

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

18.4. $\cos(\theta)$ equals:

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

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

16.5. $\tan(\theta)$ equals:

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

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

17.5. $\tan(\theta)$ equals:

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

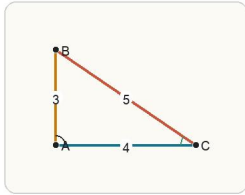
18.2. Relative to angle A, the opposite side is:

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

18.5. $\tan(\theta)$ equals:

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

19. A right triangle has legs 3 and 4. What is the hypotenuse? Answer with a number.



With the two legs known, use $a^2 + b^2 = c^2$ to determine the hypotenuse.

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

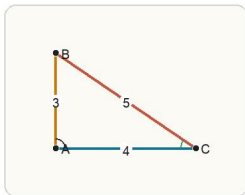
19.4. $\cos(\theta)$ equals:

- 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. You know the opposite side and the hypotenuse relative to theta. Which trig ratio should you use?



If the known sides are opposite and hypotenuse, sine is the direct trig ratio.

- A. Cosine
- B. Sine
- C. Tangent
- D. Pythagorean theorem only

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. Which set of side lengths forms a right triangle?

- A. 6, 8, 9
- B. 5, 5, 9
- C. 3, 4, 6
- D. 6, 8, 10

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

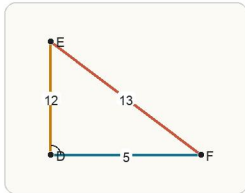
21.4. $\cos(\theta)$ equals:

- 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. You know two side lengths of a right triangle and need the third. What is the best next move?



When two side lengths of a right triangle are known and the third is missing, the Pythagorean theorem is the direct move.

- A. Use a circle formula.
- B. Use the Pythagorean theorem.
- C. Reflect the triangle.
- D. Assume all side lengths are equal.

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

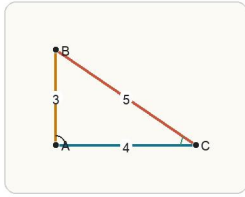
22.4. $\cos(\theta)$ equals:

- 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 student calls the side labeled 5 the adjacent side relative to theta. What is the issue?



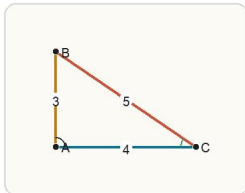
The adjacent side is the leg next to theta. The hypotenuse touches theta too, but it is identified separately because it is opposite the right angle.

- A. The adjacent side is always the longest side.
- B. The side labeled 5 is opposite the right angle, so it is the hypotenuse.
- C. No right triangle has an adjacent side.
- D. The side labeled 5 should be the opposite side instead.

23.3. $\sin(\theta)$ equals:

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

24. In the triangle, what is $\tan(\theta)$? Answer with a number.



Read the opposite and adjacent sides relative to theta, then divide opposite by adjacent.

24.3. $\sin(\theta)$ equals:

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

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

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

23.4. $\cos(\theta)$ equals:

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

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

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

24.4. $\cos(\theta)$ equals:

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

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

23.5. $\tan(\theta)$ equals:

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

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

24.5. $\tan(\theta)$ equals:

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

25. A right triangle has legs 8 and 15. What is the hypotenuse? Answer with a number.

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

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

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

- 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:

25.4. $\cos(\theta)$ equals:

25.5. $\tan(\theta)$ equals:

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

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

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

26. A right triangle has hypotenuse 13 and one leg 5. What is the other leg? Answer with a number.

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

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

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

- 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:

26.4. $\cos(\theta)$ equals:

26.5. $\tan(\theta)$ equals:

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

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

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

27. A right triangle has hypotenuse 13 and one leg 12. What is the other leg? Answer with a number.

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

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

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

- 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:

27.4. $\cos(\theta)$ equals:

27.5. $\tan(\theta)$ equals:

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

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

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

28. If $\cos(\theta) = 12/13$ in a right triangle and the hypotenuse is 13, what is the adjacent side length? Answer with a number.

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

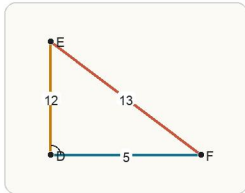
28.4. $\cos(\theta)$ equals:

- 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 right triangle has hypotenuse 13 and one leg 5. What is the other leg? Answer with a number.



When one leg and the hypotenuse are known, subtract their squares appropriately and take the square root to find the other leg.

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

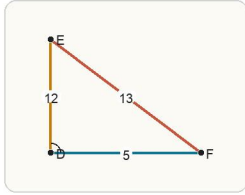
29.4. $\cos(\theta)$ equals:

- 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 right triangle has one leg 12 and hypotenuse 13. What is the other leg? Answer with a number.



Use the known leg and hypotenuse in the Pythagorean theorem to solve for the remaining leg.

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. Which explanation best justifies using cosine to find a side?

- A. Cosine is always the easiest ratio, no matter the data.
- B. Cosine uses opposite over adjacent.
- C. Cosine uses adjacent over hypotenuse, so it matches the given information.
- D. Cosine is only for obtuse triangles.

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. In a 3-4-5 triangle, θ is opposite the side of length 3. Student A says $\sin(\theta) = 3/5$. Student B says $\sin(\theta) = 4/5$. Who is correct?

- A. Student B
- B. Both students
- C. Neither student
- D. Student A

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