

SAT Right Triangles and Trigonometry Worksheet

Name: _____ Date: _____

Circle one answer for each question. Use the blank space for calculations. A calculator is allowed.

1. A right triangle has legs of lengths 6 and 8. What is the hypotenuse length?

- A. 7
- B. 10
- C. 12
- D. 14

2. A right triangle has hypotenuse 13 and one leg 5. What is the other leg?

- A. 8
- B. 10
- C. 12
- D. 18

3. In a 45-45-90 triangle, each leg has length 4. What is the hypotenuse length?

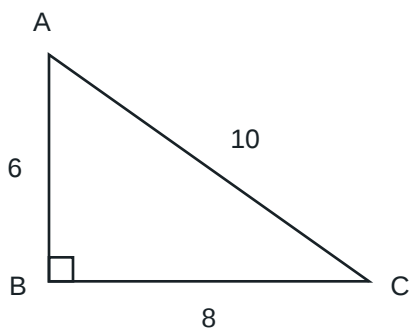
- A. 4
- B. $4\sqrt{2}$
- C. 8
- D. $8\sqrt{2}$

4. In a 30-60-90 triangle, the side opposite 30° is 5. What is the hypotenuse length?

- A. 5
- B. $5\sqrt{3}$
- C. 10
- D. 15

5. For an acute angle A in a right triangle, the opposite side is 3 and the hypotenuse is 5. What is $\sin(A)$?
- A. $\frac{3}{5}$
 - B. $\frac{4}{5}$
 - C. $\frac{3}{4}$
 - D. $\frac{5}{3}$
6. For an acute angle B in a right triangle, the adjacent leg is 8 and the hypotenuse is 17. What is $\cos(B)$?
- A. $\frac{8}{15}$
 - B. $\frac{8}{17}$
 - C. $\frac{15}{17}$
 - D. $\frac{17}{8}$

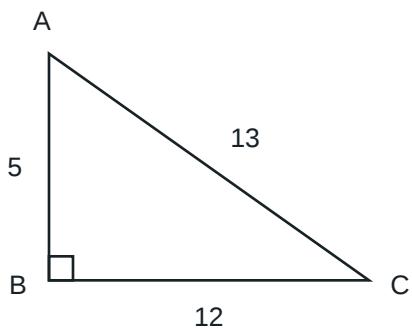
7.



In the triangle shown, what is $\sin(A)$?

- A. $\frac{3}{5}$
- B. $\frac{4}{5}$
- C. $\frac{3}{4}$
- D. $\frac{5}{4}$

8.



In the triangle shown, what is $\tan(C)$?

- A. $\frac{5}{13}$
- B. $\frac{12}{13}$
- C. $\frac{5}{12}$
- D. $\frac{12}{5}$

9. The acute angles A and B of a right triangle are complementary. If $\sin(A) = \frac{7}{25}$, what is $\cos(B)$?
- A. $\frac{7}{25}$
 - B. $\frac{24}{25}$
 - C. $\frac{7}{24}$
 - D. $\frac{25}{7}$
10. A 10-foot ladder forms a right triangle with a vertical wall and level ground. Its base is 6 feet from the wall. How high does it reach?
- A. 4 feet
 - B. 6 feet
 - C. 8 feet
 - D. 16 feet

11. A right triangle has one acute angle of 35° . What is the other acute angle?

- A. 35°
- B. 55°
- C. 65°
- D. 145°

12. Two similar right triangles have hypotenuse lengths 10 and 15. A leg in the smaller triangle is 4. What is the corresponding leg in the larger triangle?

- A. 5
- B. 6
- C. 8
- D. 9

Answer key

1 B · 2 C · 3 B · 4 C · 5 A · 6 B · 7 B · 8 C · 9 A · 10 C · 11 B · 12 B

1. B: 10

The Pythagorean theorem gives $c^2 = 6^2 + 8^2 = 100$. Taking the positive square root gives $c = 10$.

2. C: 12

The missing leg has squared length $13^2 - 5^2 = 169 - 25 = 144$, so its length is 12.

3. B: $4\sqrt{2}$

A 45-45-90 triangle has side ratio $1:1:\sqrt{2}$. Multiply the leg length 4 by $\sqrt{2}$.

4. C: 10

The hypotenuse is twice the short leg in a 30-60-90 triangle. Thus it has length $2(5) = 10$.

5. A: $\frac{3}{5}$

Sine is opposite divided by hypotenuse. The specified side lengths give $\sin(A) = \frac{3}{5}$.

6. B: $\frac{8}{17}$

Cosine is adjacent leg divided by hypotenuse. Therefore $\cos(B) = \frac{8}{17}$.

7. B: $\frac{4}{5}$

Angle A is at the top. Its opposite side is $BC = 8$, and the hypotenuse is $AC = 10$. Thus $\sin(A) = \frac{8}{10} = \frac{4}{5}$.

8. C: $\frac{5}{12}$

For angle C, the opposite leg is $AB = 5$ and the adjacent leg is $BC = 12$. Thus $\tan(C) = \frac{5}{12}$.

9. A: $\frac{7}{25}$

For complementary angles, $\sin(A) = \cos(B)$. Therefore $\cos(B)$ has the same value, $\frac{7}{25}$.

10. C: 8 feet

The ladder is the hypotenuse. The height satisfies $h^2 + 6^2 = 10^2$, so $h^2 = 64$ and $h = 8$.

11. B: 55°

The two acute angles of a right triangle sum to 90° . Subtracting 35 gives 55° .

12. B: 6

The scale factor is $\frac{15}{10} = 1.5$. Multiply the corresponding smaller leg by 1.5: $4(1.5) = 6$.