

Geometry · Right Triangle Trigonometry · Quiz

Common Core G-SRT.C.6, G-SRT.C.7, G-SRT.C.8 · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

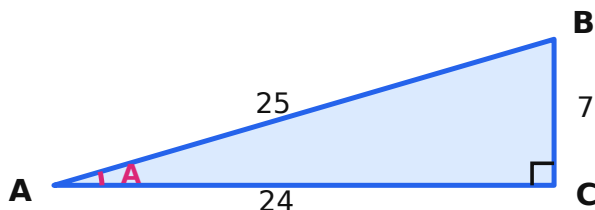
Ten multiple-choice questions check right triangle trigonometry: ratios, complementary angles, special triangles and elevation and depression problems for Common Core standards G-SRT.C.6, G-SRT.C.7 and G-SRT.C.8. Use a calculator in degree mode and choose the single best answer.

GeometryCommon Core: G-SRT.C.6 · G-SRT.C.7 · G-SRT.C.8

Questions

Question 1

In the triangle, what is $\sin A$?



Triangle with legs 24 and 7 and hypotenuse 25.

- A. $\frac{24}{25}$
- B. $\frac{7}{24}$
- C. $\frac{25}{7}$
- D. $\frac{25}{24}$

Question 2

Which expression equals $\cos 35^\circ$?

- A. $\sin 35^\circ$
- B. $\cos 55^\circ$
- C. $\tan 55^\circ$
- D. $\sin 55^\circ$

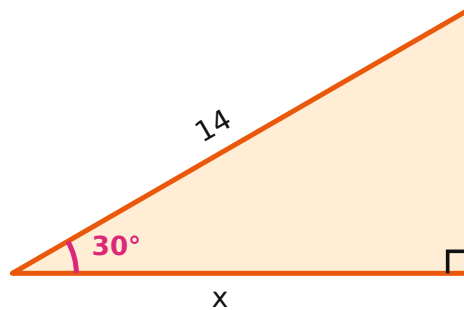
Question 3

A 45-45-90 triangle has legs of length 9. What is the hypotenuse?

- A. 18
- B. $9\sqrt{3}$
- C. $\frac{9}{\sqrt{2}}$
- D. $9\sqrt{2}$

Question 4

What is the length x of the long leg?

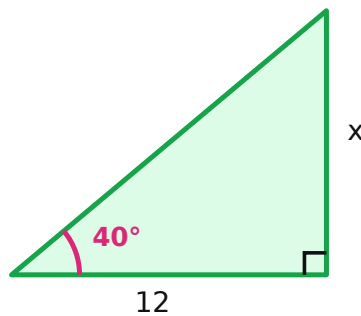


A 30-60-90 triangle with hypotenuse 14.

- A. $7\sqrt{3}$
- B. 7
- C. $14\sqrt{3}$
- D. $7\sqrt{2}$

Question 5

Find x to the nearest tenth.



Right triangle with a 40 degree angle and adjacent side 12.

- A. 14.3

- B. 7.7
- C. 10.1
- D. 9.2

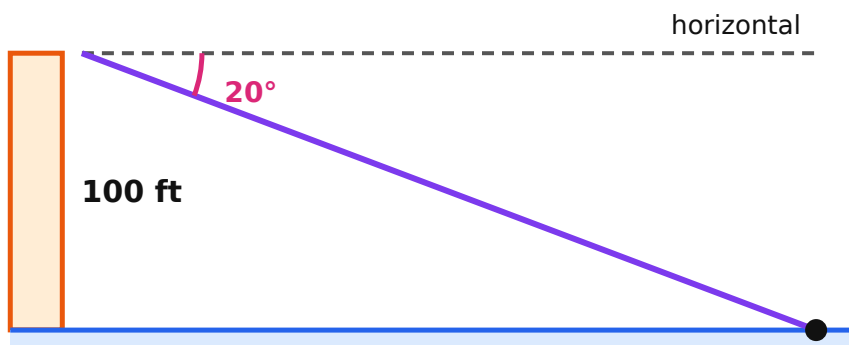
Question 6

A 30-ft pole casts an 18-ft shadow on level ground. What is the angle of elevation of the sun to the nearest tenth?

- A. 31.0°
- B. 59.0°
- C. 53.1°
- D. 36.9°

Question 7

From the top of a lighthouse the angle of depression to a boat is 20° . What is the angle of elevation from the boat to the top of the lighthouse?



Angle of depression of 20 degrees from the lighthouse to the boat.

- A. 20°
- B. 70°
- C. 110°
- D. 160°

Question 8

What is the value of x if $\sin(2x+4)^\circ = \cos(x+20)^\circ$?

- A. $x=16$
- B. $x=52$
- C. $x=30$
- D. $x=22$

Question 9

A 12-ft ladder has its base 4 ft from a wall. What angle does the ladder make with the ground, to the nearest tenth?

- A. 19.5°
- B. 71.6°
- C. 70.5°
- D. 18.4°

Question 10

Which statement is true for every acute angle A of a right triangle?

- A. $\sin A = \cos A$
- B. $\tan A = \frac{\sin A}{\cos A}$
- C. $\sin A + \cos A = 1$
- D. $\tan A = \sin A \cdot \cos A$

Answer key

1. **C** – Sine is opposite over hypotenuse, so $\frac{7}{25}$. Choosing 24 over 25 gives cosine, and 7 over 24 is tangent.
2. **D** – Cosine of an angle equals sine of its complement, and $90^\circ - 35^\circ = 55^\circ$. Keeping the same angle does not work unless the angle is 45° .
3. **D** – The hypotenuse is the leg times $\sqrt{2}$. Doubling the leg is a common mistake, and the $\sqrt{3}$ factor belongs to the 30-60-90 triangle.
4. **A** – The short leg is half the hypotenuse, 7, and the long leg is the short leg times $\sqrt{3}$. Answer 7 is the short leg.
5. **C** – Opposite and adjacent call for tangent: $x = 12 \tan 40^\circ \approx 10.1$. Dividing by tangent, or using sine or cosine, gives the other choices.
6. **B** – The pole is opposite and the shadow is adjacent, so $\tan \theta = \frac{30}{18}$ and $\theta \approx 59.0^\circ$. Swapping the sides gives 31.0° .
7. **A** – Angle of depression and angle of elevation are alternate interior angles formed by a horizontal line and the line of sight, so they are equal. The other choices use supplements or complements.
8. **D** – Complementary angles add to 90° : $(2x+4) + (x+20) = 90$ gives $3x = 66$. Setting the angles equal gives $x = 16$, which is wrong.
9. **C** – The base distance is adjacent and the ladder is the hypotenuse, so $\cos \theta = \frac{4}{12}$ and $\theta \approx 70.5^\circ$.
10. **B** – Opposite over adjacent equals (opposite over hypotenuse) divided by (adjacent over hypotenuse). Sine and cosine are equal only at 45° .

Remember:

- Standards G-SRT.C.6, G-SRT.C.7 and G-SRT.C.8 cover ratios from similarity, complementary angles and solving right triangles.
- SOH CAH TOA: sine, cosine and tangent are opposite/hypotenuse, adjacent/hypotenuse and opposite/adjacent.
- If $A + B = 90$ degrees, then $\sin A = \cos B$.
- 45-45-90 sides are $s, s, s\sqrt{2}$; 30-60-90 sides are $x, x\sqrt{3}, 2x$.
- Angles of elevation and depression are measured from the horizontal and are equal for the same line of sight.