

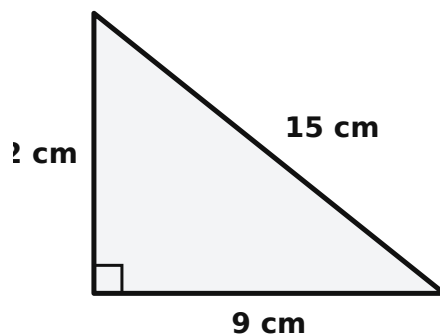
Grade 8 - The Pythagorean Theorem - Test Answer Key

Common Core 8.G.B.6, 8.G.B.7 · maths-pdf.fr/en/

Use this answer key to score the the Pythagorean theorem test out of 20 points. Each solution shows the full work and a scoring guide, so partial credit can be given fairly when a student shows correct steps but makes an arithmetic slip.

Grade 8 · Common Core State Standards: **8.G.B.6, 8.G.B.7**

Question 1 - Find the hypotenuse [2 pts]



A right triangle.

$$81 + 144 = 225, \text{ so } c = 15.$$

Scoring: 1 point for the equation. 1 point for 15 cm.

Question 2 - Find a leg [2 pts]

$$a^2 = 17^2 - 15^2 = 289 - 225 = 64, \text{ so } a = 8 \text{ inches.}$$

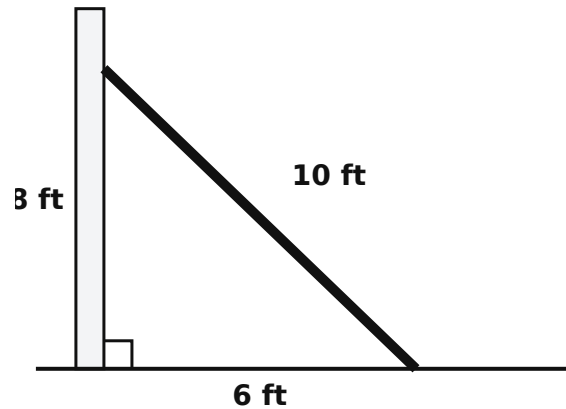
Scoring: 1 point for the equation. 1 point for 8 in.

Question 3 - Right triangle? [3 pts]

- a. $64 + 225 = 289 = 17^2$: yes.
- b. $36 + 81 = 117$, but 144 : no.

Scoring: Part a: 1 point for the sums, 1 point for yes. Part b: 1 point.

Question 4 - Ladder [3 pts]



The ladder reaches 8 ft.

$$6^2 + h^2 = 10^2, \text{ so } h^2 = 64 \text{ and } h = 8.$$

Scoring: 1 point for the setup, 1 point for $h^2 = 64$, 1 point for 8 ft.

Question 5 - Estimate a length [3 pts]

$$\text{Diagonal: } \sqrt{196 + 36} = \sqrt{232} \approx 15.2 \text{ feet.}$$

$$\text{Fencing: } 2(14 + 6) = 40 \text{ feet.}$$

Scoring: 1 point for the equation, 1 point for 15.2 ft, 1 point for 40 ft.

Question 6 - 3D [3 pts]

$$\text{Floor diagonal: } \sqrt{64 + 25} = \sqrt{89} \approx 9.4.$$

$$\text{Space diagonal: } \sqrt{64 + 36 + 25} = \sqrt{125} \approx 11.2.$$

Scoring: 1 point for each diagonal setup, 1 point for both values.

Question 7 - Shortcut [2 pts]

$$\text{Diagonal: } \sqrt{64 + 225} = 17. \text{ Saved: } 23 - 17 = 6 \text{ yards.}$$

Scoring: 1 point for 17 yards. 1 point for 6 yards.

Question 8 - Explain [2 pts]

The hypotenuse is opposite the right angle. Since $c^2 = a^2 + b^2$ is larger than a^2 or b^2 , c is larger than each leg.

Scoring: 1 point for opposite the right angle. 1 point for the reason.

Total
20 points