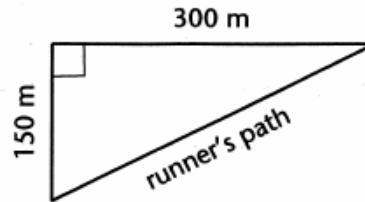


Worksheet #6

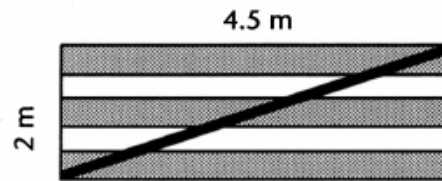
Applications of the Pythagorean relationship

1. A cross-country runner takes a short cut across a field as shown. What distance (to the nearest metre) does the runner save?

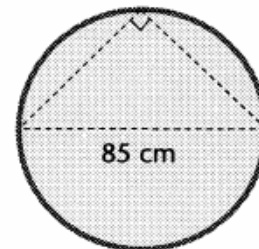


2. A 6 m ladder is leaning against a wall. The base of the ladder is 3.2 m from the wall. How far up the wall does the ladder reach?

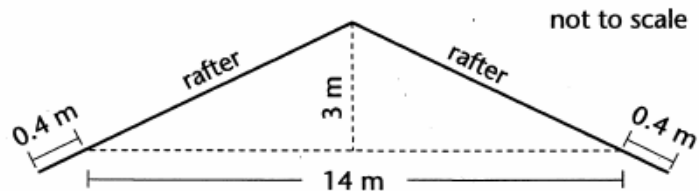
3. A fence gate is 4.5 m wide and 2 m high. Find the length of a diagonal support brace, correct to one decimal place.



4. A pine log has a circular cross-section with a diameter of 85 cm. What are the face dimensions of the largest square beam that can be cut from the log? Write your answer correct to the nearest centimetre.



5. A carpenter has to cut rafters for a house. The width of the house is 14 m and the height of the roof is 3 m higher in the centre than on the sides. The overhang is 0.4 m. Find the length of each rafter, correct to the nearest metre.



Answers

1. $\sqrt{112\,500}$
 $\approx 335\text{ m}$ 2. $\sqrt{25.76}$
 $\approx 5.1\text{ m}$ 3. $\sqrt{24.25}$
 $\approx 4.9\text{ m}$ 4. $\sqrt{3612.5}$
 $\approx 60\text{ cm}$ 5. $0.4 + \sqrt{58}$
 $\approx 8\text{ m}$