# GCSE Maths: Is it right-angled? Pythagorean triples and problems in context (Foundation): worksheet

GCSE Maths - Pythagoras and Trigonometry - Foundation - Lesson 20.2

Name: _____ Date: _____ Score: _____

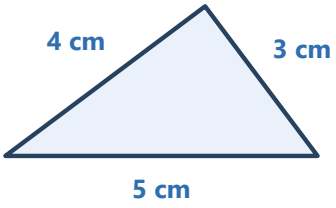
12 questions. Write your answers in the spaces. Answers and step-by-step help are free at **websink.site/gcse/maths/ch20-pythagoras-trigonometry/foundation/is-it-right-angled-pythagorean-triples-and-problems-in/**

## Exercise 20C Right-angled triangles in problems

Calculator allowed

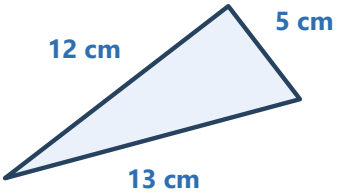
**1** Is each triangle right-angled? Show your working. All the lengths are in centimetres.

**(a)**



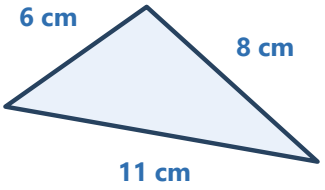

Answer:

**(b)**



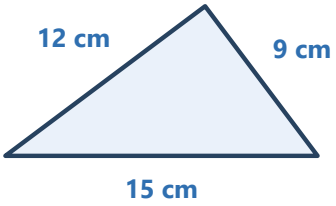

Answer:

**(c)**



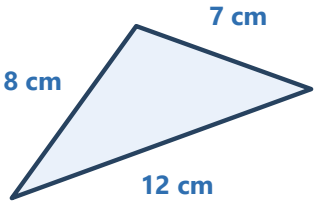

Answer:

**(d)**



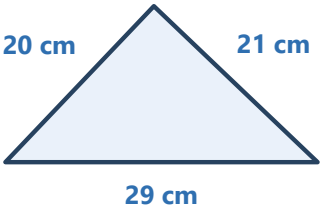

Answer:

**(e)**




Answer:

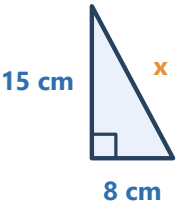
**(f)**




Answer:

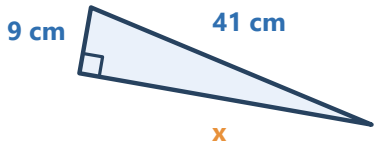
**2** **Each triangle is right-angled and the lengths are in centimetres. Find the missing length *x* (a whole number).**

**(a)** (3 whole numbers 8, 15, *x*)



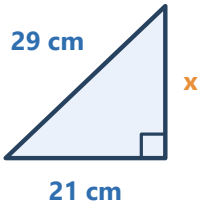

Answer:

**(b)** (9, *x*, 41)



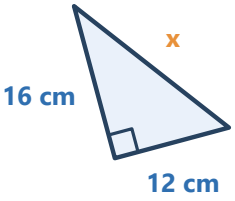

Answer:

**(c)** (*x*, 21, 29)



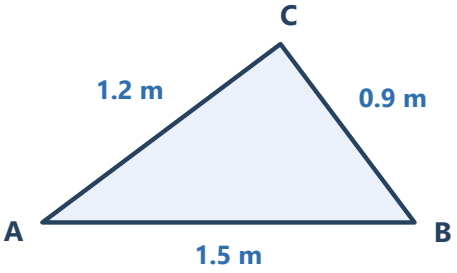

Answer:

**(d)** (12, 16, *x*)




Answer:

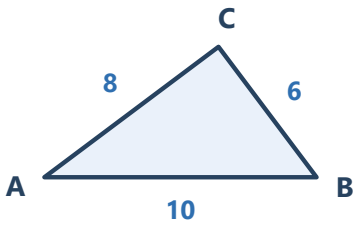
**3** A builder marks out the corner of a patio. She measures 0.9 m along one edge and 1.2 m along the other edge. The distance between the two marks is 1.5 m. Is the corner a right angle? You must show your working.




Answer:

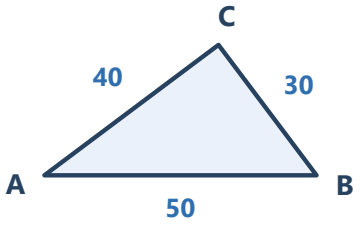
**4** 3, 4, 5 is a Pythagorean triple because 9 + 16 = 25.

**(a)** Show that 6, 8, 10 is a Pythagorean triple.



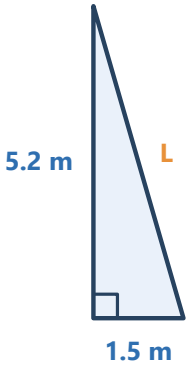

Answer:

**(b)** Show that 30, 40, 50 is a Pythagorean triple.



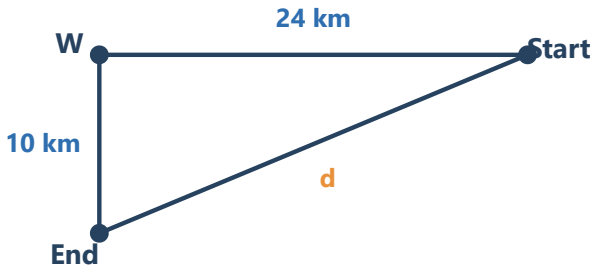

Answer:

**5** **A ladder reaches 5.2 m up a vertical wall. The foot of the ladder is 1.5 m from the wall. Work out the length of the ladder, correct to 2 decimal places.**



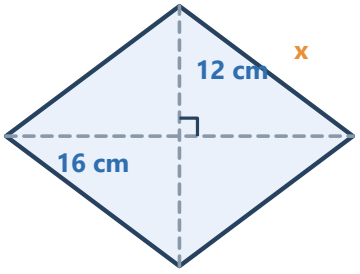

Answer:

**6** **A boat sails 24 km due west and then 10 km due south. Work out the distance of the boat from its starting point.**



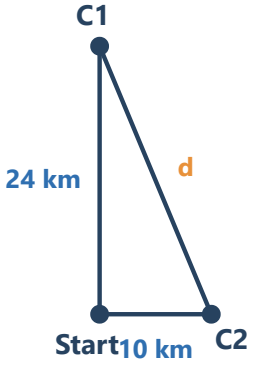

Answer:

**7** The diagonals of a rhombus are 16 cm and 12 cm long. Work out the length of one side of the rhombus, *x*.



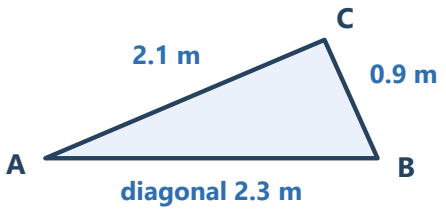

Answer:

**8** Two cyclists leave the same place at the same time. One cycles north at 12 km/h and the other cycles east at 5 km/h. How far apart are they after 2 hours?



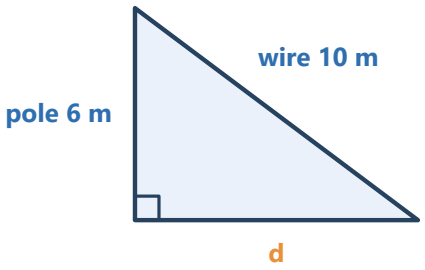

Answer:

**9** A joiner checks that a door frame is square. The frame is 0.9 m wide and 2.1 m tall, and a diagonal measures 2.3 m. Is the frame exactly square (right-angled)? Give a reason using Pythagoras' theorem.



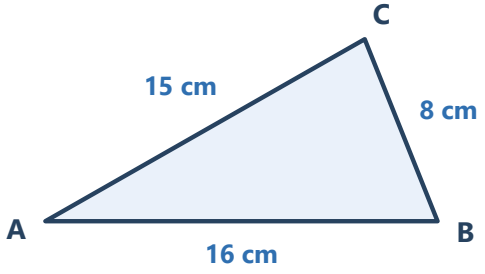

Answer:

**10** A vertical pole is 6 m tall. A wire 10 m long runs from the top of the pole to a point on level ground. How far is that point from the foot of the pole?



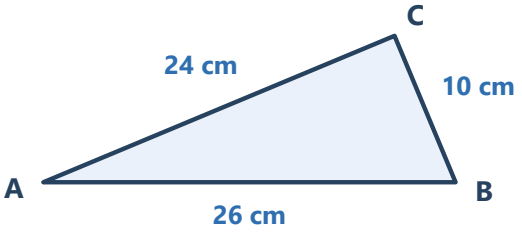

Answer:

**11** Raj says: "This triangle is not right-angled because 8 + 15 = 23, and 23 is not 16." Explain why Raj's method is wrong. Then use the correct method to decide whether the triangle is right-angled.




Answer:

**12** **Challenge.** Jada says: "If I double every length of a right-angled triangle, the new triangle is still right-angled." Use the triangle 5 cm, 12 cm, 13 cm to show that Jada is right for this triangle (the doubled triangle is drawn). Then explain why this must be true for any right-angled triangle.




Answer:

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