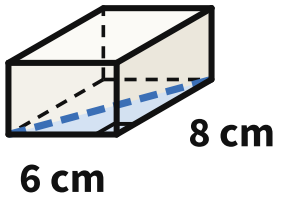
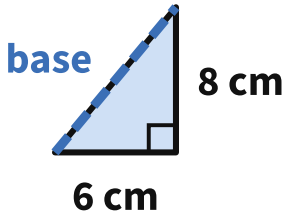
Pythagoras in 3D

ANSWERS

1

Find the length of the diagonal of the base of the cuboid.





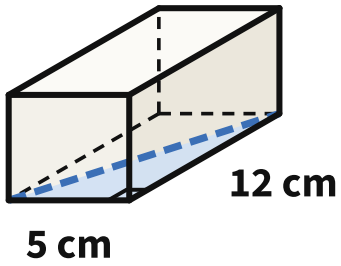
$base^2 = 6^2 + 8^2$

$base^2 = 100$

$base = \sqrt{100} = 10$ cm

2

Find the length of the diagonal of the base of the cuboid.



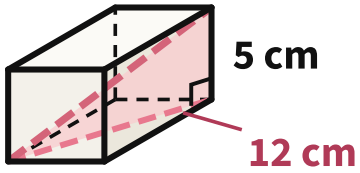
$base^2 = 5^2 + 12^2$

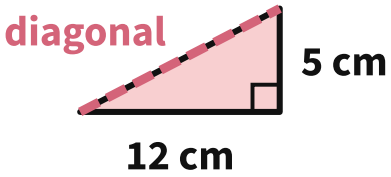
$base^2 = 169$

$base = \sqrt{169} = 13$ cm

3

The diagonal of the base is 12 cm. Find the length of the diagonal of the cuboid.





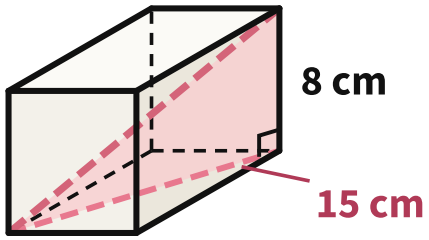
$diagonal^2 = 12^2 + 5^2$

$diagonal^2 = 169$

$diagonal = \sqrt{169} = 13$ cm

4

The diagonal of the base is 15 cm. Find the length of the diagonal of the cuboid.



$diagonal^2 = 15^2 + 8^2$

$diagonal^2 = 289$

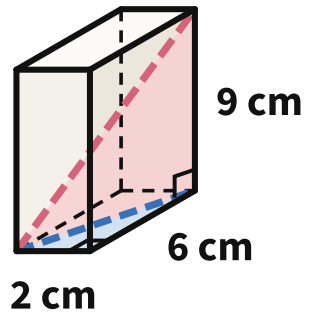
$diagonal = \sqrt{289} = 17$ cm

Pythagoras in 3D

ANSWERS

5

Find the length of the diagonal of the cuboid.



base^2 = 2^2 + 6^2

base^2 = 40

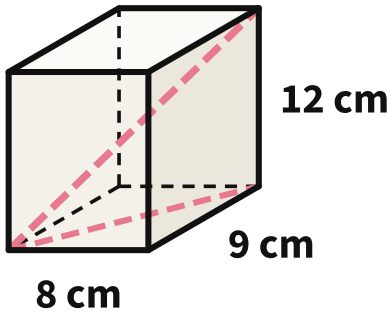
diagonal^2 = 40 + 9^2

diagonal^2 = 121

diagonal = √121 = 11 cm

6

Find the length of the diagonal of the cuboid.



base^2 = 8^2 + 9^2

base^2 = 145

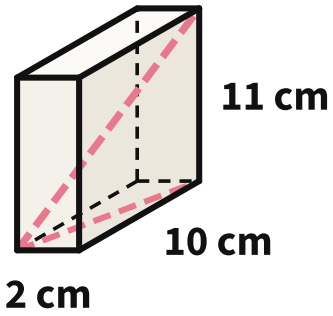
diagonal^2 = 145 + 12^2

diagonal^2 = 289

diagonal = √289 = 17 cm

7

Find the length of the diagonal of the cuboid.



base^2 = 2^2 + 10^2

base^2 = 104

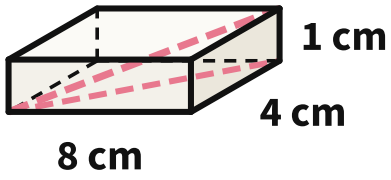
diagonal^2 = 104 + 11^2

diagonal^2 = 225

diagonal = √225 = 15 cm

8

Find the length of the diagonal of the cuboid.



base^2 = 8^2 + 4^2

base^2 = 80

diagonal^2 = 80 + 1^2

diagonal^2 = 81

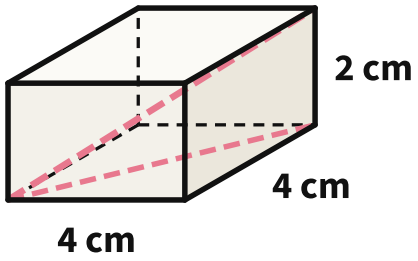
diagonal = √81 = 9 cm

Pythagoras in 3D *further practice*

ANSWERS

9

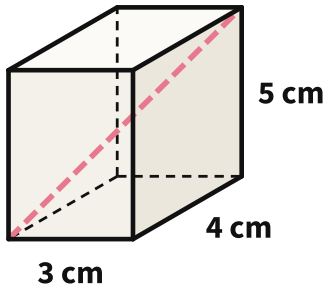
Find the length of the diagonal of the cuboid.



Answer: 6 cm

10

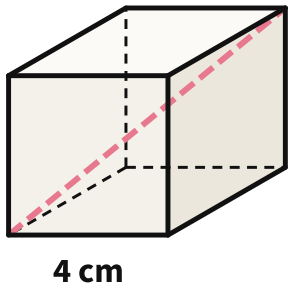
Find the length of the diagonal of the cuboid to 1 decimal place.



Answer: 7.1 cm

11

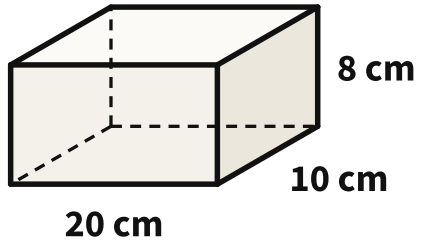
A cube has edges of 4 cm.
Find the length of the diagonal of the cube to 1 decimal place.



Answer: 6.9 cm

12

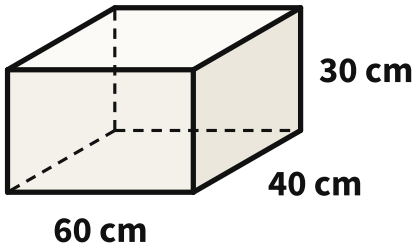
A pencil case is a cuboid 20 cm by 10 cm by 8 cm. Will a 22 cm pencil fit inside it? Show how you know.



Answer: Yes: 23.7 cm

13

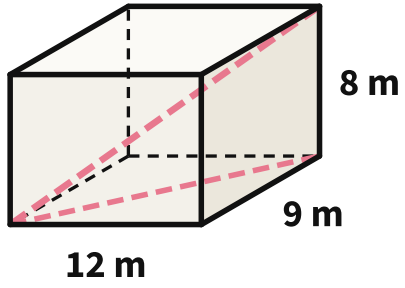
A storage box is 60 cm by 40 cm by 30 cm. Will an 80 cm umbrella fit inside it? Show how you know.



Answer: No: 78.1 cm

14

A room is 12 m long, 9 m wide and 8 m high. Find the length of (a) the diagonal of the floor, (b) the diagonal of the room.



Answer: (a) 15 m (b) 17 m

15

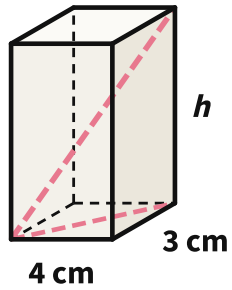
Sam says the diagonal of a cuboid 3 cm by 4 cm by 12 cm is 3 + 4 + 12 = 19 cm.
Explain Sam's mistake and find the diagonal.

Square the lengths and add, then square root. Adding the lengths makes a path along three edges, longer than the diagonal.

Answer: 13 cm

16

A cuboid has a base 4 cm by 3 cm.
The diagonal of the cuboid is 13 cm.
Find the height of the cuboid.



Answer: 12 cm