

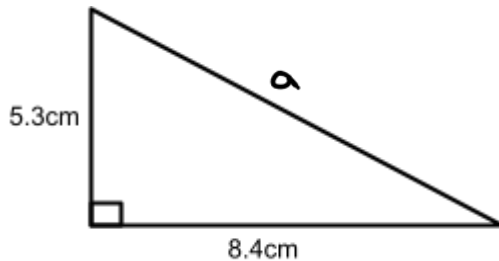
QT Pythagoras

Calculator



1. Work out the length of the unknown side in each of the triangles shown. Give your answers correct to 1 decimal place.

(a)

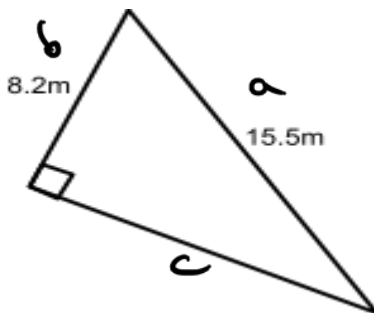


$$\begin{aligned} a^2 &= b^2 + c^2 \\ a^2 &= 5.3^2 + 8.4^2 \\ a^2 &= 98.65 \\ a &= 9.9322 \end{aligned}$$

$$\therefore a = \underline{\underline{9.9\text{cm}}}$$

(2 marks)

(b)

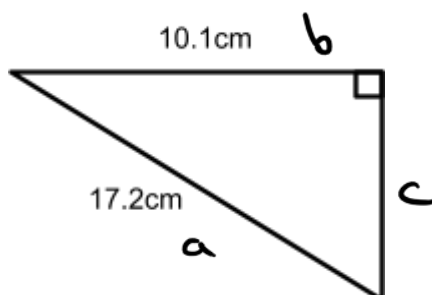


$$\begin{aligned} a^2 &= b^2 + c^2 \\ 15.5^2 &= 8.2^2 + c^2 \\ 15.5^2 - 8.2^2 &= c^2 \\ 173.01 &= c^2 \\ 13.1533 &= c \end{aligned}$$

$$\therefore c = \underline{\underline{13.2\text{cm}}}$$

(2 marks)

(c)



$$\begin{aligned} a^2 &= b^2 + c^2 \\ 17.2^2 &= 10.1^2 + c^2 \\ 17.2^2 - 10.1^2 &= c^2 \\ 193.83 &= c^2 \\ 13.9222 &= c \end{aligned}$$

(2 marks)

$$\therefore c = \underline{\underline{13.9\text{cm}}}$$

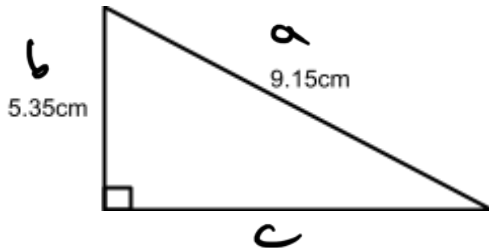
QT Pythagoras

Calculator



2. Work out the length of the unknown side in each of the triangles shown. Give your answers correct to 1 decimal place.

(a)

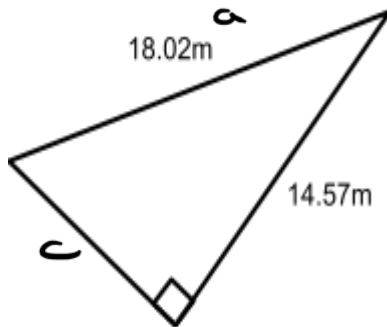


$$\begin{aligned} a^2 &= b^2 + c^2 \\ 9.15^2 &= 5.35^2 + c^2 \\ 9.15^2 - 5.35^2 &= c^2 \\ 75.1 &= c^2 \\ 8.6649 &= c \end{aligned}$$

7.4cm.

(2 marks)

(b)

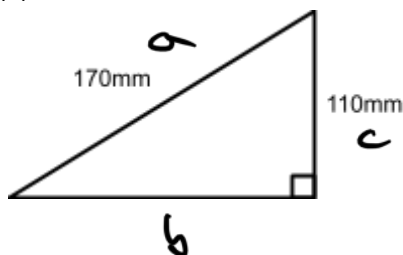


$$\begin{aligned} a^2 &= b^2 + c^2 \\ 18.02^2 &= 14.57^2 + c^2 \\ 18.02^2 - 14.57^2 &= c^2 \\ 112.4355 &= c^2 \\ 10.603 &= c \end{aligned}$$

10.6cm.

(2 marks)

(c)



$$\begin{aligned} a^2 &= b^2 + c^2 \\ 170^2 &= b^2 + 110^2 \\ 170^2 - 110^2 &= b^2 \\ 16800 &= b^2 \\ 129.6148 &= b \end{aligned}$$

129.6mm.

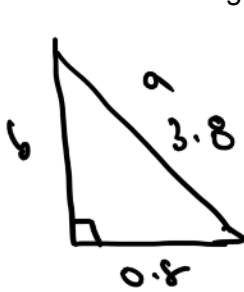
(2 marks)

QT Pythagoras

Calculator



3. A 3.8 metre ladder is placed against a vertical wall. The base of the ladder is 0.8 metres from the base of the wall. Work out how far the ladder reaches up the wall. Give your answer correct to 3 significant figures. (2 marks)

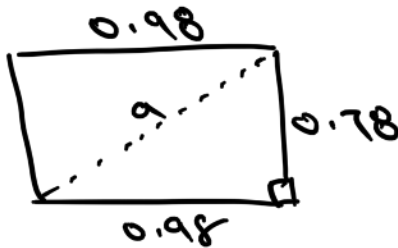


$$\begin{aligned}
 a^2 &= b^2 + c^2 \\
 3.8^2 &= b^2 + 0.8^2 \\
 3.8^2 - 0.8^2 &= b^2 \\
 13.8 &= b^2 \\
 3.7148 &= b
 \end{aligned}$$

$$b = \underline{\underline{3.71\text{m}}}$$

(3 sf)

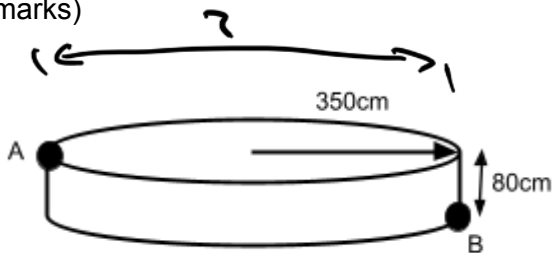
4. Tony is packing his suitcase to go to an exhibition. His suitcase is rectangular, and the internal measurements are 98cm in length and 78cm in width. Tony is a carpenter, and would like to pack his 1.2m long metal ruler into his suitcase. Will the metal ruler fit into Tony's suitcase? You must show your working. (3 marks)



$$\begin{aligned}
 a^2 &= b^2 + c^2 \\
 a^2 &= 0.98^2 + 0.78^2 \\
 a^2 &= 1.5688 \\
 a &= 1.2525\text{m}
 \end{aligned}$$

Yes it will fit, corner to corner

5. The diagram shows a small cylinder, with radius 350cm and 80cm height. Points A and B are diagonally opposite to each other. Calculate the length AB in metres. Give your answer correct to 2 decimal places. (3 marks)



length AB
7.05m



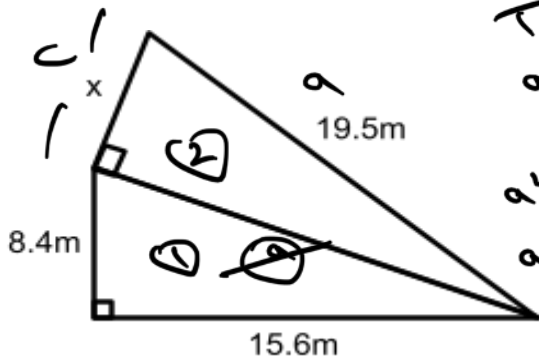
$$\begin{aligned}
 a^2 &= b^2 + c^2 \\
 &= 80^2 + 700^2 \\
 a^2 &= 49.64 \\
 a &= 7.04556
 \end{aligned}$$

QT Pythagoras

Calculator



6. The diagram shows two right angled triangles. Work out the size of length x , giving your answer correct to 3 significant figures. (4 marks)

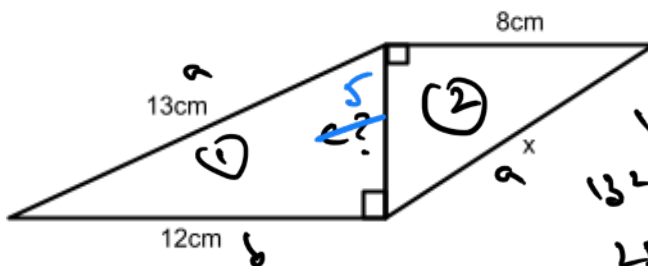


Triangle 1
 $a^2 = b^2 + c^2$
 $= 8.4^2 + 15.6^2$
 $a^2 = 313.92$ (b)
 $a = \underline{\underline{17.7177}}$

Triangle 2
 $a^2 = b^2 + c^2$
 $19.5^2 = 313.92 + c^2$
 $19.5^2 - 313.92 = c^2$
 $66.33 = c^2$
 $8.144 = c$

length $x = \underline{\underline{8.14}}$ (3sf)

7. The diagram shows two right angled triangles. Work out the length x . Give your answer correct to 1 decimal place. (4 marks)

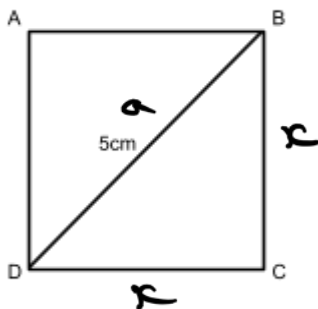


Triangle (1)
 $a^2 = b^2 + c^2$
 $13^2 = 12^2 + c^2$
 $13^2 - 12^2 = c^2$
 $25 = c^2$
 $5 = c$

Triangle 2
 $a^2 = b^2 + c^2$
 $= 5^2 + 8^2$
 $= 25 + 64$
 $a^2 = 89$
 $a = 9.43398$

$x = \underline{\underline{9.43}}$ cm (3sf)

8. The shape ABCD is a square, with a diagonal of 5cm, as shown in the diagram. Work out the perimeter of the square. Give your answer correct to 3 significant figures. (4 marks)



$a^2 = b^2 + c^2$
 $5^2 = p^2 + p^2$
 $25 = 2p^2$
 $12.5 = p^2$
 $3.5355 = p$

Perimeter = $4p$
 $= 14.142135$
 Perimeter
 $\underline{\underline{14.1}}$ cm (3sf)