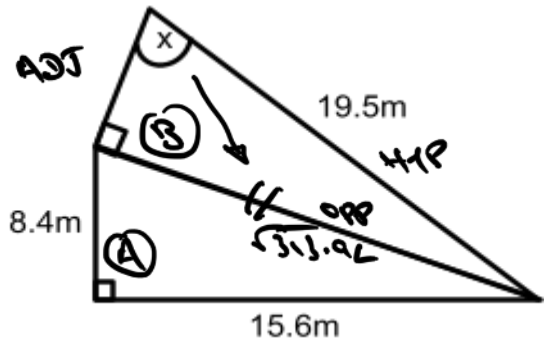
QT Combined Pythagoras & SohCahToa

Calculator

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



(A) $a^2 = b^2 + c^2$

$= 8.4^2 + 15.6^2$

$a = \sqrt{313.92} = 17.717285762...$

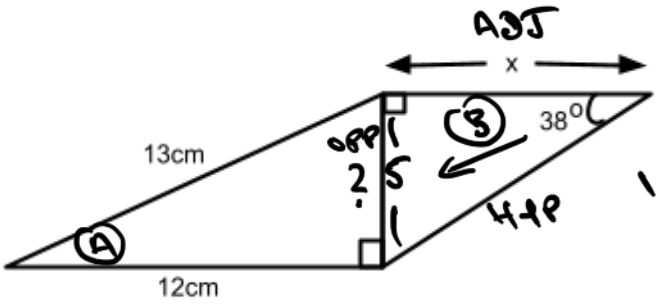
(S) SOH CAH TOA

$\sin x = \frac{OPP}{HYP} = \frac{\sqrt{313.92}}{19.5}$

$\sin^{-1}\left(\frac{\sqrt{313.92}}{19.5}\right) = 65.3132...$

$= 65.3°$ (3 sf)

2. The diagram shows two right angled triangles. Work out the value of x. Give your answer correct to 1 decimal place. (3 marks)



(A) $a^2 = b^2 + c^2$

$13^2 = b^2 + 12^2$

$13^2 - 12^2 = b^2$

$25 = b^2$

$5 = b$

(S) SOH CAH TOA

$\tan 38° = \frac{OPP}{ADJ}$ $\tan 38° = \frac{5}{ADJ}$ $ADJ = \frac{5}{\tan 38°}$

$= 6.3997...cm$

$x = 6.4 cm$

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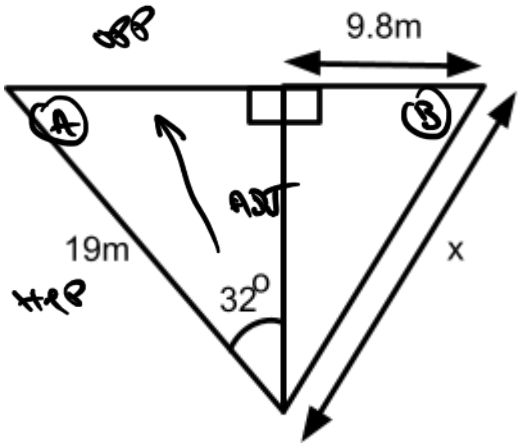
3. The diagram shows two right angled triangles. Work out the value of side x. Give your answer correct to 1 decimal place. (3 marks)



(A) SOH CAH TOA

$\cos 32° = \frac{ADJ}{19}$

$16.1129 = ADJ$

(B) $a^2 = b^2 + c^2$

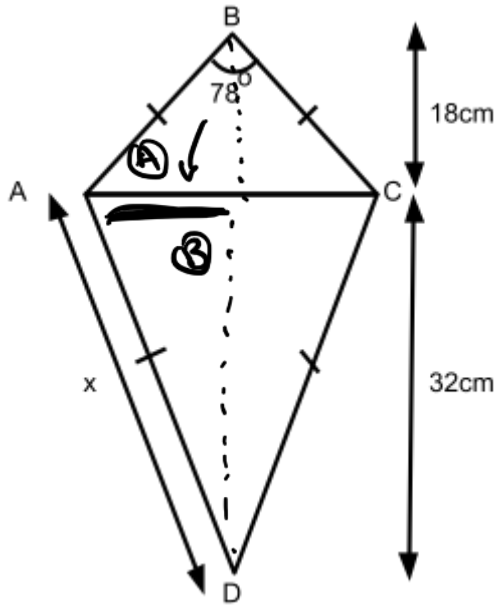
$= ANS^2 + 9.8^2$

$= 355.665992$

$x = 18.859$

$x = 18.9\text{m}$ (1dp)

4. ABCD is a kite. Find the length AD. Give your answer to 3 significant figures. (3 marks)



(A) SOH CAH TOA

$\tan 39° = \frac{OPP}{18}$

$14.5761126 = OPP$

(B) $a^2 = b^2 + c^2$

$= ANS^2 + 32^2$

$a^2 = 1236.463058$

$x = 35.16337$

$x = 35.2\text{cm}$ (3sf)

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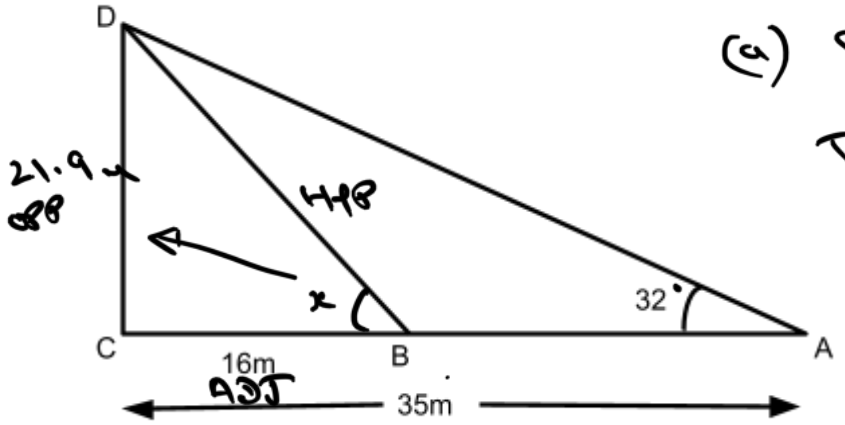
5. The diagram shows a swimming pool water slide AD, with a supporting metal line DB and ladder DC. The angle of the slide is 32°, points ABC are in a straight line on the ground, DC is vertical.

(a) Work out the height of ladder DC in metres. Give your answer correct to 3 significant figures. (2 marks)

(b) Work out the length of the water slide AD. Give your answer correct to 3 significant figures. (2 marks)

(c) Work out the size of the angle of elevation of D from B. Give your answer correct to 3 significant figures. (2 marks)



(a) SOH CAH TOA

$\tan 32° = \frac{OPP}{35}$

$21.8704 = OPP$

DC = 21.9 m (3 sf)

(b) $a^2 = b^2 + c^2$

$= ANS^2 + 35^2$

$= 1703.31559$

(AD) $= 41.3$ m (3 sf)

(c) SOH CAH TOA

$\tan x = \frac{OPP}{ADJ} = \left(\frac{ANS}{16}\right)$

$\tan^{-1}\left(\frac{ANS}{16}\right) = 53.8°$ (3 sf)

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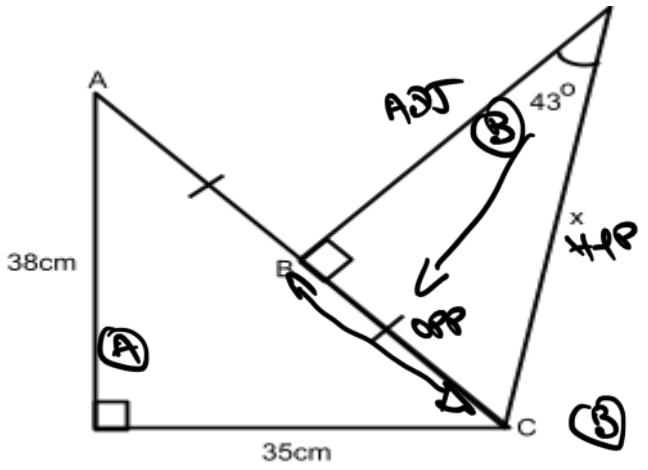
6. The diagram shows two right angled triangles.
Length AB = length BC
Work out the value of side x.
Give your answer correct to 1 decimal place. (3 marks)



(A) $a^2 = b^2 + c^2$

$= 38^2 + 35^2$

$= 2669$

$AC = a = \sqrt{51.662365741}$

(B) SOH CAH TOA

$\sin 43° = \frac{OPP}{HYP} = \frac{\frac{1}{2}(ANC)}{HYP}$

$\sin 43° = \frac{\frac{1}{2}(ANC)}{HYP}$

$HYP = \frac{\frac{1}{2}(ANC)}{\sin 43°} = 37.475725...$

$= 37.9\ cm\ (1dp)$