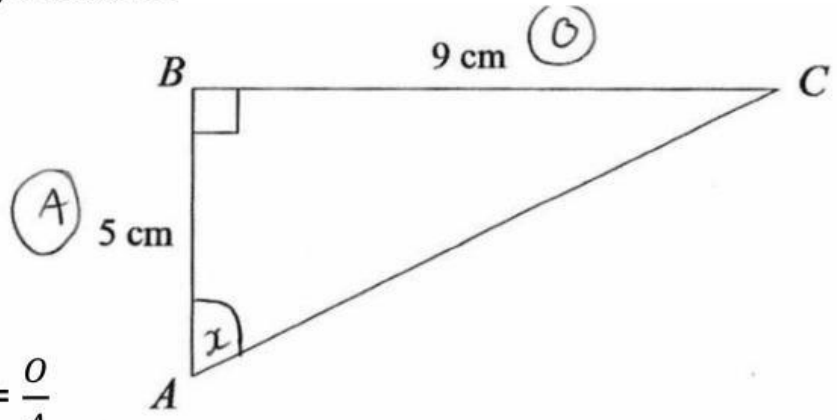
Trigonometry with right-angled triangles: SOH CAH TOA

Notes:

- Sometimes questions may mention something like ∠PQR:
  - This just means the angle found between lines PQ and QR
  - Essentially the angle at point Q because it is the middle letter in the 3 letters.
- Remember that if your unknown is an angle which you need to find, then you use the inverse trig function:
  - Eg if you have:



$\tan(x) = \frac{O}{A}$

1. functions have inputs and outputs
2. tan is a function
3. the input is x, so that tan(input) = output
4. the output is $\frac{O}{A}$
5. To inverse, simply swap the inputs and outputs,

So $\tan(x) = \frac{O}{A}$ ➔ $\tan^{-1}(\frac{O}{A}) = x$,

hence

Calculate the size of angle *BAC*.

$$\tan x = \frac{9}{5}$$

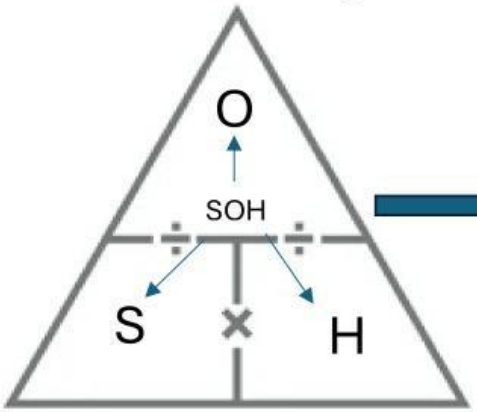
$$x = \tan^{-1}\left(\frac{9}{5}\right)$$

$$= 60.9 \text{ (1dp)}$$

LIVEWORKSHEETS

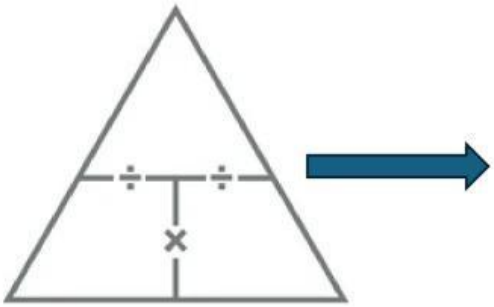
- You can use the above phrase (SOH CAH TOA) to come up with the trigonometry formulae pyramids: The middle letter always goes on the top, and the left and right letters act as the base
- So:

Formula triangle | Original Formula

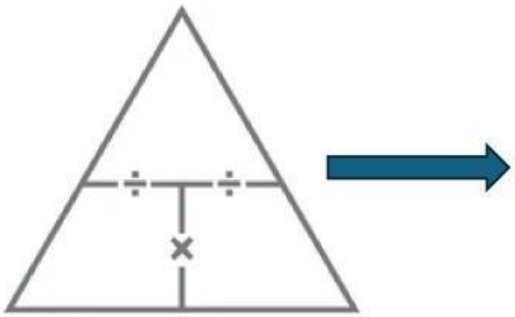


$$\sin x = \frac{o}{h}$$

1. Hence, draw the remaining two formula pyramids, as well as the original formula:



$=$ _____

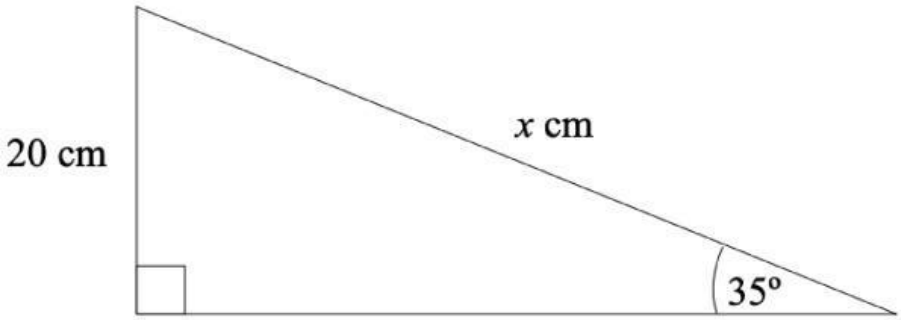


$=$ _____

tan(x)	cos(x)	O	H	A	A

LIVEWORKSHEETS

2.

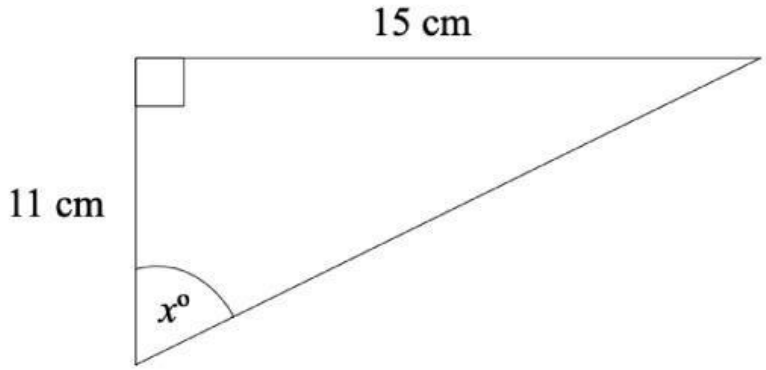


Work out the value of x.

(2 marks)

x = _____cm

3.



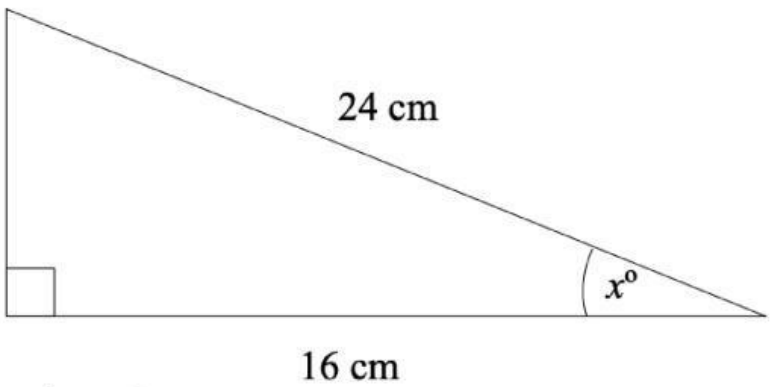
Work out the value of x.

(2 marks)

x = _____°

LIVEWORKSHEETS

4.

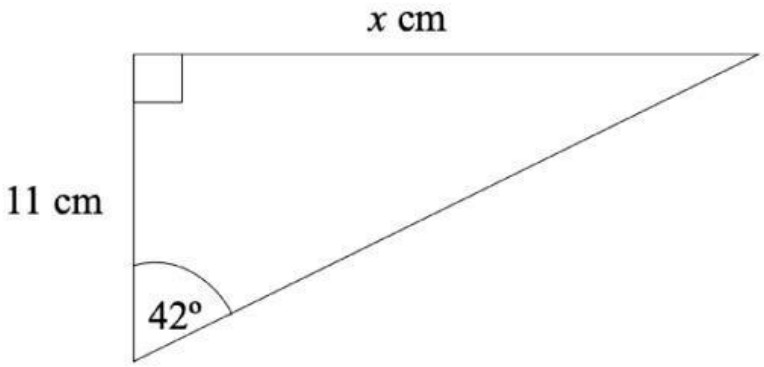


Work out the value of x.

(2 marks)

x = _____°

5.



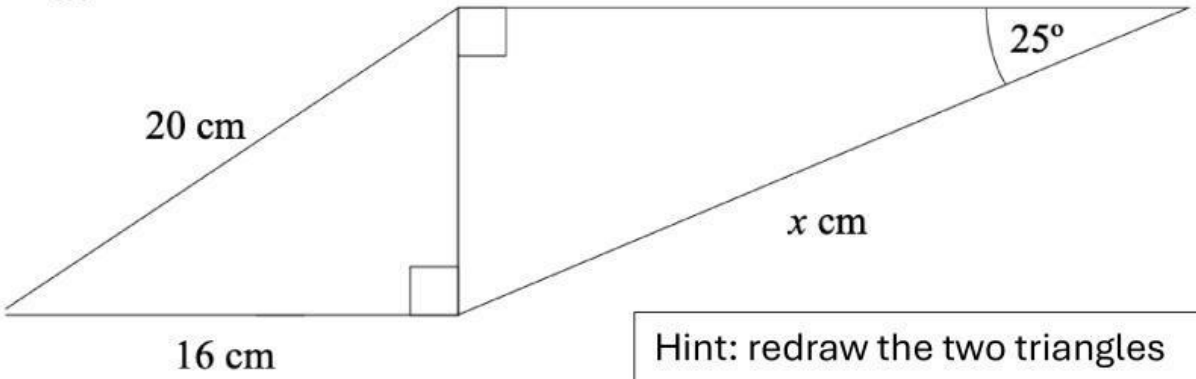
Work out the value of x.

(2 marks)

x = _____cm

LIVEWORKSHEETS

6.



Hint: redraw the two triangles separately and note down the side that they both have in common

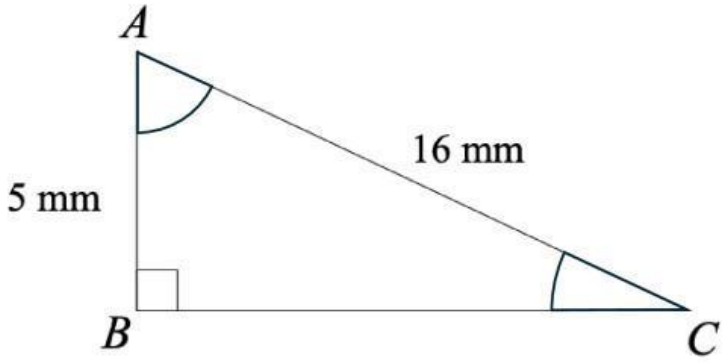
Work out the value of x.
Give your answer to 1 decimal place.

(4 marks)

x = _____cm

LIVEWORKSHEETS

7.



a) Identify where angle BAC is on the diagram, and drag and drop the following theta symbol into the correct corner of the triangle above: θ

b) Now find ∠BAC:

∠BAC = _____°

LIVEWORKSHEETS