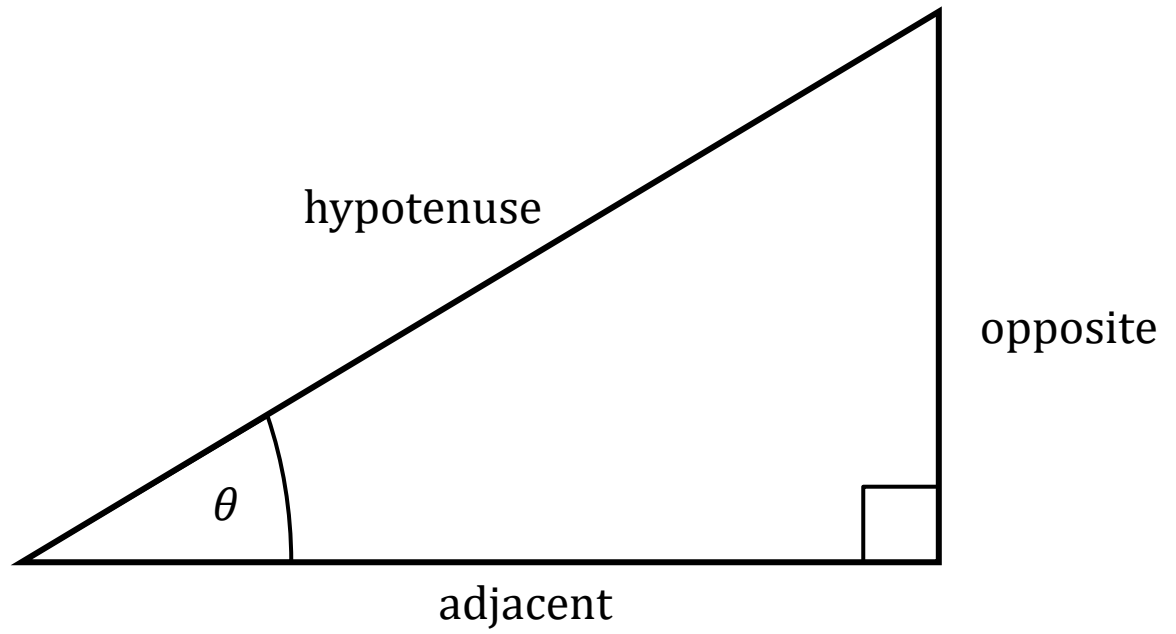
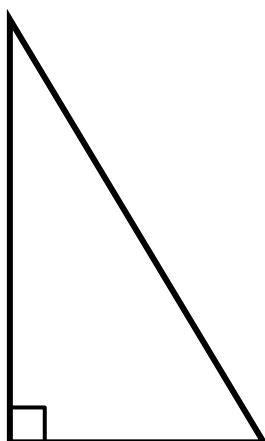
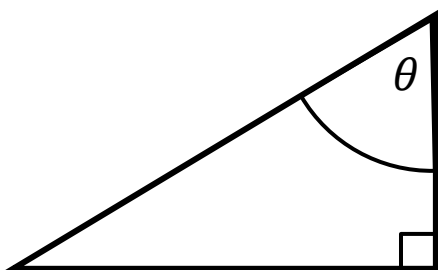
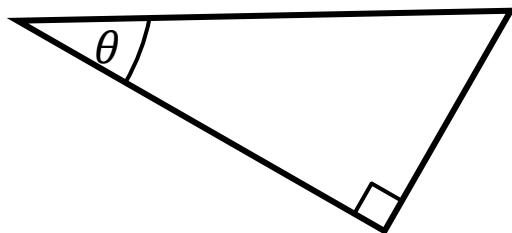
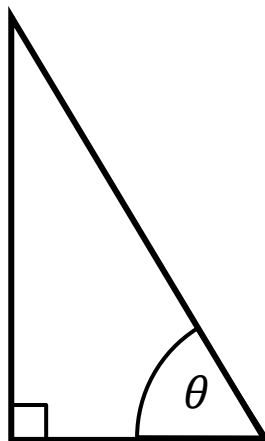
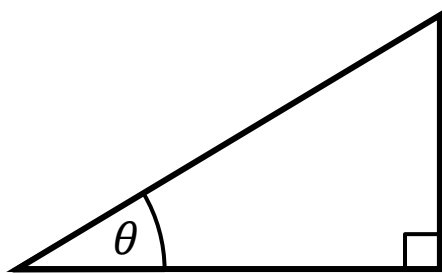


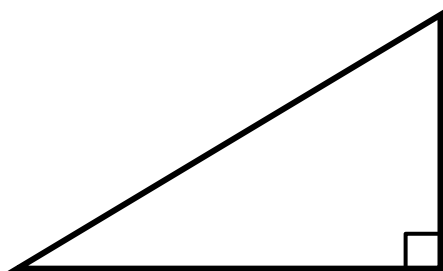
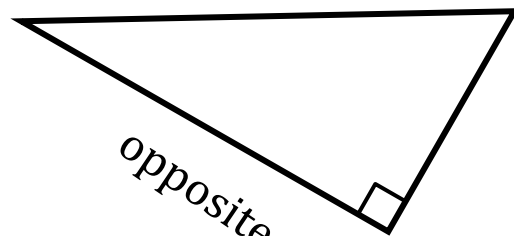
LABELLING RIGHT ANGLES TRIANGLES



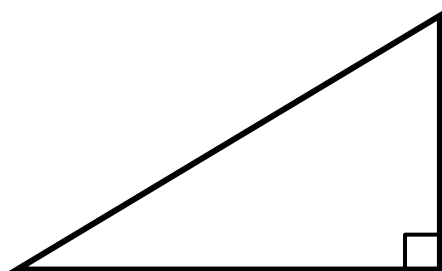
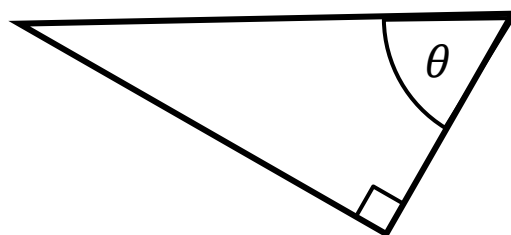
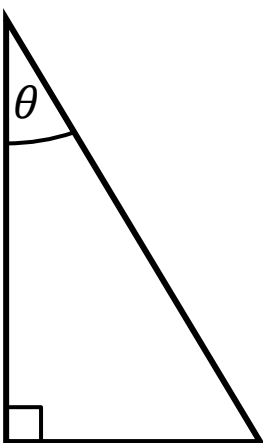
TASK: In each of these triangles label the opposite, adjacent, hypotenuse and the angle θ



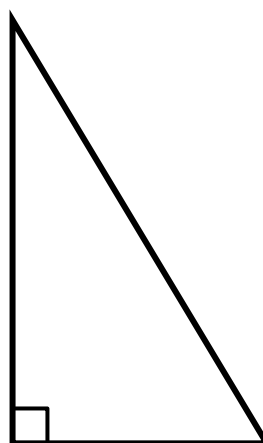
opposite



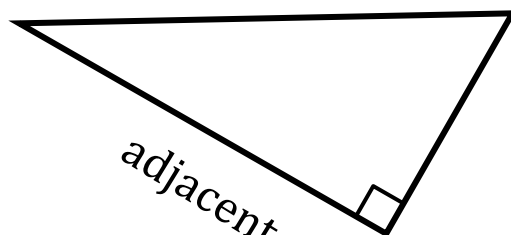
opposite



adjacent



adjacent



TASK: Use Pythagoras' Theorem to complete this table of side ratios

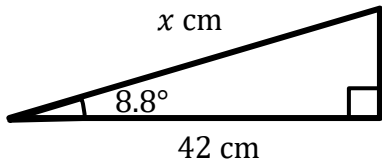
Angle (θ) rounded to 1d.p	$\frac{\text{opp}}{\text{hyp}}$	$\frac{\text{adj}}{\text{hyp}}$	$\frac{\text{opp}}{\text{adj}}$
8.8°	$\frac{13}{85}$		
10.4°	$\frac{11}{61}$		
11.4°		$\frac{99}{101}$	
12.7°		$\frac{40}{41}$	
14.3°			$\frac{16}{63}$
16.3°			$\frac{7}{24}$
18.9°	$\frac{12}{37}$		
22.6°	$\frac{5}{13}$		
25.1°		$\frac{77}{85}$	
26.0°		$\frac{80}{89}$	
28.1°			$\frac{8}{15}$
30°			$\frac{\sqrt{3}}{3}$
30.5°	$\frac{33}{65}$		
31.9°	$\frac{28}{53}$		
33.4°		$\frac{91}{109}$	
36.9°		$\frac{4}{5}$	
41.1°			$\frac{48}{55}$
42.1°			$\frac{65}{72}$
43.6°	$\frac{20}{29}$		
45°	$\frac{\sqrt{2}}{2}$		

TABLE OF SIDE RATIOS

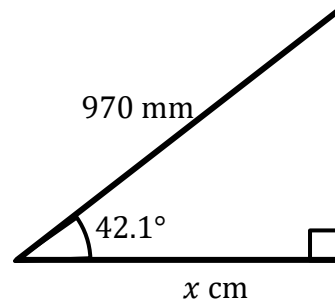
Angle (θ) rounded to 1d.p	$\frac{\text{opp}}{\text{hyp}}$	$\frac{\text{adj}}{\text{hyp}}$	$\frac{\text{opp}}{\text{adj}}$
8.8°	$\frac{13}{85}$	$\frac{84}{85}$	$\frac{13}{84}$
10.4°	$\frac{11}{61}$	$\frac{60}{61}$	$\frac{11}{60}$
11.4°	$\frac{20}{101}$	$\frac{99}{101}$	$\frac{20}{99}$
12.7°	$\frac{9}{41}$	$\frac{40}{41}$	$\frac{9}{40}$
14.3°	$\frac{16}{65}$	$\frac{63}{65}$	$\frac{16}{63}$
16.3°	$\frac{7}{25}$	$\frac{24}{25}$	$\frac{7}{24}$
18.9°	$\frac{12}{37}$	$\frac{35}{37}$	$\frac{12}{35}$
22.6°	$\frac{5}{13}$	$\frac{12}{13}$	$\frac{5}{12}$
25.1°	$\frac{36}{85}$	$\frac{77}{85}$	$\frac{36}{77}$
26.0°	$\frac{39}{89}$	$\frac{80}{89}$	$\frac{39}{80}$
28.1°	$\frac{8}{17}$	$\frac{15}{17}$	$\frac{8}{15}$
30°	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{3}}{3}$
30.5°	$\frac{33}{65}$	$\frac{56}{65}$	$\frac{33}{56}$
31.9°	$\frac{28}{53}$	$\frac{45}{53}$	$\frac{28}{45}$
33.4°	$\frac{60}{109}$	$\frac{91}{109}$	$\frac{60}{91}$
36.9°	$\frac{3}{5}$	$\frac{4}{5}$	$\frac{3}{4}$
41.1°	$\frac{48}{73}$	$\frac{55}{73}$	$\frac{48}{55}$
42.1°	$\frac{65}{97}$	$\frac{72}{97}$	$\frac{65}{72}$
43.6°	$\frac{20}{29}$	$\frac{21}{29}$	$\frac{20}{21}$
45°	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{2}}{2}$	1

TASK: Using the table of side ratios, find the lettered sides and angles.

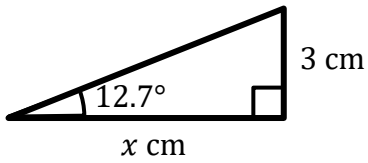
1



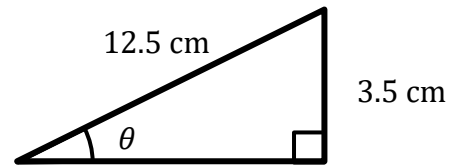
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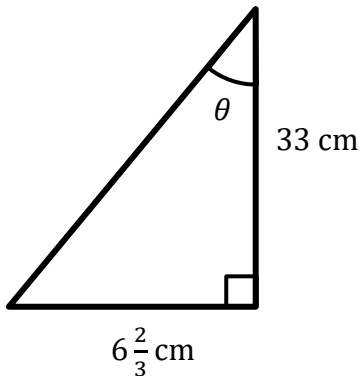
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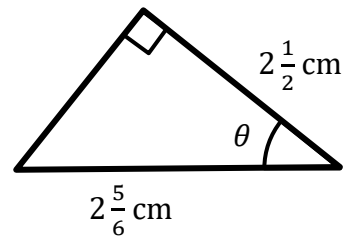
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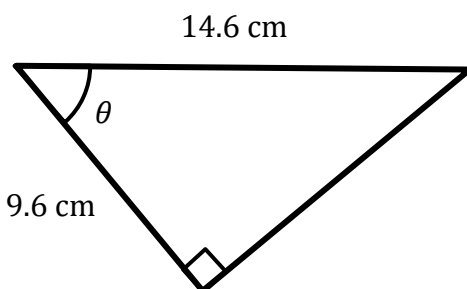
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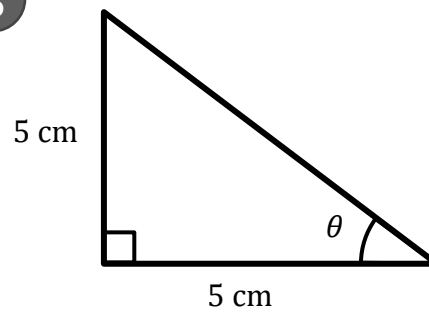
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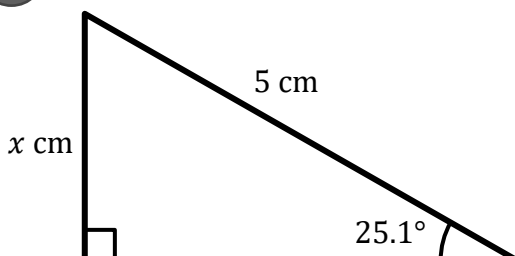
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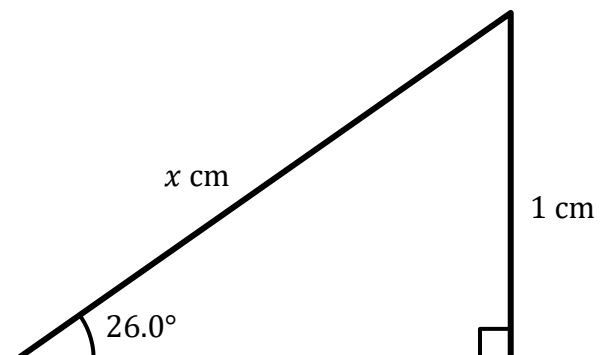
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9

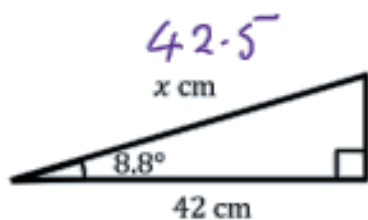


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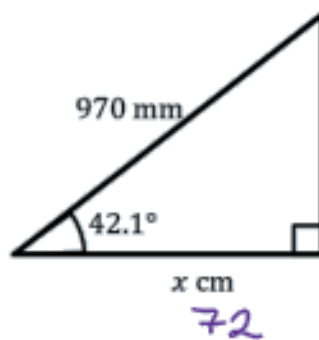


TASK 1: Using the table of side ratios, find the lettered sides and angles.

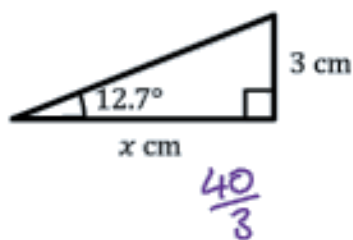
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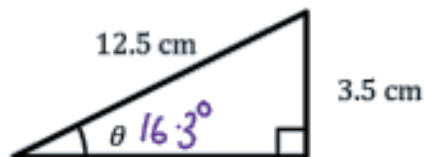
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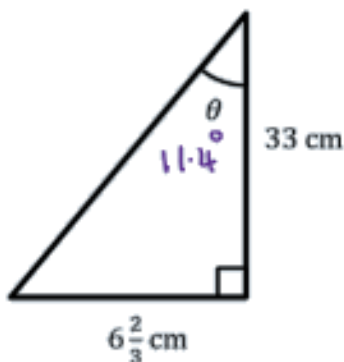
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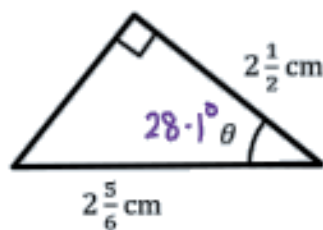
4



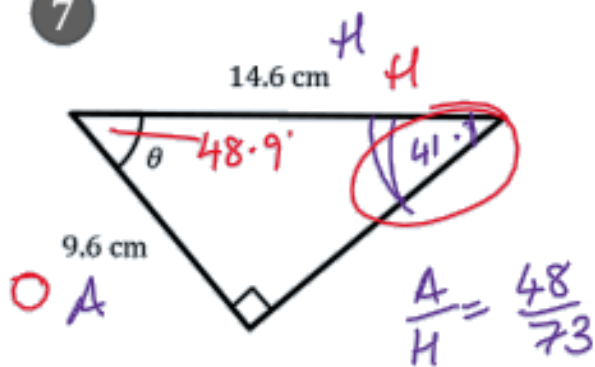
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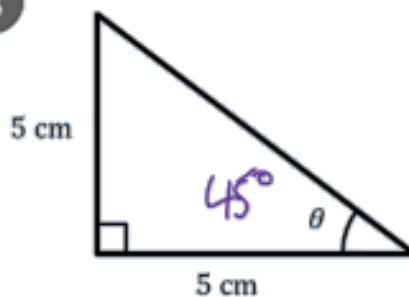
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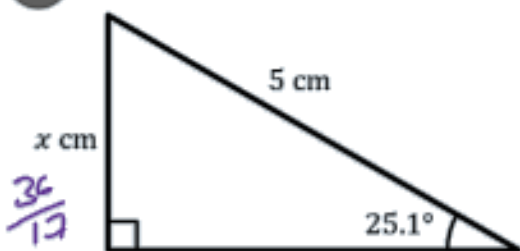
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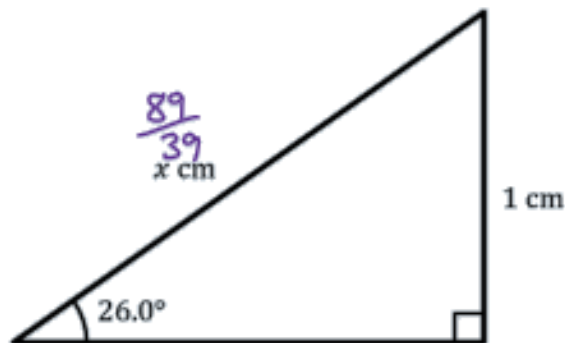
8



9

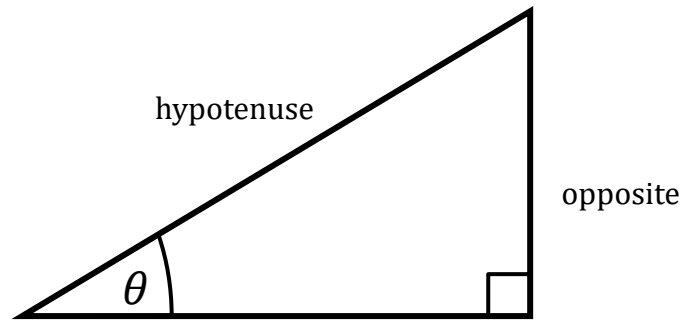


10

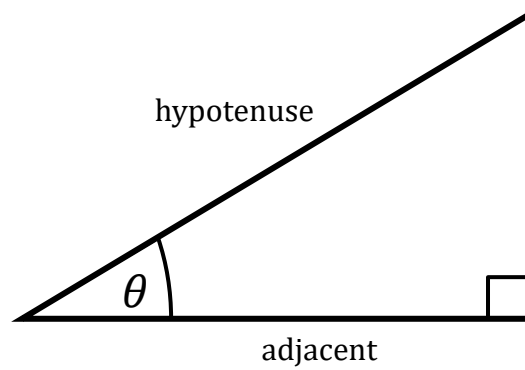


TRIGONOMETRIC RATIOS

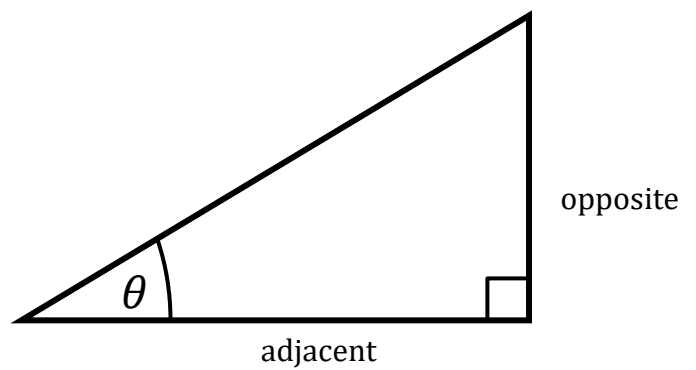
$$\sin \theta = \frac{\text{opposite}}{\text{hypotenuse}}$$



$$\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$$

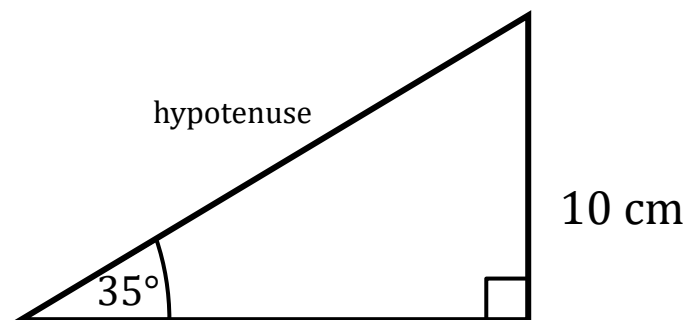
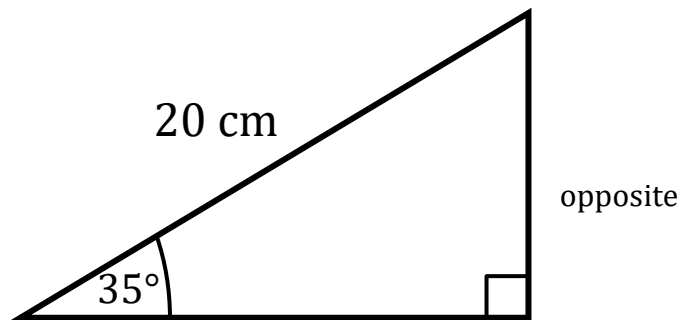
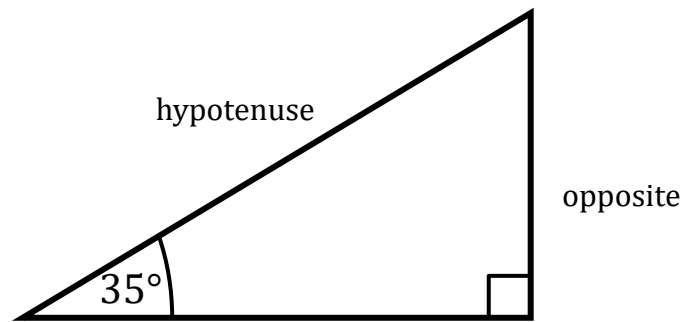


$$\tan \theta = \frac{\text{opposite}}{\text{adjacent}}$$



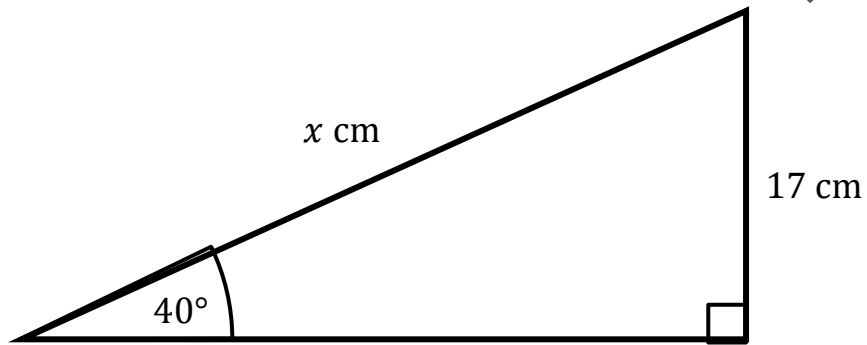
TASK

$$\sin 35^\circ = 0.5736$$



Veronica has answered this question **correctly**

Find the length of x



$$\sin 40^\circ = \frac{17}{x}$$

$$x(\sin 40^\circ) = 17$$

$$x = \frac{17}{\sin 40^\circ}$$

$$= \underline{\underline{26.4 \text{ cm}}}$$

Study the solution carefully and answer these questions.



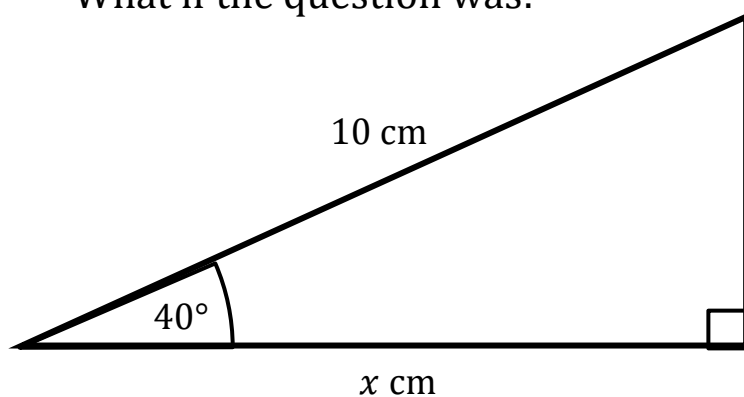
(1) How does Veronica know to use the sine ratio?

(2) Veronica's friend types $17(\sin 40^\circ)$ into their calculator and gets the answer:

10.9 cm

Explain how they can tell they have made a mistake.

(3) What if the question was:

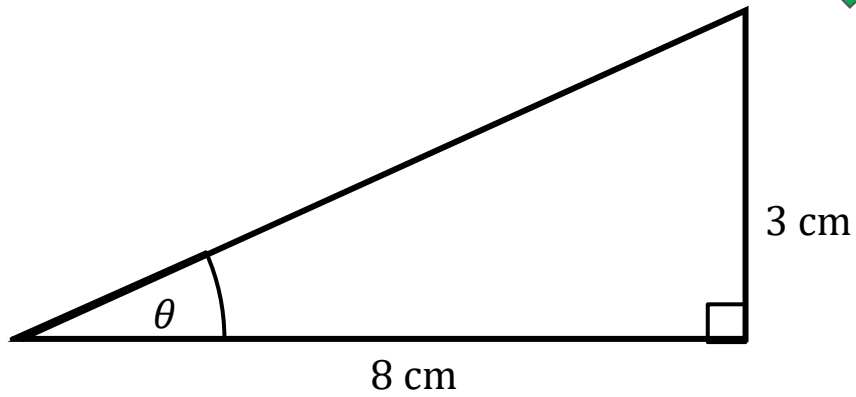


(a) Which trigonometric ratio would you use?

(b) What would your working look like?

Jordan has answered this question **correctly**

Find the length of x



$$\tan \theta = \frac{3}{8}$$

$$\theta = \tan^{-1}\left(\frac{3}{8}\right)$$

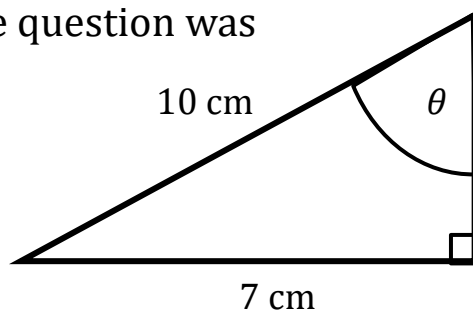
$$\theta = \underline{\underline{20.6^\circ}}$$

Study the solution carefully and answer these questions.



- (1) How does Jordan know to use the tangent ratio?
- (2) Jordan's friend has their calculator in the wrong mode. They get an answer of 0.359. Explain how they can tell they have a wrong answer.
- (3) (a) What mode should their calculator be in?
(b) How can they check this?
(c) What keys should they press to put it in the correct mode?

- (4) What if the question was



What would your first line of working look like?

TASK

$$\sin \theta = \frac{5}{13}$$

Label the triangle and find all the missing sides and angles

