Sin, cos or tan?

Right-angled triangles. Give lengths to 3 significant figures and angles to 1 decimal place.

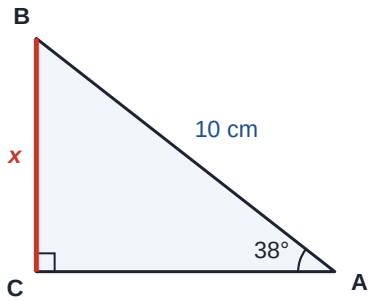
Name _____

Date _____

Part A: one of each

Each question tells you which ratio to use. Diagrams are not drawn accurately.

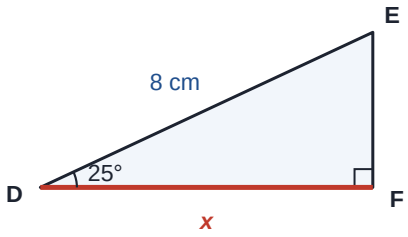
1 SIN: FIND A SIDE



Find the length x.

Answer: _____

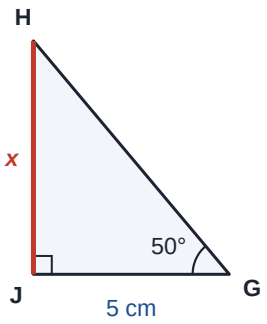
2 COS: FIND A SIDE



Find the length x.

Answer: _____

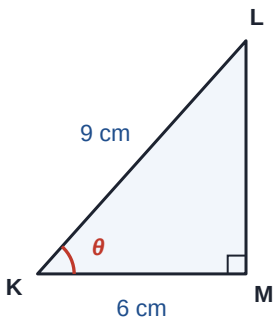
3 TAN: FIND A SIDE



Find the length x.

Answer: _____

4 COS: FIND AN ANGLE



Find the angle θ.

Answer: _____

Part B: you decide

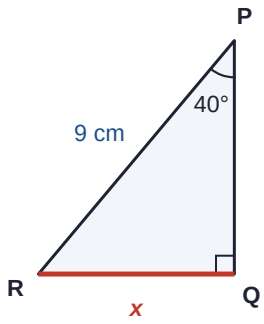
sin (SOH) $\sin\theta = \dfrac{\text{opp}}{\text{hyp}}$
The two sides in the question are the opposite and the hypotenuse.

cos (CAH) $\cos\theta = \dfrac{\text{adj}}{\text{hyp}}$
The two sides are the adjacent and the hypotenuse.

tan (TOA) $\tan\theta = \dfrac{\text{opp}}{\text{adj}}$
The two sides are the opposite and the adjacent. No hypotenuse.

Label the sides from the marked angle first: hyp, opp, adj. Then tick the ratio you need and work out the answer. Each answer matches a letter in the code table. The letters from questions 1 to 8, in order, spell a word.

1

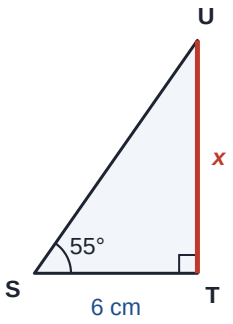


Find x.

Which method? ☐ sin ☐ cos ☐ tan

Answer: _____ Letter: ___

2

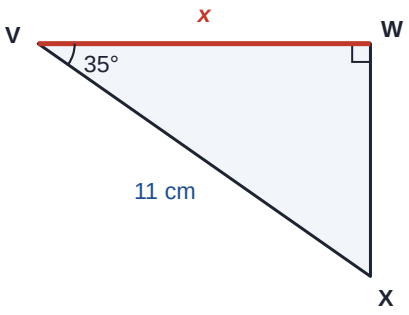


Find x.

Which method? ☐ sin ☐ cos ☐ tan

Answer: _____ Letter: ___

3

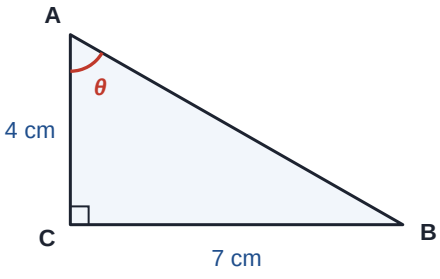


Find x.

Which method? ☐ sin ☐ cos ☐ tan

Answer: _____ Letter: ___

4

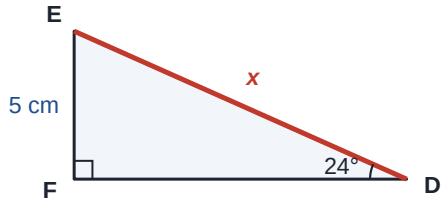


Find θ.

Which method? ☐ sin ☐ cos ☐ tan

Answer: _____ Letter: ___

5

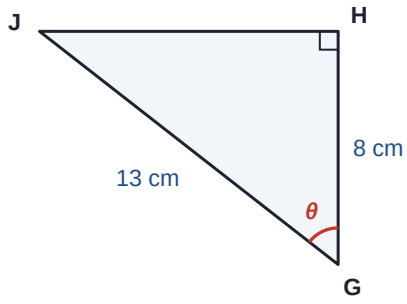


Find x.

Which method? ☐ sin ☐ cos ☐ tan

Answer: _____ Letter: ___

6

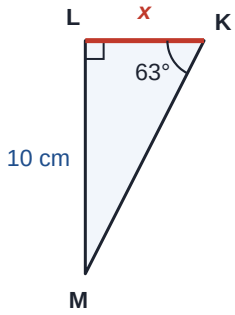


Find θ.

Which method? ☐ sin ☐ cos ☐ tan

Answer: _____ Letter: ___

7

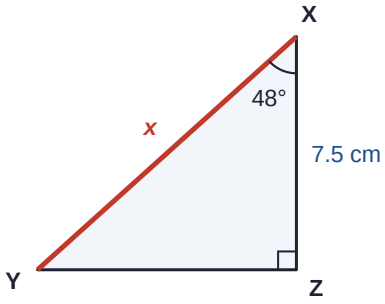


Find x.

Which method? ☐ sin ☐ cos ☐ tan

Answer: _____ Letter: ___

8



Find x.

Which method? ☐ sin ☐ cos ☐ tan

Answer: _____ Letter: ___

2.03	4.91	5.02	5.10	5.79	6.31	6.89	8.57	9.01	11.2	12.3	19.6	29.7	38.0	52.0	60.3
Q	**V**	**P**	**G**	**B**	**K**	**X**	**E**	**A**	**S**	**I**	**U**	**T**	**Y**	**N**	**R**

1 2 3 4 5 6 7 8

Answers

Part A

1. $\sin 38^\circ = \dfrac{x}{10} \Rightarrow x = 10 \sin 38^\circ = 6.16$ cm

2. $\cos 25^\circ = \dfrac{x}{8} \Rightarrow x = 8 \cos 25^\circ = 7.25$ cm

3. $\tan 50^\circ = \dfrac{x}{5} \Rightarrow x = 5 \tan 50^\circ = 5.96$ cm

4. $\cos \theta = \dfrac{6}{9} \Rightarrow \theta = \cos^{-1}\left(\dfrac{6}{9}\right) = 48.2^\circ$

Part B

1. sin. Opp and hyp: $x = 9 \sin 40^\circ = 5.79$ cm → **B**

2. tan. Opp and adj: $x = 6 \tan 55^\circ = 8.57$ cm → **E**

3. cos. Adj and hyp: $x = 11 \cos 35^\circ = 9.01$ cm → **A**

4. tan. Opp and adj: $\tan \theta = \dfrac{7}{4} \Rightarrow \theta = 60.3^\circ$ → **R**

5. sin. Opp and hyp: $\sin 24^\circ = \dfrac{5}{x} \Rightarrow x = \dfrac{5}{\sin 24^\circ} = 12.3$ cm → **I**

6. cos. Adj and hyp: $\cos \theta = \dfrac{8}{13} \Rightarrow \theta = 52.0^\circ$ → **N**

7. tan. Opp and adj: $\tan 63^\circ = \dfrac{10}{x} \Rightarrow x = \dfrac{10}{\tan 63^\circ} = 5.10$ cm → **G**

8. cos. Adj and hyp: $\cos 48^\circ = \dfrac{7.5}{x} \Rightarrow x = \dfrac{7.5}{\cos 48^\circ} = 11.2$ cm → **S**

The word is **BEARINGS**. The other letters come from using the wrong ratio (questions 1, 2, 3 and 6), turning a fraction upside down in question 4, or multiplying when the unknown is on the bottom of the fraction (questions 5, 7 and 8).