

Using the Sine Rule to find missing sides – Solutions



Match each side with its opposite angle, then calculate accurately.

Name _____

Date _____

Diagram first

The measurements are in the diagrams. Circle a complete opposite pair, write the Sine Rule substitution, keep full calculator values, and round the final side to 1 decimal place.

Worked example A side of 11.5 cm is opposite 47° ; x is opposite 73° .



$$\frac{x}{\sin 73^\circ} = \frac{11.5}{\sin 47^\circ}$$

$$x = \frac{11.5 \sin 73^\circ}{\sin 47^\circ} = 15.0 \text{ cm (1 d.p.)}$$

Check: the larger angle is opposite the longer side.

1. Find x to 1 d.p.



Solution

$$x = 6.4 \frac{\sin 68^\circ}{\sin 44^\circ}$$

$$x = 8.5 \text{ cm}$$

2. Find x to 1 d.p.

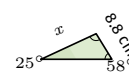


Solution

$$x = 10.5 \frac{\sin 44^\circ}{\sin 68^\circ}$$

$$x = 7.9 \text{ cm}$$

3. Find x to 1 d.p.



Solution

$$x = 8.8 \frac{\sin 58^\circ}{\sin 25^\circ}$$

$$x = 17.7 \text{ cm}$$

4. Find x to 1 d.p.



Solution

$$x = 16.2 \frac{\sin 58^\circ}{\sin 97^\circ}$$

$$x = 13.8 \text{ cm}$$

5. Find x to 1 d.p.

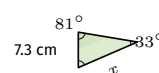


Solution

$$x = 12.5 \frac{\sin 67^\circ}{\sin 81^\circ}$$

$$x = 11.6 \text{ cm}$$

6. Find x to 1 d.p.

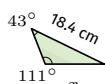


Solution

$$x = 7.3 \frac{\sin 81^\circ}{\sin 33^\circ}$$

$$x = 13.2 \text{ cm}$$

7. Find x to 1 d.p.

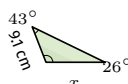


Solution

$$x = 18.4 \frac{\sin 43^\circ}{\sin 111^\circ}$$

$$x = 13.4 \text{ cm}$$

8. Find x to 1 d.p.

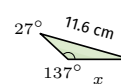


Solution

$$x = 9.1 \frac{\sin 43^\circ}{\sin 26^\circ}$$

$$x = 14.2 \text{ cm}$$

9. Find x to 1 d.p.



Solution

$$x = 11.6 \frac{\sin 27^\circ}{\sin 137^\circ}$$

$$x = 7.7 \text{ cm}$$

Using the Sine Rule to find missing sides – Solutions



Apply the same opposite-pair method to a wider mix of triangles.

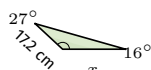
Name _____

Date _____

Reasonableness check

After calculating, compare the two relevant angles: the side opposite the larger angle must be longer. Include units in every answer.

10. Find x to 1 d.p.

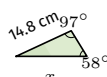


Solution

$$x = 17.2 \frac{\sin 27^\circ}{\sin 16^\circ}$$

$$x = 28.3 \text{ cm}$$

11. Find x to 1 d.p.

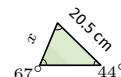


Solution

$$x = 14.8 \frac{\sin 97^\circ}{\sin 58^\circ}$$

$$x = 17.3 \text{ cm}$$

12. Find x to 1 d.p.

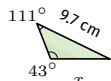


Solution

$$x = 20.5 \frac{\sin 44^\circ}{\sin 67^\circ}$$

$$x = 15.5 \text{ cm}$$

13. Find x to 1 d.p.

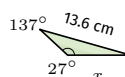


Solution

$$x = 9.7 \frac{\sin 111^\circ}{\sin 43^\circ}$$

$$x = 13.3 \text{ cm}$$

14. Find x to 1 d.p.



Solution

$$x = 13.6 \frac{\sin 137^\circ}{\sin 27^\circ}$$

$$x = 20.4 \text{ cm}$$

15. Find x to 1 d.p.

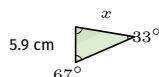


Solution

$$x = 22.5 \frac{\sin 44^\circ}{\sin 68^\circ}$$

$$x = 16.9 \text{ cm}$$

16. Find x to 1 d.p.

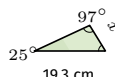


Solution

$$x = 5.9 \frac{\sin 67^\circ}{\sin 33^\circ}$$

$$x = 10.0 \text{ cm}$$

17. Find x to 1 d.p.

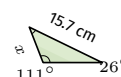


Solution

$$x = 19.3 \frac{\sin 25^\circ}{\sin 97^\circ}$$

$$x = 8.2 \text{ cm}$$

18. Find x to 1 d.p.



Solution

$$x = 15.7 \frac{\sin 26^\circ}{\sin 111^\circ}$$

$$x = 7.4 \text{ cm}$$