

Solutions: Using the Sine Rule to find missing angles



Match the opposite pair before checking the calculator work.

Name _____

Date _____

Method

$\sin x = (\text{side opposite } x) \times \frac{\sin(\text{known angle})}{\text{side opposite known angle}}$, then apply $\sin^{-1}$. Values are rounded only at the final step.

Worked example

Worked example from the student sheet.

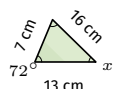


$$\sin x = \frac{11 \sin 69^\circ}{16}$$

$$x = \sin^{-1}\left(\frac{11 \sin 69^\circ}{16}\right) = 39.9^\circ.$$

Since $11 < 16$, $x < 69^\circ$ is reasonable.

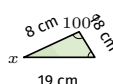
1. Name the side opposite x .



Solution

Opposite x : 7 cm.

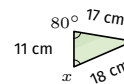
2. Name the side opposite x .



Solution

Opposite x : 18 cm.

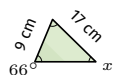
3. Name the side opposite x .



Solution

Opposite x : 17 cm.

4. Find x to 1 d.p.



Solution

$$\sin x = \frac{9 \sin 66^\circ}{17}; x = 28.9^\circ.$$

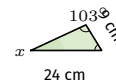
5. Find x to 1 d.p.



Solution

$$\sin x = \frac{13 \sin 75^\circ}{20}; x = 38.9^\circ.$$

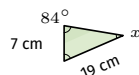
6. Find x to 1 d.p.



Solution

$$\sin x = \frac{9 \sin 103^\circ}{24}; x = 21.4^\circ.$$

7. Find x to 1 d.p.



Solution

$$\sin x = \frac{7 \sin 84^\circ}{19}; x = 21.5^\circ.$$

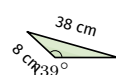
8. Find x to 1 d.p.



Solution

$$\sin x = \frac{9 \sin 115^\circ}{27}; x = 17.6^\circ.$$

9. Find x to 1 d.p.



Solution

$$\sin x = \frac{8 \sin 139^\circ}{38}; x = 7.9^\circ.$$

Solutions: Using the Sine Rule to find missing angles

Check inverse sine, angle sums, and side-angle order.



Name _____

Date _____

Reasonableness

Every direct comparison has the same order: the shorter displayed side faces the smaller angle. Remaining angles use the unrounded value of x .

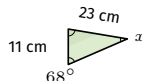
10. Find x to 1 d.p.



Solution

$$\sin x = \frac{17 \sin 95^\circ}{29}; x = 35.7^\circ.$$

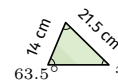
11. Find x to 1 d.p.



Solution

$$\sin x = \frac{11 \sin 68^\circ}{23}; x = 26.3^\circ.$$

12. Find x to 1 d.p.



Solution

$$\sin x = \frac{14 \sin 63.5^\circ}{21.5}; x = 35.6^\circ.$$

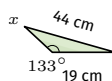
13. Find x to 1 d.p.



Solution

$$\sin x = \frac{16 \sin 119^\circ}{33}; x = 25.1^\circ.$$

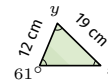
14. Find x to 1 d.p.



Solution

$$\sin x = \frac{19 \sin 133^\circ}{44}; x = 18.4^\circ.$$

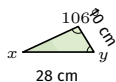
15. Find x and y to 1 d.p.



Solution

$$x = 33.5^\circ; y = 180^\circ - 61^\circ - x = 85.5^\circ.$$

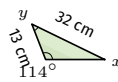
16. Find x and y to 1 d.p.



Solution

$$x = 20.1^\circ; y = 180^\circ - 106^\circ - x = 53.9^\circ.$$

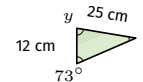
17. Find x and y to 1 d.p.



Solution

$$x = 21.8^\circ; y = 180^\circ - 114^\circ - x = 44.2^\circ.$$

18. Find x and y to 1 d.p.



Solution

$$x = 27.3^\circ; y = 180^\circ - 73^\circ - x = 79.7^\circ.$$