

# Using the Sine Rule to find missing angles

Read opposite pairs from each diagram, then calculate angles accurately.



Name \_\_\_\_\_

Date \_\_\_\_\_

## Diagram first

Circle the complete known side-angle pair. Match the side opposite  $x$ , write the Sine Rule substitution, isolate  $\sin x$ , and use inverse sine. Keep full calculator values and round final angles to 1 decimal place.

### Worked example

A side of 16 cm is opposite  $69^\circ$ ; a side of 11 cm is opposite  $x$ .



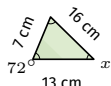
$$\frac{\sin x}{11} = \frac{\sin 69^\circ}{16}$$

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

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

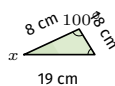
Check:  $11 < 16$ , so  $x < 69^\circ$ .

1. Name the side opposite  $x$ .



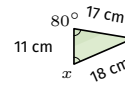
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2. Name the side opposite  $x$ .



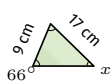
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3. Name the side opposite  $x$ .



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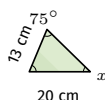
4. Find  $x$  to 1 d.p.



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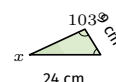
5. Find  $x$  to 1 d.p.



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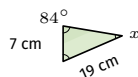
6. Find  $x$  to 1 d.p.



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7. Find  $x$  to 1 d.p.



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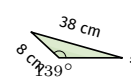
8. Find  $x$  to 1 d.p.



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9. Find  $x$  to 1 d.p.



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# Using the Sine Rule to find missing angles

Apply inverse sine, angle sums, and a reasonableness check.



Name \_\_\_\_\_

Date \_\_\_\_\_

## Finish and check

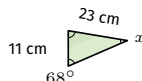
For questions 10–14, find  $x$ . For questions 15–18, find  $x$  first and use its unrounded value to calculate  $y$ . Check that the smaller angle is opposite the shorter side.

10. Find  $x$  to 1 d.p.



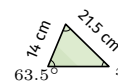
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11. Find  $x$  to 1 d.p.



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12. Find  $x$  to 1 d.p.



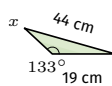
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13. Find  $x$  to 1 d.p.



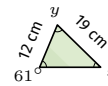
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14. Find  $x$  to 1 d.p.



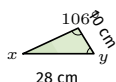
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15. Find  $x$  and  $y$  to 1 d.p.



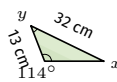
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16. Find  $x$  and  $y$  to 1 d.p.



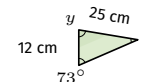
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17. Find  $x$  and  $y$  to 1 d.p.



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



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