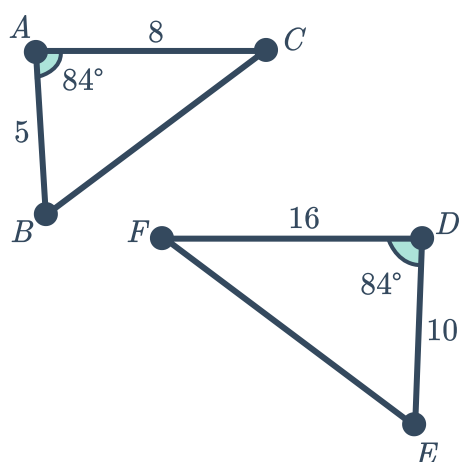


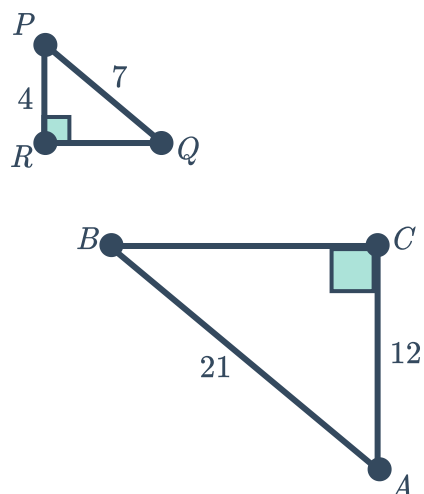
Similar triangles

- 1 State whether the following pairs of triangles are similar, and if so, state the similarity test to prove this.

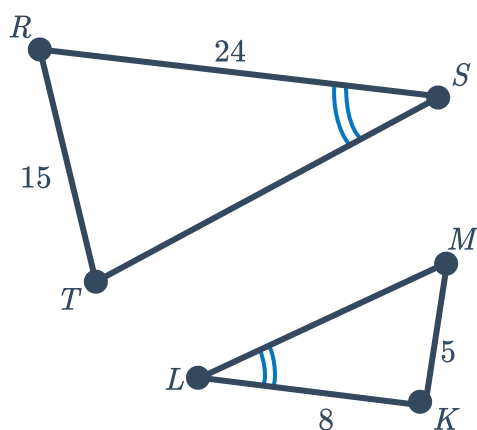
a



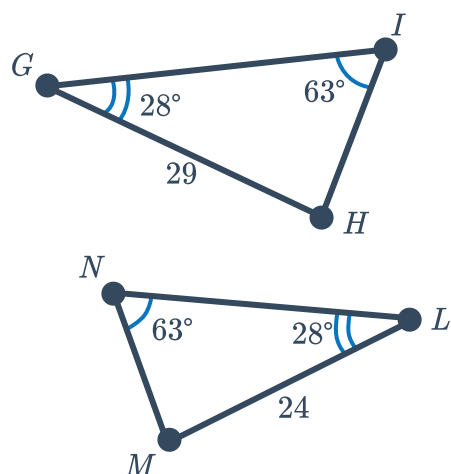
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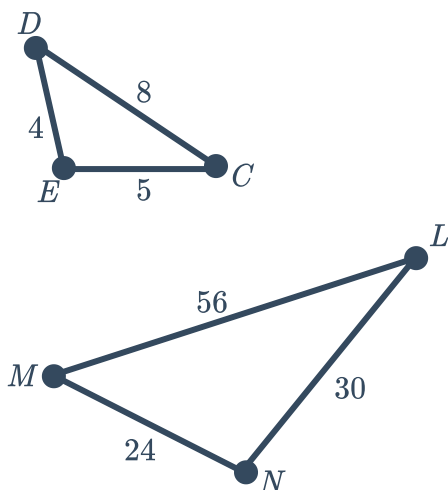
c



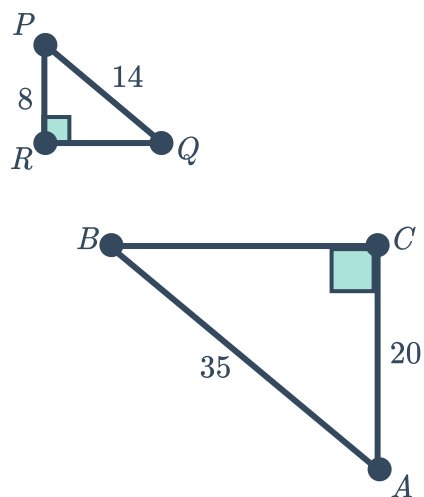
d



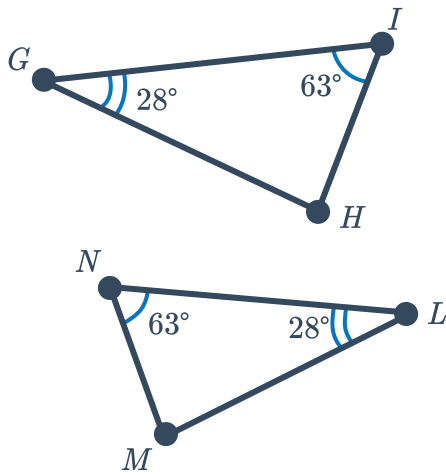
e



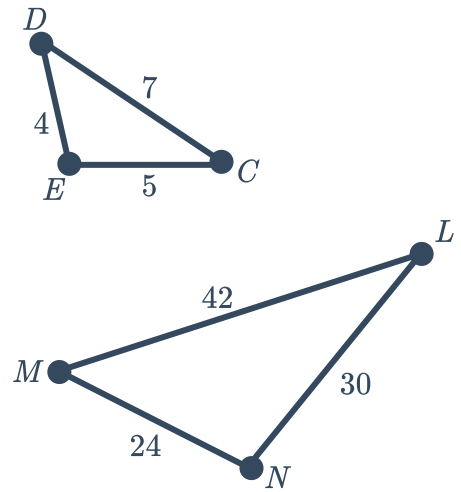
f



g



h

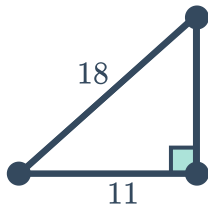


2 For each of the following sets of triangles:

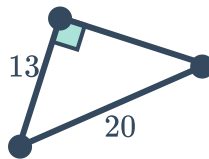
- Identify which two are similar.
- Identify the similarity test that the pair satisfy: AAA, SSS, SAS, or RHS.

a

A



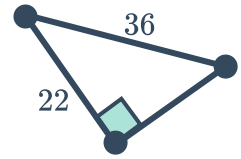
B



C



D

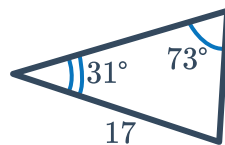


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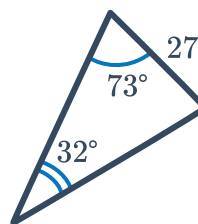
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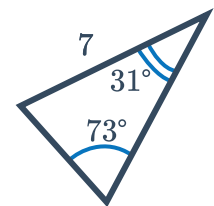
B



C

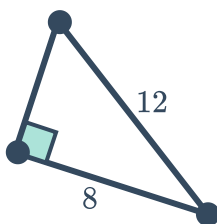


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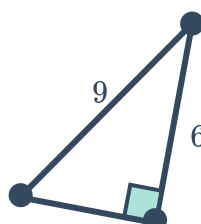


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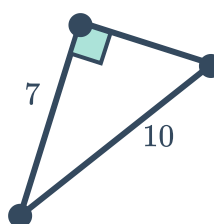
A



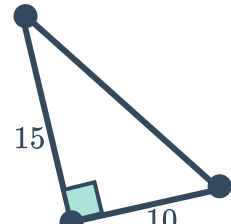
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C

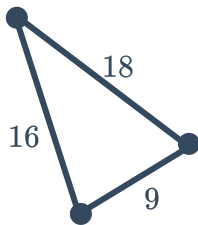


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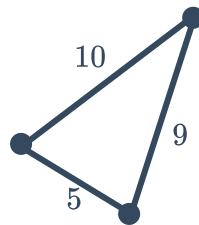


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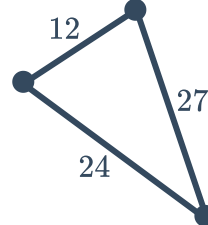
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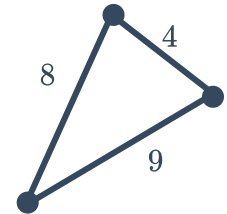
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C

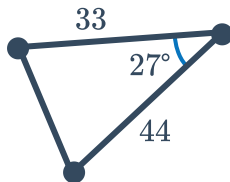


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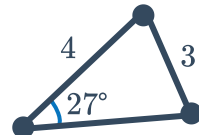


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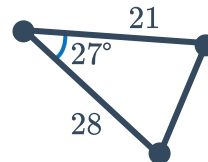
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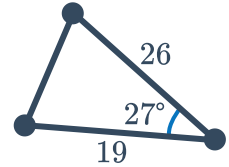
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C

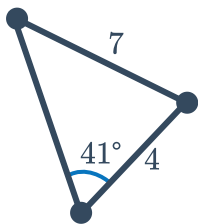


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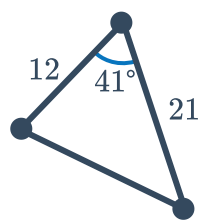


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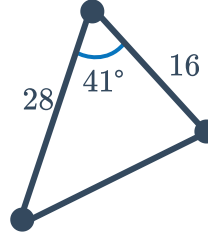
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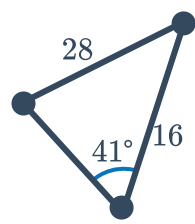
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C

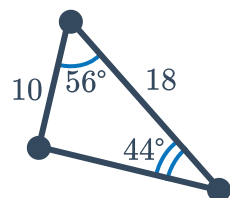


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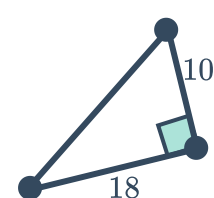


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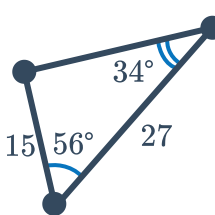
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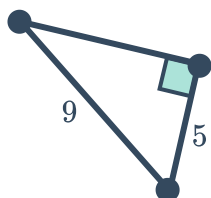
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C

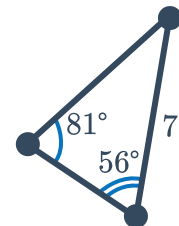


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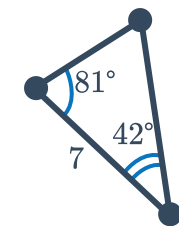


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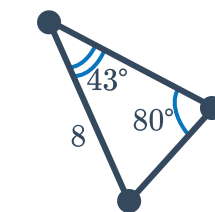
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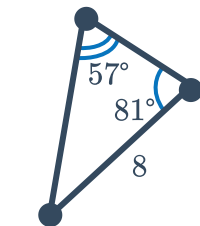
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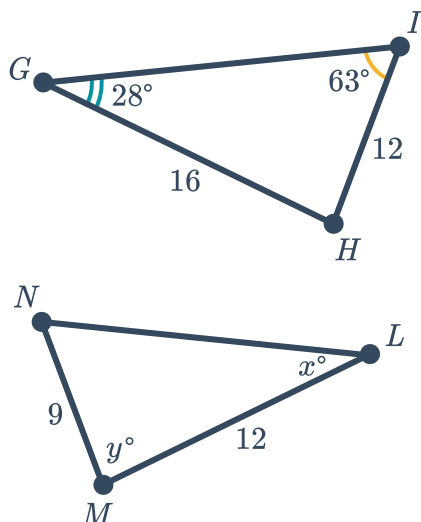


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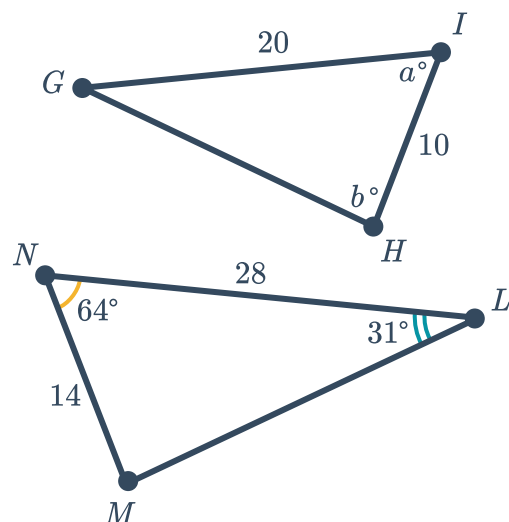


3 Find the value of the pronumerals for each of the following similar triangles:

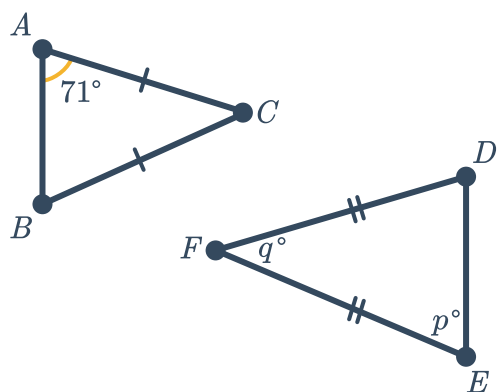
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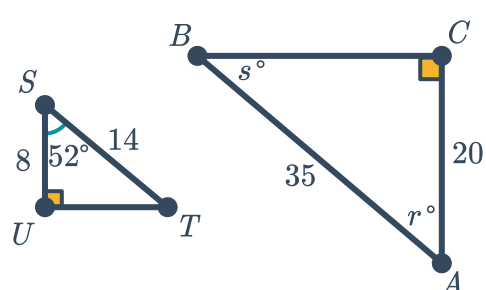
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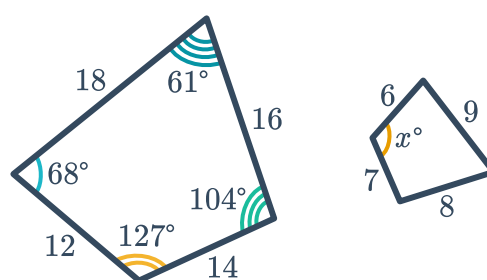
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d



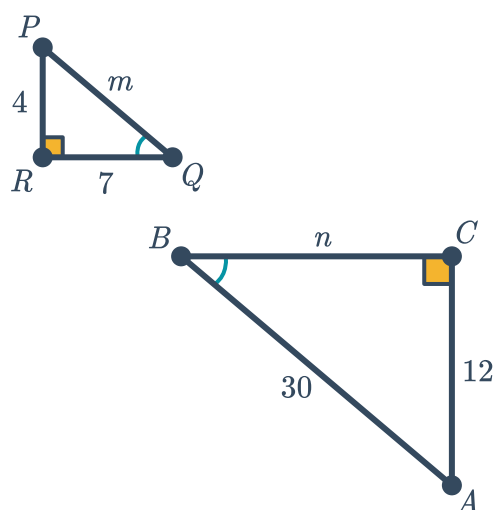
4 The two shapes in the following diagram are similar:
Find the size of the angle marked x .



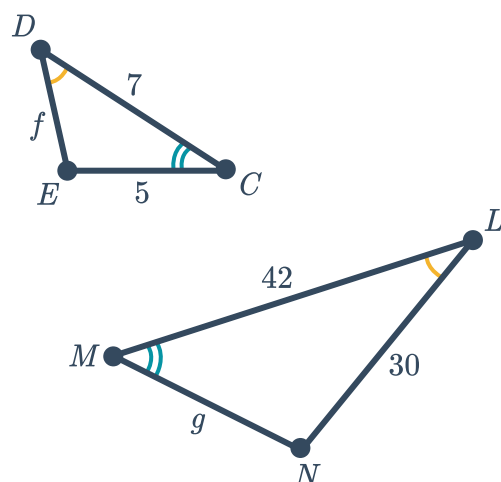
Sides of similar triangles

5 Find the value of the pronumerals for each of the following similar triangles:

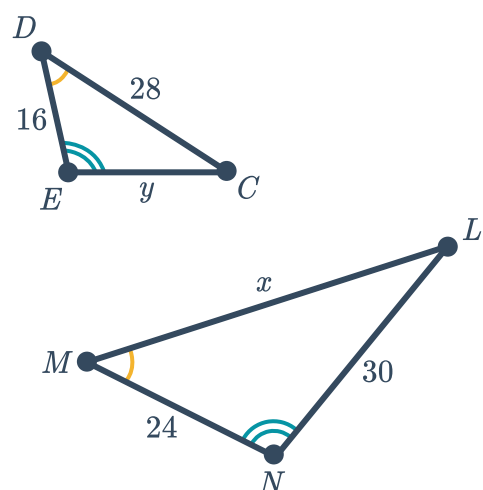
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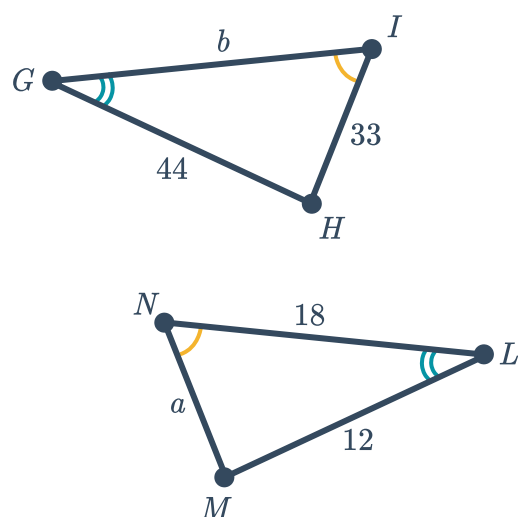
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c

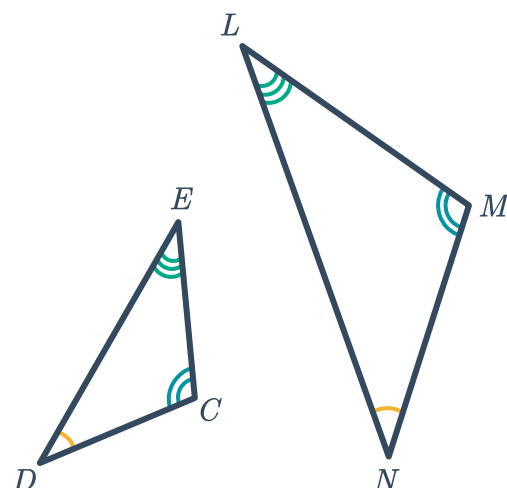


d



6 Consider the two similar triangles:

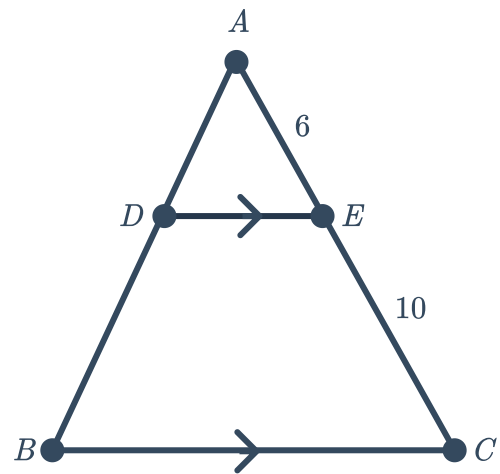
- Which side in $\triangle LMN$ corresponds to the side DE ?
- Which side in $\triangle LMN$ corresponds to the side DC ?



Applications

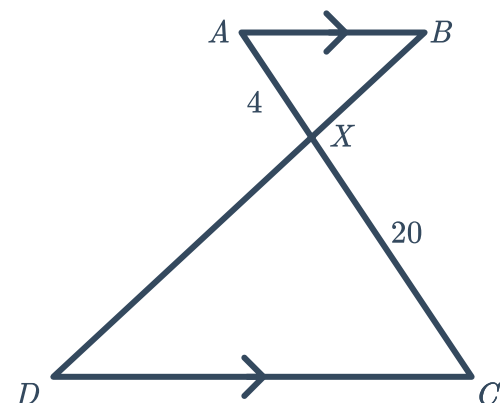
7 Consider the following diagram:

- a Identify two similar triangles and state the similarity test that they satisfy.
- b Given that $DE = 7$, what is the length of BC ?



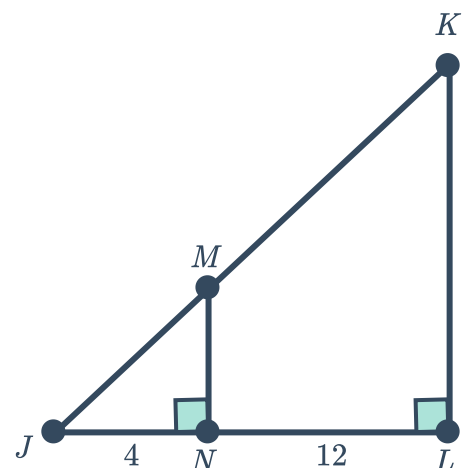
8 Consider the following diagram:

- a State the similarity test that triangles $\triangle ABX$ and $\triangle CDX$ satisfy.
- b Given that $AB = 5$, what is the length of CD ?

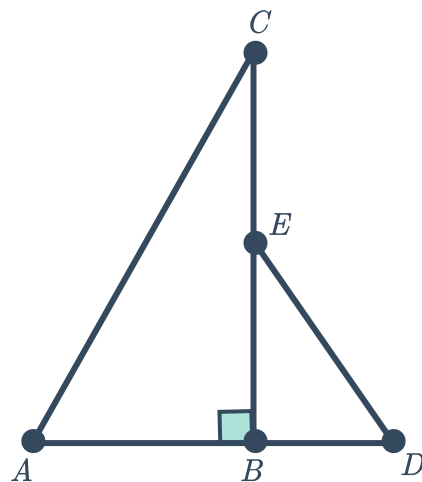


9 Consider the following diagram:

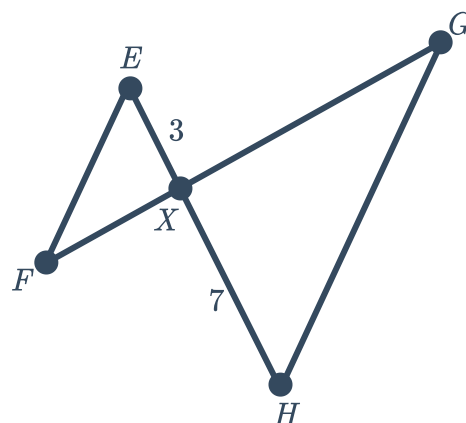
- a Identify two similar triangles and state the similarity test that they satisfy.
- b Given that $KL = 20$, what is the length of MN ?



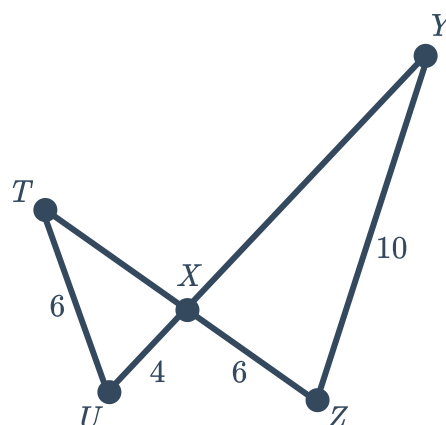
- 10 Consider the following diagram, where AD is a straight line:
What information is required to know that triangles $\triangle ABC$ and $\triangle DBE$ are in fact similar?



- 11 Consider the following diagram, where EH and FG are straight lines:
What information is required to know that triangles $\triangle EFX$ and $\triangle GHX$ are in fact similar?

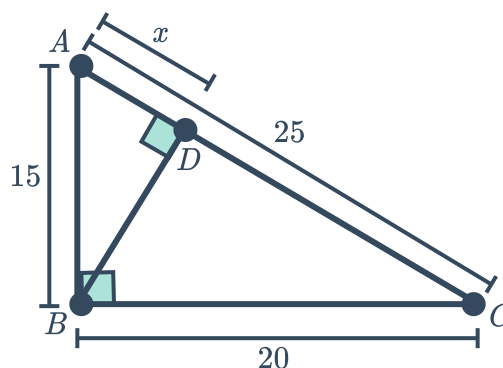


- 12 Consider the following diagram, where TZ and UY are non-parallel straight lines:
- Explain why the triangles $\triangle TUX$ and $\triangle YZX$ are not similar.
 - What length does YZ need to be for the two triangles to be similar?



13 Peter constructs a ramp in the shape of a right-angled triangle. To give the ramp more strength, he wants to place a brace from the base point across to the hypotenuse. The brace should meet the hypotenuse at a right angle, as shown in the diagram:

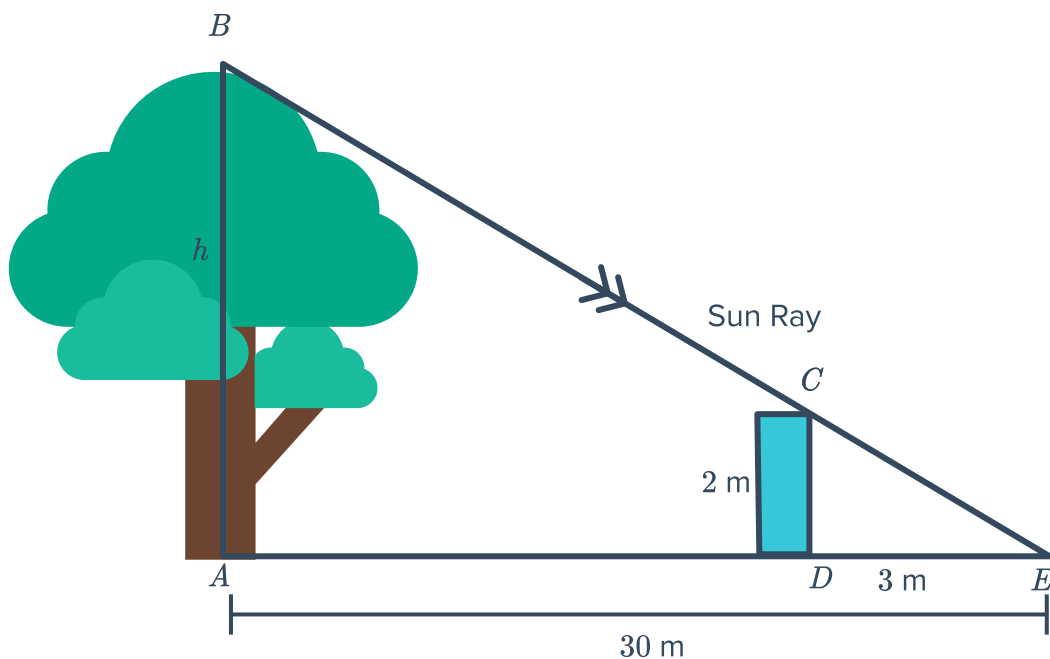
- State the similarity test that the triangles $\triangle ABC$ and $\triangle ADB$ satisfy.
- How long does the brace, BD , need to be?
- Hence, find the length x .



14 A horizontal brace lies between the slanted sides of an A-shaped ladder. In this position, the top of the ladder is 220 cm from the ground. The brace is 44 cm in length, and sits 71 cm from the top of the ladder. How far apart are the feet of the ladder? Round your answer to the nearest whole centimetre.



- 15 A large tree casts a shadow of 30 m. At the same time, a 2 m high stick, standing vertically, casts a shadow of 3 m.



- a State the reasons why the triangles $\triangle ABE$ and $\triangle DCE$ are similar.
- b If the height of the tree is h metres, find h .