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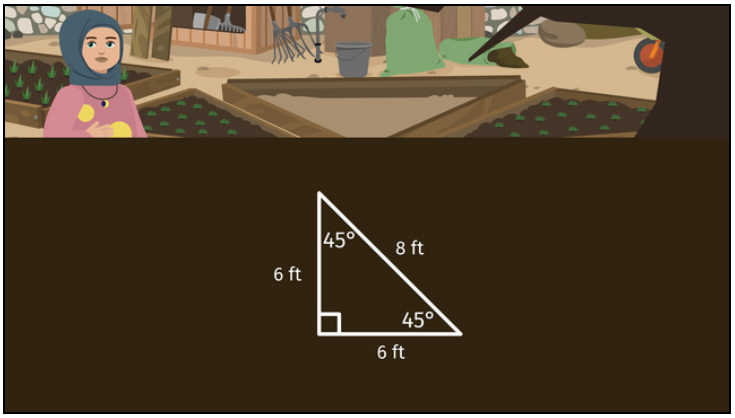
Conditions for a Unique Triangle



1 **Classify the triangles.**

2 Describe the triangle.

3 Which triangles are considered unique triangles?

4 Can these form a triangle?

5 What makes this triangle unique?

6 Find the value of w using your knowledge of the angles of traingles.

\+ with many hints, answer keys, and solution approaches for all tasks

Classify the triangles.

Match the information with the type of triangle.

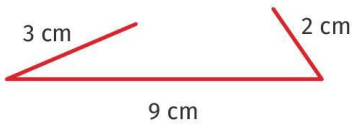
Angles of the triangle are $60°$, $20°$ and $80°$.	A	1	**Unique**
Angles of the triangle are $90°$, $30°$ and $60°$.	B	2	**Impossible** (Sum of shorter sides must be greater than the longer side)
Sides of the triangle are 5cm, 7cm and 10 cm.	C	3	**Impossible** (Sum of angles must = $180°$)
Sides of the triangle are 8cm, 3cm and 14 cm.	D	4	**Non-unique**

Our hints for the tasks

1 from 6

Classify the triangles.

1. Hint



The two shorter sides are not long enough to form a triangle

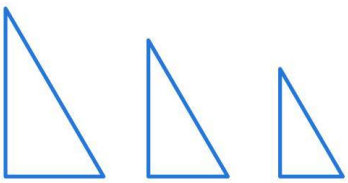
A unique triangle - **the sum of the smaller sides is greater than the longer side**.

The diagram shows why this condition has to be met.

2. Hint

A unique triangle has the sum of its angles = 180°

3. Hint



The angles are all the same but the sides are different.
Therefore - Non-unique

A triangle is non-unique if the angle sum is 180° but there are no sides given.

It forms a triangle but it could be different sizes.

Solutions and solution approaches for the tasks

1 from 6

Classify the triangles.

Answer key: A—3 // B—4 // C—1 // D—2

Angles of the triangle are 60°, 20° and 80° - Impossible. (Sum of angles = 160°)

Angles of the triangle are 90°, 30° and 60° - Non-unique.

Sides of the triangle are 5cm, 7cm and 10cm - Unique.

Sides of the triangle are 8cm, 3cm and 14cm - Impossible. ($8 + 3 < 14$)

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