

Constructing Triangles

KS3 Maths · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

Classify the angles 35° , 120° and 250°

Step 1 · 35° is less than 90°

Acute

Step 2 · 120° is between 90° and 180°

Obtuse

Step 3 · 250° is between 180° and 360°

Reflex

Answer: Acute, obtuse, reflex

Check: To draw 250° , draw $360^\circ - 250^\circ = 110^\circ$ and mark the outside angle ✓

2. Now try one with the steps

Construct triangle ABC with AB = 6 cm, angle A = 50° and AC = 4 cm (SAS)

Step 1 · Draw the base

Step 2 · Measure the angle at A

Step 3 · Draw the second side

Step 4 · Finish

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. Is an angle of 145° acute, obtuse or reflex? [1]

2. Is an angle of 290° acute, obtuse or reflex? [1]

3. Which equipment do you need to construct a triangle when you are given all three sides? [1]
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4. In triangle PQR, which point is the vertex of the angle $\angle PQR$? [1]
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5. In triangle ABC, which side is opposite angle B? [1]
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6. Can sides of 5 cm, 6 cm and 12 cm make a triangle? [1]
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7. You construct a triangle (ASA) with angles of 40° and 75° . What size will the third angle be? [1]
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8. Your protractor shows 70° on the inside of an angle. What is the reflex angle on the outside? [1]
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9. You construct a triangle with three sides of 4 cm. What size is each angle? [1]
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10. Which of these does NOT fix a single triangle: SSS, SAS, ASA or AAA? [1]
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11. What do the letters RHS stand for when constructing a triangle? [1]
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12. A triangular garden has sides 10 m, 8 m and 6 m. On a scale drawing using 1 cm to 2 m, how long should each side be? [2]
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13. Two sides of a triangle are 3 cm and 7 cm. What is the smallest whole number of centimetres the third side could be? [2]
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14. Two sides of a triangle are 3 cm and 7 cm. What is the largest whole number of centimetres the third side could be? [2]

15. How many lines of symmetry does a triangle with sides 6 cm, 6 cm and 6 cm have? [1]

4. Before you hand it in

Measuring an obviously acute angle as 130°

Estimate first ('this is less than 90° '). Then count up from the 0° on the arm you lined up — the inner and outer scales go in opposite directions.

Rubbing out the compass arcs after constructing a triangle

The arcs show HOW you constructed it. Leave them visible — in an exam they earn the method marks.

Assuming any three lengths will make a triangle

The two shorter sides must add up to more than the longest. 3, 4 and 8 fail because $3 + 4 = 7 < 8$.

Marking $\angle ABC$ at point A

The middle letter is the vertex: $\angle ABC$ is at B, between the lines BA and BC.