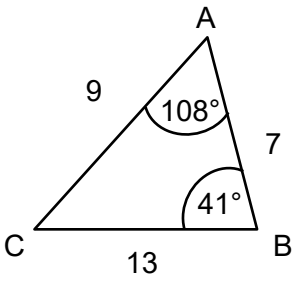
OCR
Oxford Cambridge and RSA

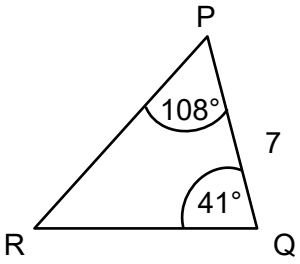
Foundation Check In - 9.02 Congruence

Use triangle ABC to answer questions 1 and 2.



Not to scale

1. Triangle PQR is congruent to triangle ABC. Find length PR.



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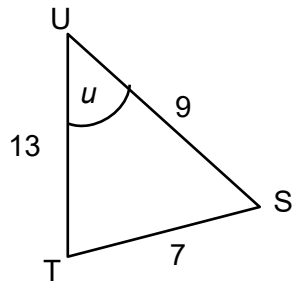
2. Triangle STU is congruent to triangle ABC. Find angle *u*.



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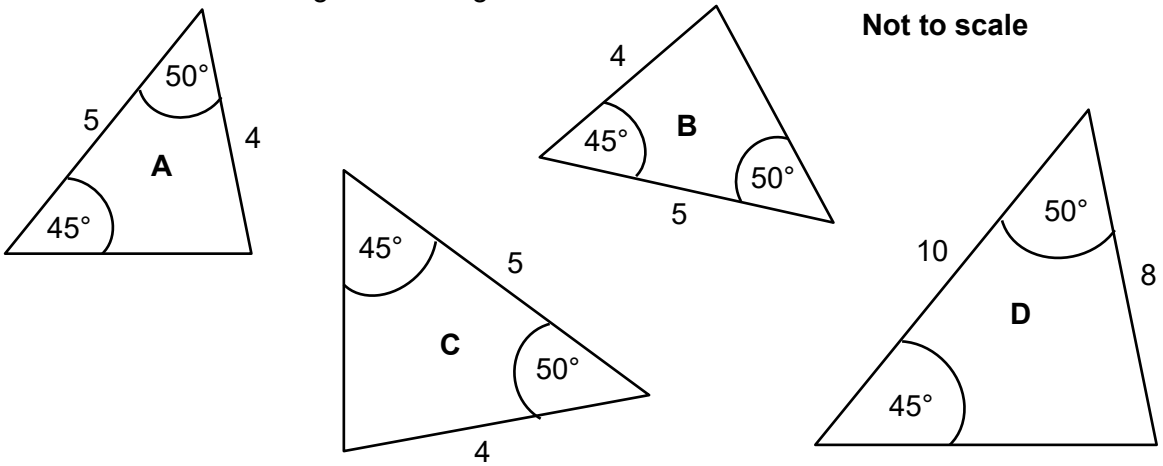
3. Which of these triangles are congruent?



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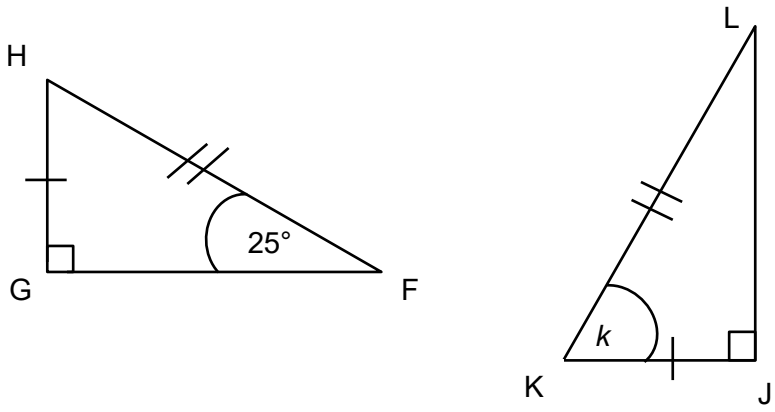
4. Triangles FGH and JKL are congruent. Find angle *k*.



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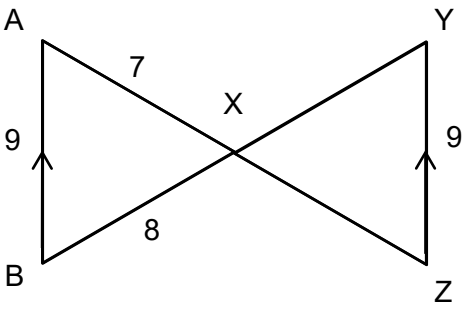
5. The lines AB and YZ are parallel in the diagram below.
Find length XZ.



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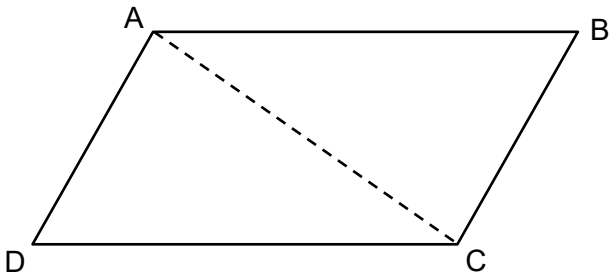
6. The diagram below shows a parallelogram, ABCD. Explain why triangle ABC and triangle CDA are congruent.



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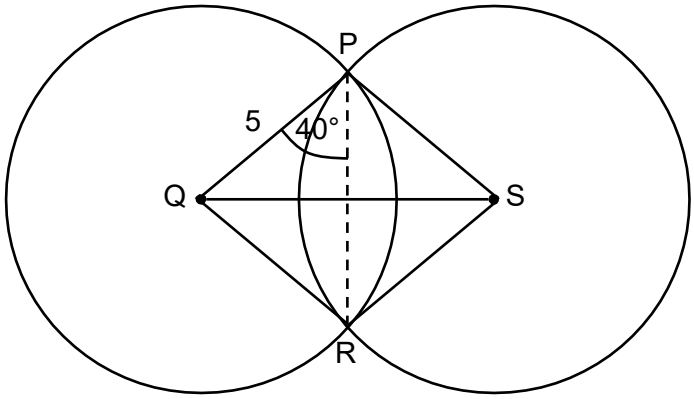
7. Explain why a kite is formed from two congruent triangles.

8. Maria makes the following statement.

"If two triangles have the same base and height then their areas are the same and therefore they are congruent triangles."

Explain why Maria is not correct.

9. The diagram below shows two intersecting circles of equal size. Angle QPR = 40°.
Work out angle PSR.



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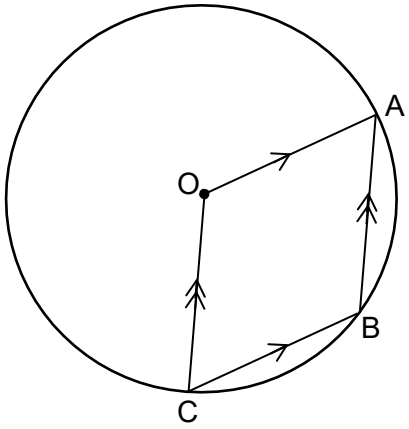
10. Points A, B and C are on the circumference of a circle, centre O. OA is parallel to CB and AB is parallel to OC. Find angle ABC.



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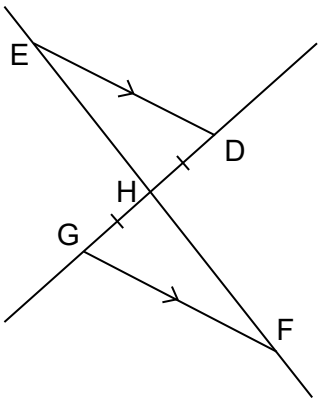
Extension

Given that ED is parallel to GF and DH is the same length as GH, prove that triangle EDH and triangle FGH are congruent.



Not to scale

Answers

1. 9

2. 41°

3. 31°

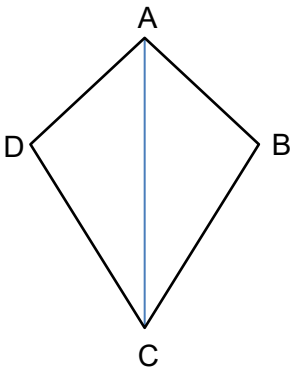
4. 65°

5. 7

6. 3 statements supporting SSS, SAS or ASA from the 6 statements below.

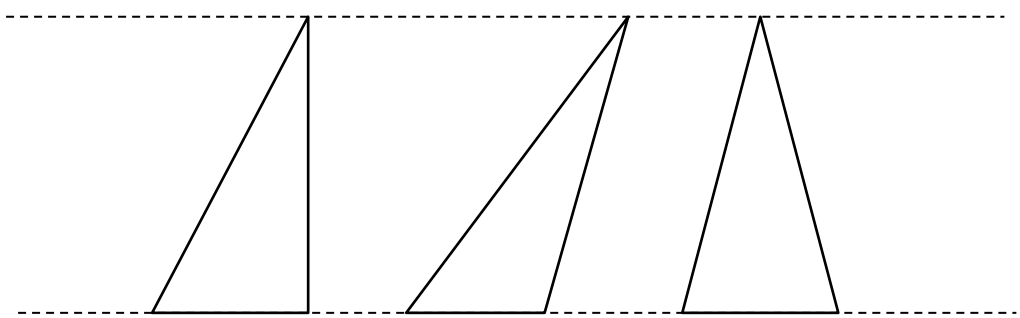
   AB = DC (opposite sides of parallelogram)
   BC = AD (opposite sides of parallelogram)
   AC = AC (common side)

   Angle BAC = Angle ACD (alternate angles)
   Angle BCA = Angle CAD (alternate angles)
   Angle ABC = Angle ADC (opposite angles in parallelogram)

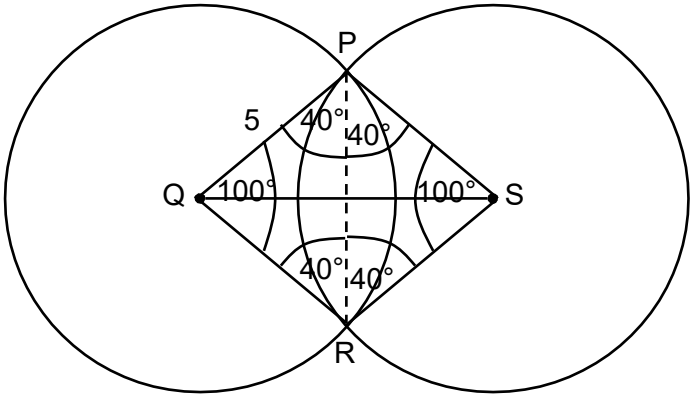
7. 

   Line AC is a line of symmetry
   Length AD = Length AB
   Length DC = Length BC
   SSS so congruent triangles

8. The h in $A = \frac{1}{2}bh$ is the perpendicular height and does not necessarily refer to an actual triangle side length.



9. 100°



10. 120°

Extension

∠E = ∠F (alternate angles because ED is parallel to GF)
∠EHD = ∠GHF (vertically opposite angles)
DH = GH (equal sides, stated in the question)

So △ EDH and △ FGH are congruent (ASA – 2 angles, 1 side)

GCSE (9–1)
MATHEMATICS

Assessment Objective	Qu.	Topic	R	A	G
AO1	1	Know that corresponding lengths in congruent triangles are equal			
AO1	2	Know that corresponding angles in congruent triangles are equal			
AO1	3	Identify congruent triangles			
AO1	4	Recognise congruence in related triangles to find an angle			
AO1	5	Identify corresponding angles and sides of congruent triangles			
AO2	6	Recognise congruence in parallelograms			
AO2	7	Recognise congruence in kites			
AO2	8	Understand properties of congruent triangles			
AO3	9	Apply congruence to solve a problem			
AO3	10	Apply congruence to solve a problem			

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