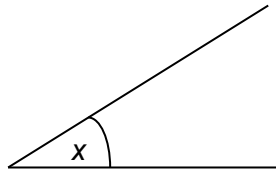


Higher Check In - 8.02 Ruler and compass constructions

1. Construct the locus of points at a constant distance of 3 cm from a fixed point B.
2. Use a ruler and a compass to draw an equilateral triangle with sides of length 6 cm.
3. A plot of land is in the shape of a triangle with sides 600 m, 800 m and 1.2 km. Using a ruler and compass, draw the triangle accurately (using an appropriate scale).
4. Use a ruler and a compass to draw an angle of 120° .
5. Draw a straight horizontal line of length 5 cm. Construct the locus of all points that stay a fixed distance from the straight line.
6. Orla has been asked to construct the angle bisector of the angle marked x below, using only a ruler and a compass. Explain in words how she would do this.



7. A mobile phone mast needs to be positioned 8 km from X and from Y. Show where the mast could be positioned.

Scale: 1 cm to 2 km

• X

• Y

8. Fletcher is asked to find a point on the perpendicular bisector of the straight line PQ when P is (2, 6) and Q is (3, 7). He thinks the point (2, 6.5) will be on the perpendicular bisector. Is he correct? Explain your answer.
9. On a one centimetre grid, a straight line joins A (-4, 2) and B (2, 2). Point C (x, y) lies on the perpendicular bisector of the line AB, such that triangle ABC has a perimeter of 16 cm. Work out the the values of x and y.

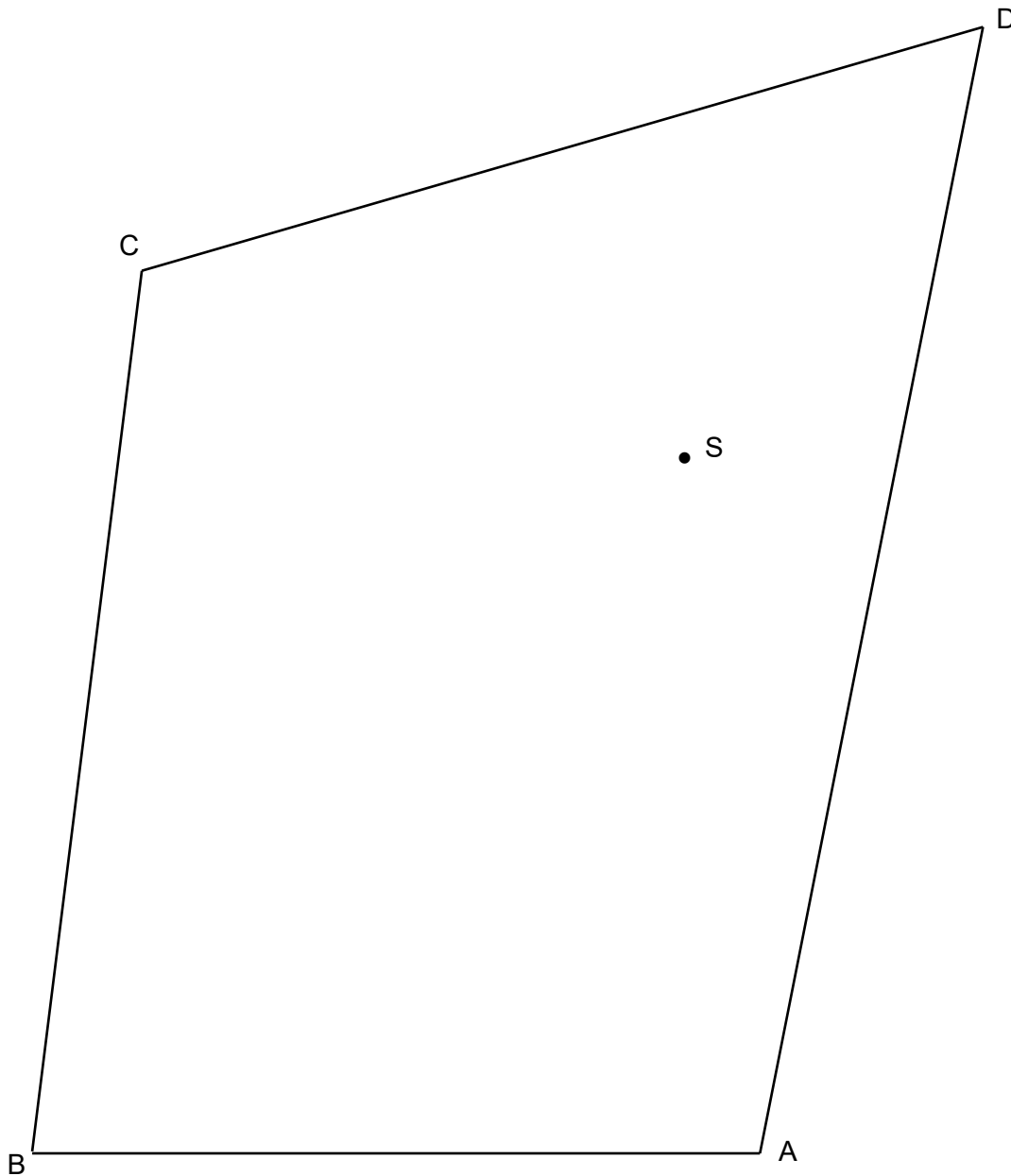


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10. The diagram represents a plan of a camping site ABCD. There is a shower block at S, a field of cows beyond the boundary CD, AD is bordered by trees and a road runs adjacent to AB. The scale used is 1 cm represents 10 m.

Locate the region to set up camp that satisfies all of the following:

- closer to the trees than the field of cows
- within 70 m of the shower block
- more than 55 m from the road.



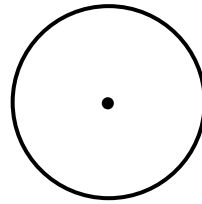
Extension

Draw the locus of points that are equidistant from points (2, 6) and (6, 10). What is the equation of this line?

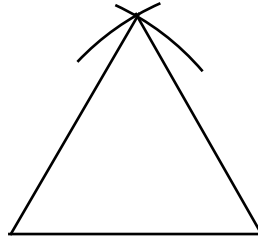


Answers

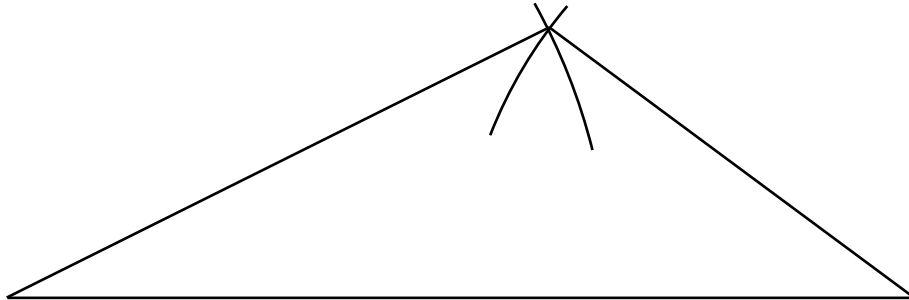
1. A circle with centre B and radius 3 cm.



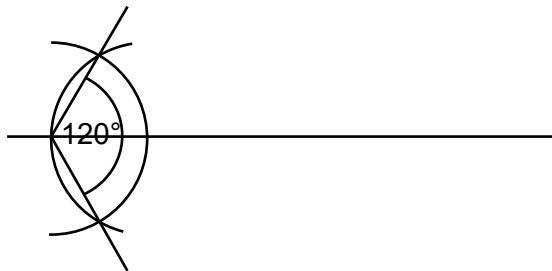
2. An equilateral triangle with sides of length 6 cm (arcs should be shown).



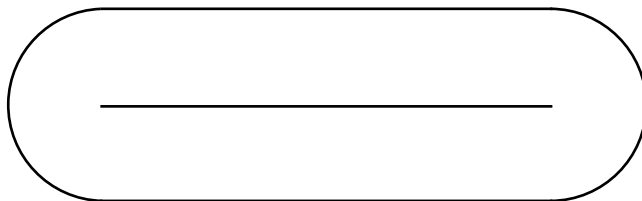
3. Correctly drawn triangle (arcs should be shown). Appropriate scale could be 1 cm to 100 m.



4. Diagram showing 120 degree construction.



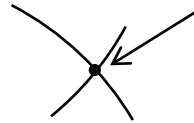
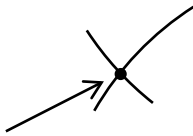
5. Parallel lines above and below the horizontal line (at a fixed distance from the horizontal line) joined by a semicircle at each end (radius same as the fixed distance).



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6. Place your compass on A and draw an arc that crosses both sides of the angle, label the crossing points B and C. Place your compass on B and draw an arc **between** the two sides of the angle. Do not adjust your compass, place it on C and draw another arc that cuts the one that you have just drawn. Label this point D and draw a straight line from A to D. The line AD bisects the angle.
7. Mast plotted in correct positions with correct arcs, 4 cm from X and Y.

• X

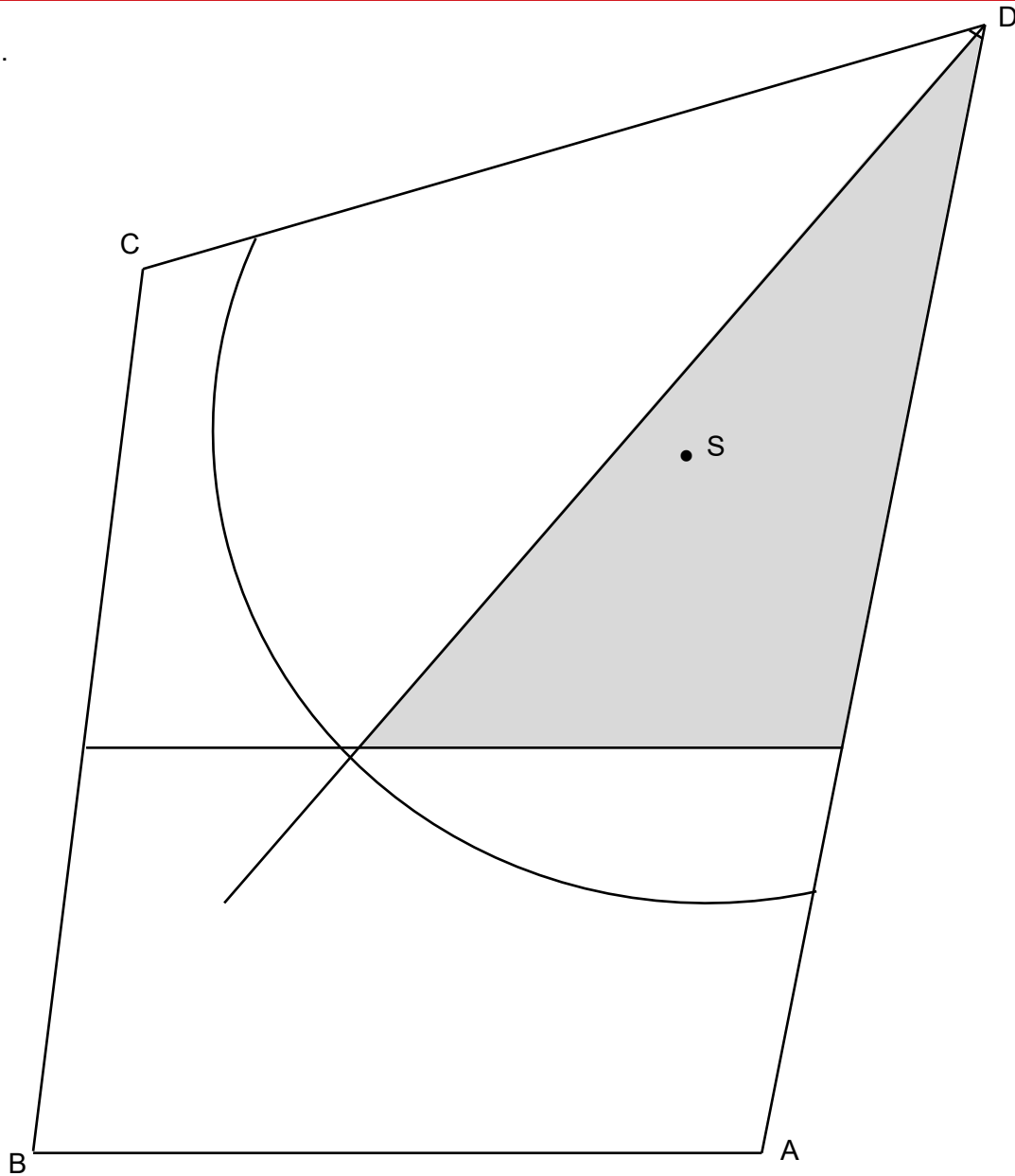


• Y

8. No he is not correct. The midpoint of line PQ is (2.5, 6.5) which is where the perpendicular bisector crosses line PQ, therefore, no other point on the perpendicular bisector can have a y coordinate of 6.5.
9. (-1, 6) or (-1, -2)



10.



Extension

$$y = -x + 12 \text{ or } y = 12 - x$$

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Assessment Objective	Qu.	Topic	R	A	G
AO1	1	Apply ruler and compass constructions to identify the loci of points			
AO1	2	Apply ruler and compass constructions to construct figures			
AO1	3	Apply ruler and compass constructions to construct figures			
AO1	4	Apply ruler and compass constructions to construct a given angle			
AO1	5	Apply ruler and compass constructions to identify the loci of points			
AO2	6	Describe how to construct the bisector of an angle formed from two lines			
AO2	7	Apply ruler and compass constructions to identify the loci of points			
AO2	8	Construct the midpoint of a line segment and interpret the position of coordinates on the perpendicular bisector			
AO3	9	Construct the midpoint of a line segment and the perpendicular bisector to solve a problem			
AO3	10	Apply ruler and compass constructions to solve a real life problem			

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