

GCSE Mathematics

F/H

Constructions & Loci

GCSE Maths Practice

Total Marks	Time	Questions
52	52 min	20

Instructions:

- Do not use a calculator when you see: 
- Answer all questions in the spaces provided.
- Show all your working - marks are awarded for method as well as final answers.
- Cross through any work you do not want to be marked.
- Check your answers if you have time at the end.

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Edexcel-style questions

Q1

Grade 4

Edexcel style

A point moves so that it is always exactly 5 cm from a fixed point A. Describe fully the locus of the point.

Answer _____

teachably

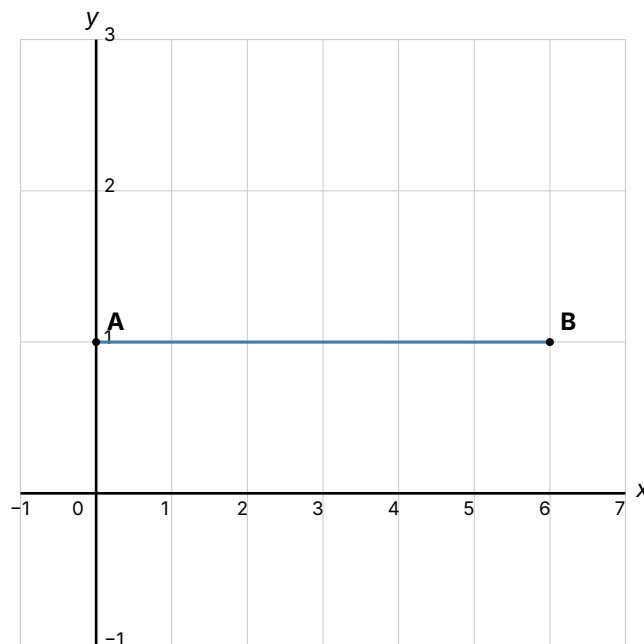
[1 mark]

Q2

Grade 4

Edexcel style

Describe, step by step, how you would use compasses and a straight edge to construct the perpendicular bisector of the line segment AB.



Answer _____

teachably

[3 marks]

Q3

Grade 5

Edexcel style

A goat is tied to a post in the middle of a large open field, using a rope of length 6 m. The rope is free to swing all the way around the post. Find the area the goat can graze. Use $\pi = 3.14$.

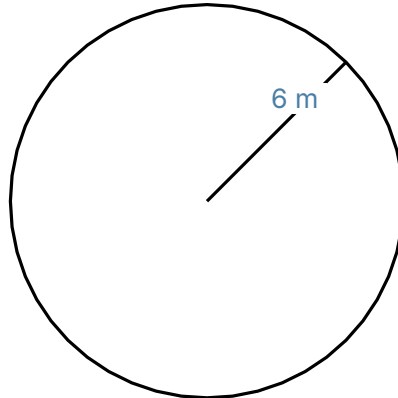


Diagram NOT accurately drawn

Answer _____

teachably

[2 marks]

Q4

Grade 5

Edexcel style

Point P lies closer to point A than to point B. Point P also lies within 4 cm of point C. Describe fully the region in which P can lie.

Answer _____

teachably

[2 marks]

Q5

Grade 6

Edexcel style

A point moves so that it is always exactly 4 cm from a straight line segment XY, where XY has length 10 cm (unlike an infinite line, the locus must curve around each end of the segment). Describe fully the shape of the locus, and find its total perimeter. Use $\pi = 3.14$.

Answer _____

teachably

[4 marks]

AQA-style questions

Q6

Grade 4

AQA style

A point moves so that it is always the same distance from two fixed points A and B. Describe fully the locus of the point.

Answer _____

teachably

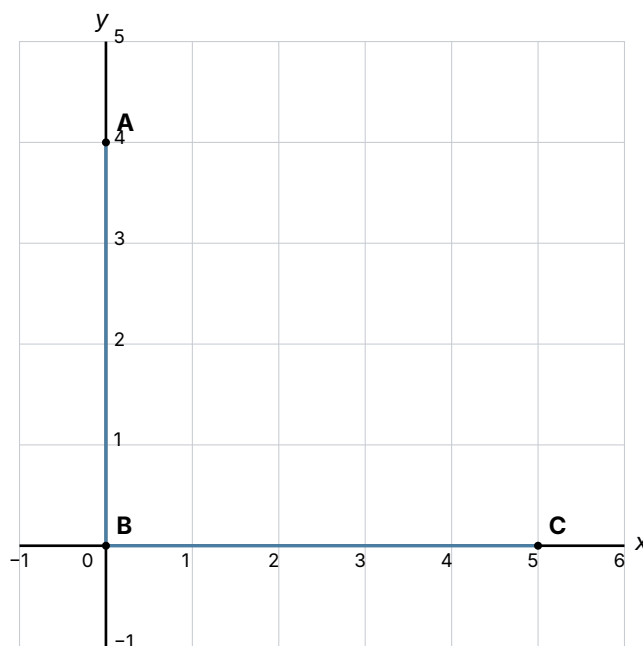
[1 mark]

Q7

Grade 4

AQA style

Describe, step by step, how you would use compasses and a straight edge to construct the bisector of angle ABC.



Answer _____

teachably

[3 marks]

Q8

Grade 5

AQA style

A goat is tied to a corner of a rectangular barn, using a rope of length 8 m. The rope cannot cross the barn walls, and both walls at that corner are longer than 8 m. Find the area the goat can graze. Use $\pi = 3.14$.

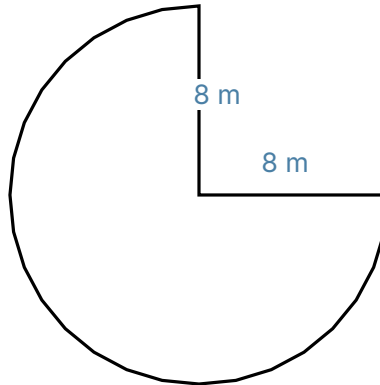


Diagram NOT accurately drawn

Answer _____

teachably

[3 marks]

Q9

Grade 6

AQA style

A buried marker is exactly 6 m from a tree at point A and exactly 8 m from a rock at point B, where A and B are 10 m apart. Find the number of possible positions for the marker.

Answer _____

teachably

[3 marks]

Q10

Grade 6

AQA style

A rectangular garden measures 12 m by 8 m. A sprinkler is fixed at one corner of the garden and can water any point within 6 m of it (the sprinkler cannot water outside the garden). Find the area of the garden NOT reached by the sprinkler. Use $\pi = 3.14$.

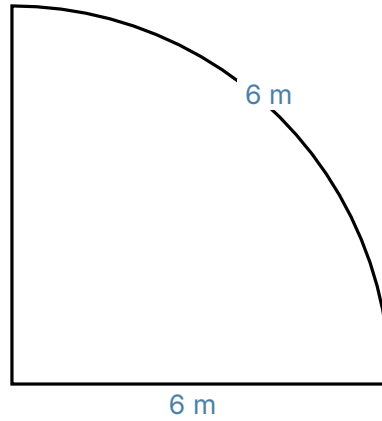


Diagram NOT accurately drawn

Answer _____

OCR-style questions

Q11

Grade 4

OCR style

Two straight lines meet at a point O. A point moves so that it is always the same distance from both lines. Describe fully the locus of the point.

Answer _____

teachably

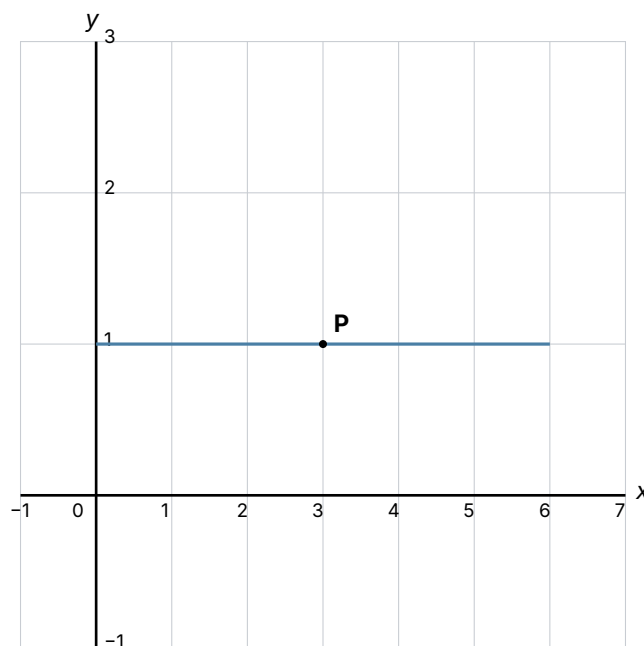
[1 mark]

Q12

Grade 5

OCR style

The point P lies on the straight line shown. Describe, step by step, how you would use compasses and a straight edge to construct the perpendicular to the line at P.



Answer _____

teachably

[3 marks]

Q13

Grade 5

OCR style

A dog is tied to a point part-way along a long, straight wall, using a chain of length 5 m. The chain cannot cross the wall. Find the area the dog can reach. Use $\pi = 3.14$.

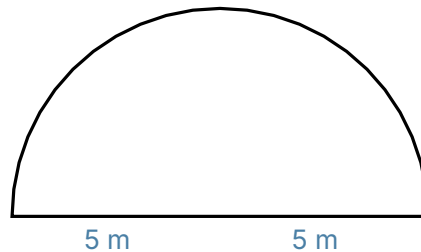


Diagram NOT accurately drawn

Answer _____

teachably

[3 marks]

Q14

Grade 6

OCR style

Point P is equidistant from points A and B, and is also exactly 5 cm from a point C, where C does not lie on the perpendicular bisector of AB. Find the greatest possible number of positions for P.

Answer _____

teachably

[3 marks]

Q15

Grade 6

OCR style

A vertex O has two straight arms forming an angle. Describe, step by step, how you would construct the set of points inside the angle that are both equidistant from the two arms AND exactly 5 cm from O, and state how many such points there are.

Answer _____

teachably

[3 marks]

Teachably-style questions

Q16 

Grade 4

Teachably style

A point moves so that it is always exactly 3 cm from a fixed straight line (you may assume the line extends indefinitely in both directions). Describe fully the locus of the point.

Answer _____

teachably

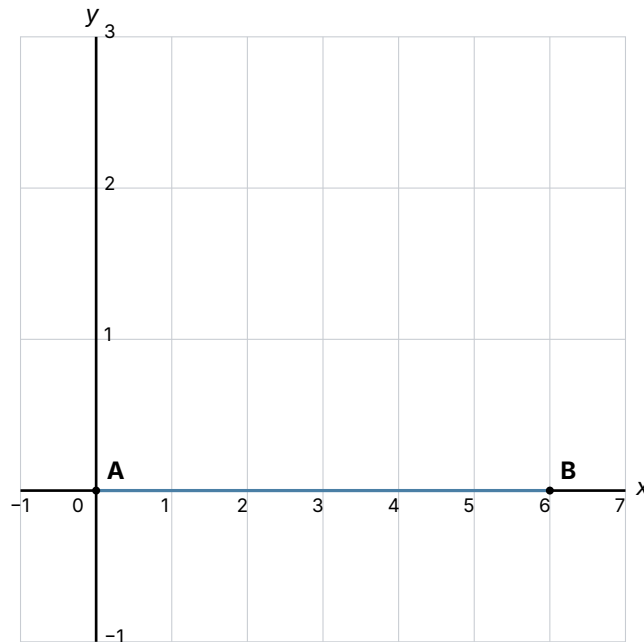
[1 mark]

Q17

Grade 5

Teachably style

Describe, step by step, how you would use only compasses and a straight edge (no protractor) to construct an angle of exactly 60° .



Answer _____

Q18



Grade 5

Teachably style

A horse is tied to a corner of a rectangular field using a rope of length 10 m. At that corner, one fence is 6 m long and the other is 15 m long, and the rope cannot cross either fence. Find the total area the horse can graze. Use $\pi = 3.14$.

Answer _____

teachably

[4 marks]

Q19



Grade 5

Teachably style

A goat tied to a post in an open field can graze a circular region of area 78.5 m^2 . Find the length of the rope. Use $\pi = 3.14$.

Answer _____

teachably

[2 marks]

Q20



Grade 6

Teachably style

A ship's captain must sail a route that is always equidistant from a lighthouse at point A and a lighthouse at point B (the perpendicular bisector of AB), while staying more than 10 km from a submerged rock at point C at all times. The closest point on this route to the rock is only 6 km from C. Explain whether the captain can safely follow this route without changing course, giving a reason.

Answer _____

teachably

[3 marks]

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