



ACHIEVE ACADEMY

GCSE Maths — Higher Tier

Constructions, Loci & Bearings · Practice Booklet

NAME: _____

CLASS: _____

DATE: _____

☐ Developing

☐ Secure

☒ Greater Depth

Answer every question in the working space provided. Method marks are available for correct working even if the final answer is wrong. Check the time allowed with your tutor before you start.

Constructions, Loci & Bearings

Total marks available: 102

● Constructions, Loci & Bearings

Q1

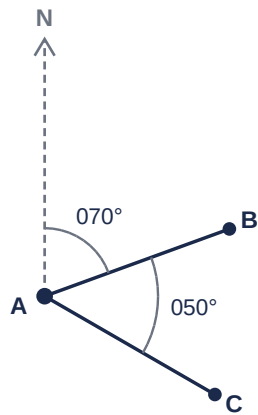
[3 marks]

A plane flies from a harbour H on a bearing of 235° to reach a marker buoy M. The plane then needs to return directly from M to H. Find the bearing it must travel on for the return journey.

Q2

[3 marks]

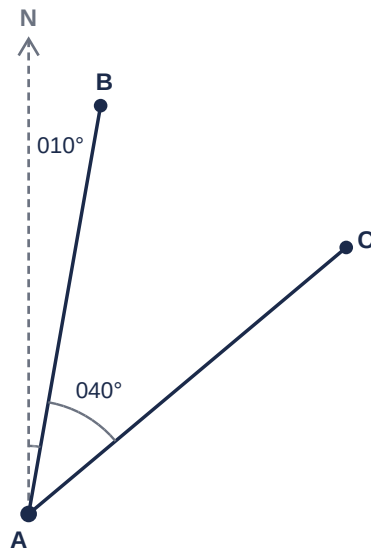
A ship sails from A on a bearing of 070° to point B. It then turns a further 50° clockwise and sails in a straight line to point C, as shown. Find the bearing of C from A.



Q3

[3 marks]

A hiker walks from A on a bearing of 010° to point B. It then turns a further 40° clockwise and walks in a straight line to point C, as shown. Find the bearing of C from A.



Q4

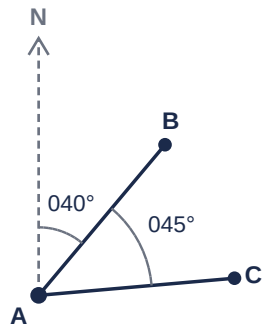
[3 marks]

A ship sails from a harbour H on a bearing of 050° to reach a marker buoy M. The ship then needs to return directly from M to H. Find the bearing it must travel on for the return journey.

Q5

[3 marks]

A ship sails from A on a bearing of 040° to point B. It then turns a further 45° clockwise and sails in a straight line to point C, as shown. Find the bearing of C from A.



Q6

[3 marks]

A ship sails from a harbour H on a bearing of 025° to reach a marker buoy M. The ship then needs to return directly from M to H. Find the bearing it must travel on for the return journey.

Q7

[3 marks]

A plane flies from a harbour H on a bearing of 190° to reach a marker buoy M. The plane then needs to return directly from M to H. Find the bearing it must travel on for the return journey.

Q8

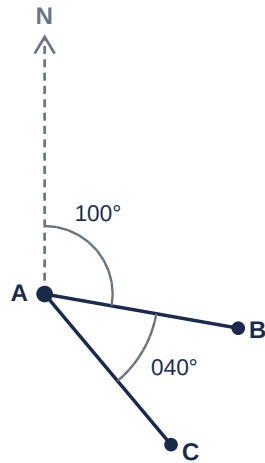
[3 marks]

A ship sails from a harbour H on a bearing of 305° to reach a marker buoy M. The ship then needs to return directly from M to H. Find the bearing it must travel on for the return journey.

Q9

[3 marks]

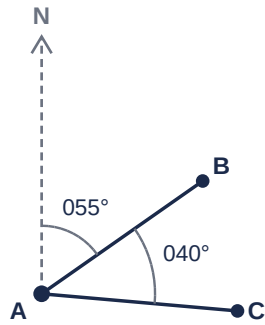
A plane flies from A on a bearing of 100° to point B. It then turns a further 40° clockwise and flies in a straight line to point C, as shown. Find the bearing of C from A.



Q10

[3 marks]

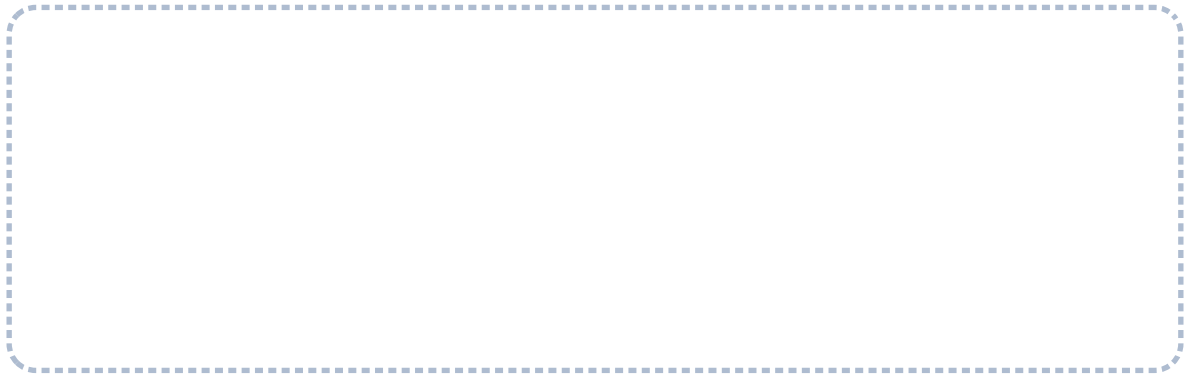
A ship sails from A on a bearing of 055° to point B. It then turns a further 40° clockwise and sails in a straight line to point C, as shown. Find the bearing of C from A.



Q11

[2 marks]

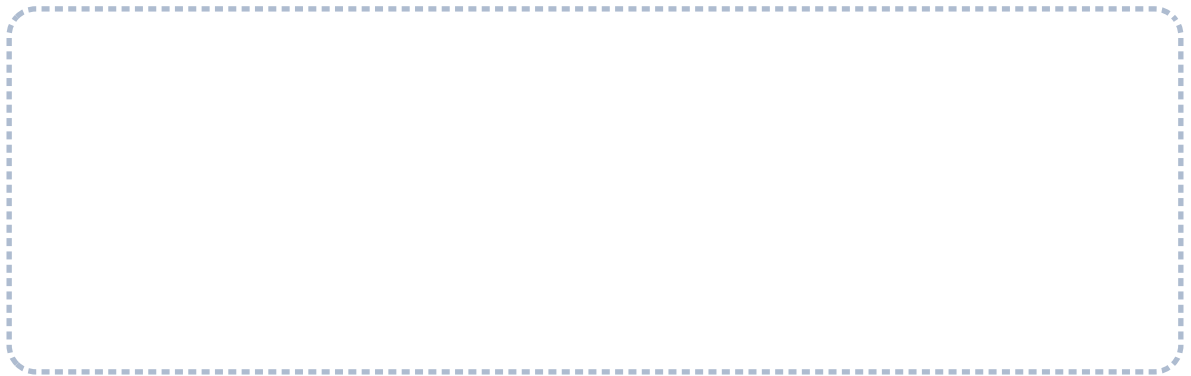
A straight wall runs across a field. Describe the locus of points that are a fixed distance from the wall.



Q12

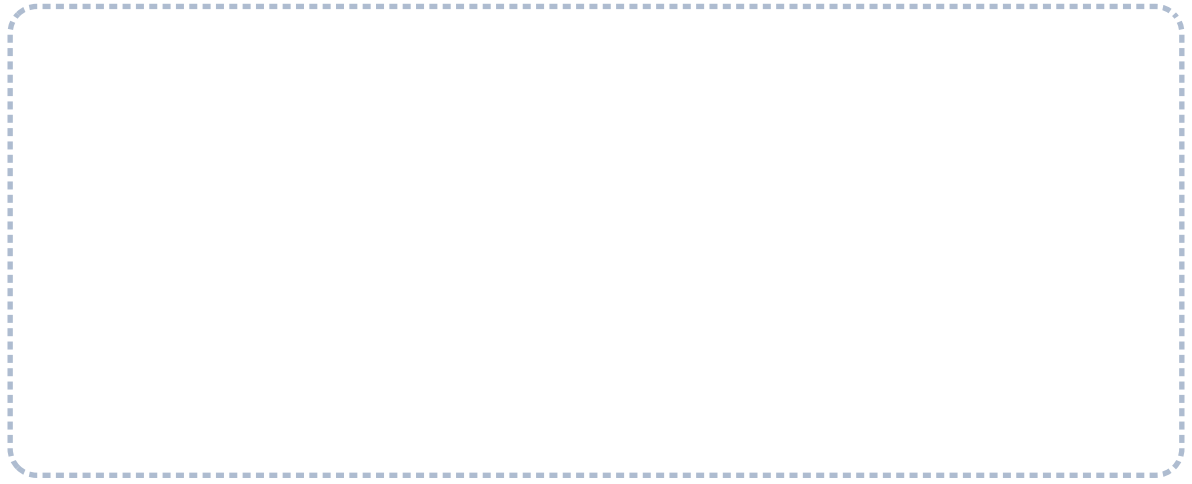
[2 marks]

A and B are two fixed points. Describe the locus of points that are the same distance from A as they are from B.

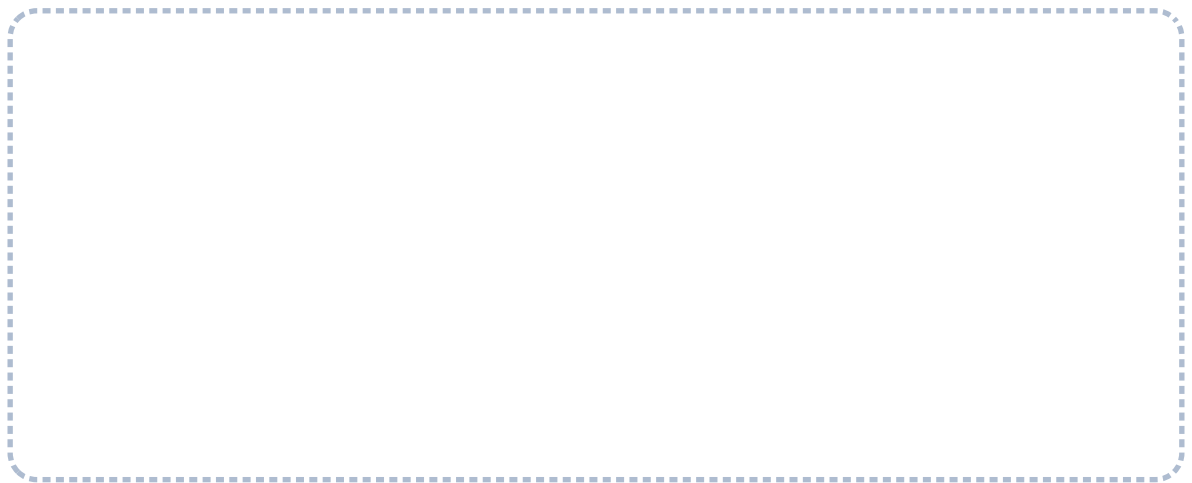


Q13**[3 marks]**

A horse is tied by a rope of length 3 m to a post in the middle of a large, flat field. Find the area the horse can graze, to 1 decimal place. (The locus of points the rope can reach is a circle of radius 3 m, centred on the post.)

**Q14****[3 marks]**

A goat is tied by a rope of length 4 m to a post in the middle of a large, flat field. Find the area the goat can graze, to 1 decimal place. (The locus of points the rope can reach is a circle of radius 4 m, centred on the post.)



Q15

[2 marks]

Two straight lines cross at a point O. Describe the locus of points that are the same distance from both lines.

Q16

[3 marks]

A goat is tied by a rope of length 10 m to a post in the middle of a large, flat field. Find the area the goat can graze, to 1 decimal place. (The locus of points the rope can reach is a circle of radius 10 m, centred on the post.)

Q17

[2 marks]

P is a fixed point. Describe the locus of points that are a fixed distance from P.

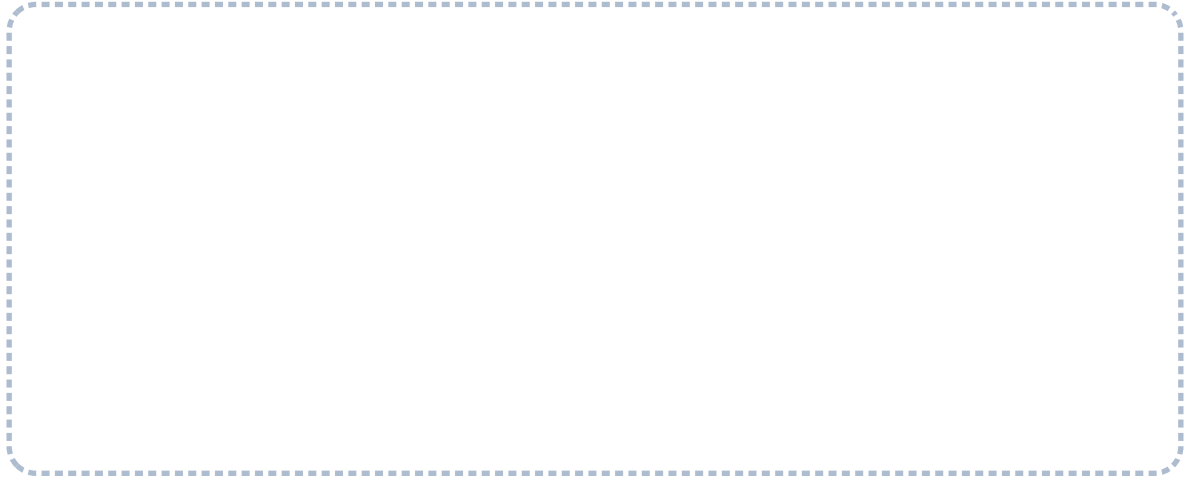
Q18

[3 marks]

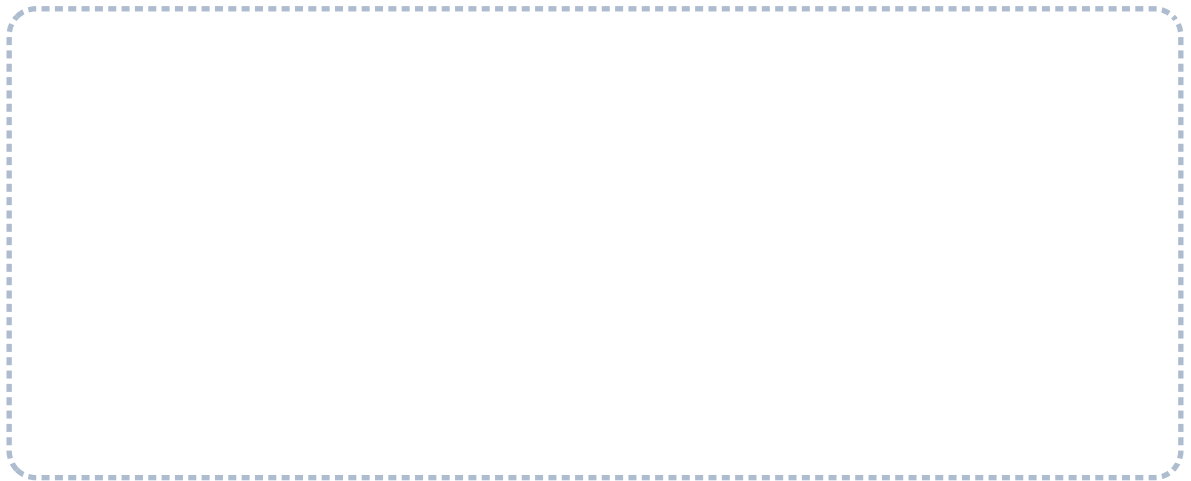
A horse is tied by a rope of length 4 m to a post in the middle of a large, flat field. Find the area the horse can graze, to 1 decimal place. (The locus of points the rope can reach is a circle of radius 4 m, centred on the post.)

Q19**[3 marks]**

A goat is tied by a rope of length 7 m to a post in the middle of a large, flat field. Find the area the goat can graze, to 1 decimal place. (The locus of points the rope can reach is a circle of radius 7 m, centred on the post.)

**Q20****[3 marks]**

A goat is tied by a rope of length 9 m to a post in the middle of a large, flat field. Find the area the goat can graze, to 1 decimal place. (The locus of points the rope can reach is a circle of radius 9 m, centred on the post.)



Q21

[5 marks]

On a scale drawing with a scale of 1 cm to 2.5 km, town P is 12 cm from town Q, on a bearing of 230° from Q. Find (a) the real distance PQ, in km, and (b) the bearing of Q from P.

Q22

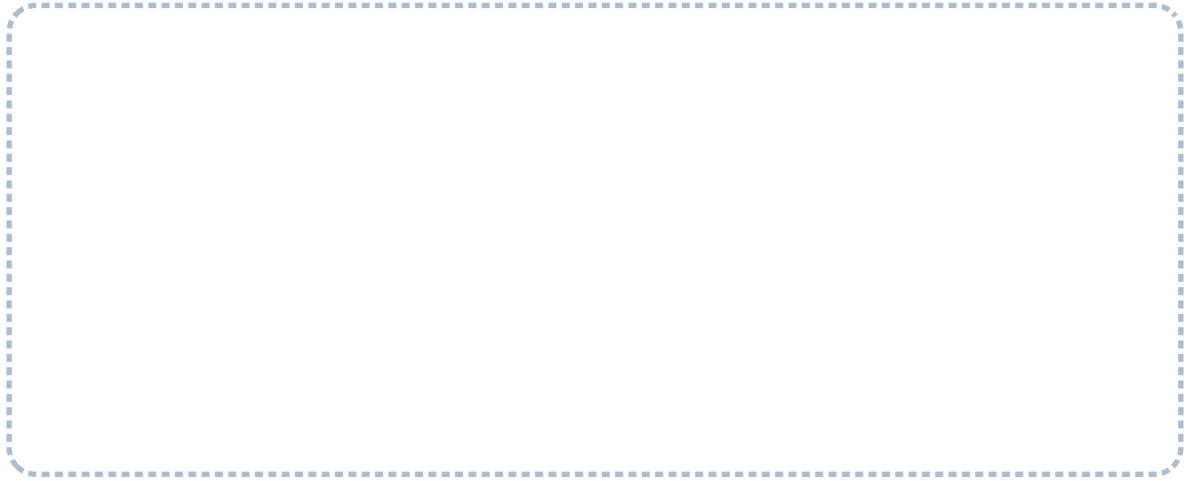
[5 marks]

On a scale drawing with a scale of 1 cm to 2 km, town P is 11 cm from town Q, on a bearing of 020° from Q. Find (a) the real distance PQ, in km, and (b) the bearing of Q from P.

Q23

[5 marks]

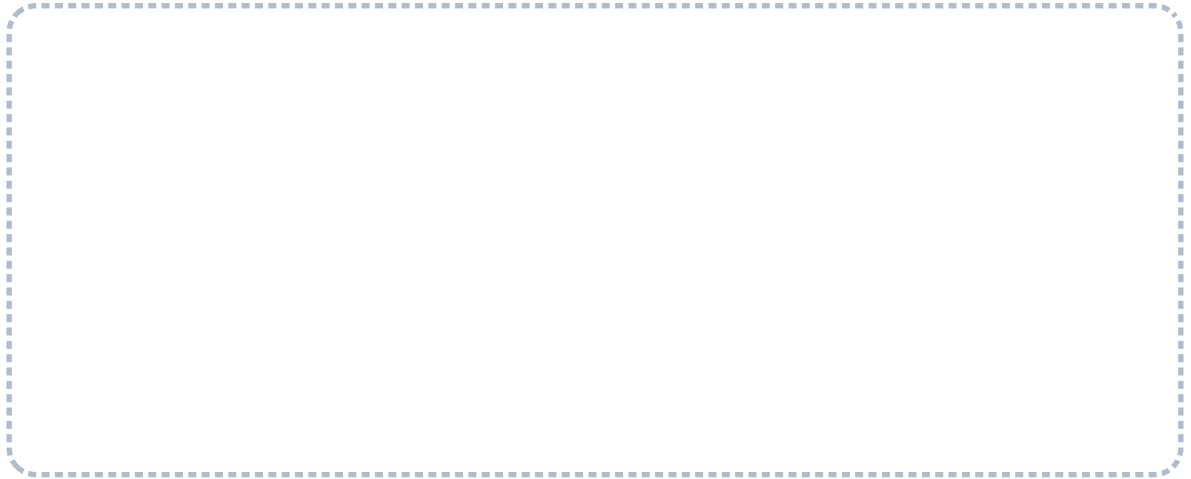
On a scale drawing with a scale of 1 cm to 4 km, town P is 5 cm from town Q, on a bearing of 195° from Q. Find (a) the real distance PQ, in km, and (b) the bearing of Q from P.



Q24

[5 marks]

On a scale drawing with a scale of 1 cm to 1 km, town P is 4 cm from town Q, on a bearing of 080° from Q. Find (a) the real distance PQ, in km, and (b) the bearing of Q from P.



Q25

[3 marks]

A region is defined by two conditions: points must be the same distance from two straight lines that cross at O, AND exactly 4 cm from O. Describe how you would construct the set of points satisfying both conditions.

Q26

[5 marks]

On a scale drawing with a scale of 1 cm to 2.5 km, town P is 12 cm from town Q, on a bearing of 100° from Q. Find (a) the real distance PQ, in km, and (b) the bearing of Q from P.

Q27

[3 marks]

A region is defined by two conditions: points must be the same distance from fixed points A and B, AND exactly 5 cm from fixed point C. Describe how you would construct the set of points satisfying both conditions.

Q28

[5 marks]

On a scale drawing with a scale of 1 cm to 2.5 km, town P is 4 cm from town Q, on a bearing of 245° from Q. Find (a) the real distance PQ, in km, and (b) the bearing of Q from P.

Q29

[5 marks]

On a scale drawing with a scale of 1 cm to 2.5 km, town P is 3 cm from town Q, on a bearing of 350° from Q. Find (a) the real distance PQ, in km, and (b) the bearing of Q from P.

Q30

[5 marks]

On a scale drawing with a scale of 1 cm to 4 km, town P is 3 cm from town Q, on a bearing of 180° from Q. Find (a) the real distance PQ, in km, and (b) the bearing of Q from P.