

# APPLIED GEOMETRY AND BEARINGS

*KCSE 1989 – 2012 Form 1 Mathematics*

1.	<p><b>1989 Q8 P1</b></p> <p>A town P is 200 km West of Q. Town R is at a distance of 80km on a bearing of <math>049^\circ</math> from P. Town S is due East of R and due North Of Q.</p> <p>Determine the bearing of S from P <span style="float: right;">(4marks)</span></p>
2.	<p><b>1993 Q22P1</b></p> <p>A route for safari rally has five sections AB, BC, CD, DE and EA. B is 200 km on a bearing <math>050^\circ</math> from A.C is 500km from B. The bearing of B from C is <math>300^\circ</math>. D is 400km on a bearing <math>230^\circ</math> from c. E is 250km on a bearing <math>025^\circ</math> from d. Using the scale 1cm for 50km draw the diagram representing the route for the rally.</p> <p>From the diagram determine</p> <p style="margin-left: 40px;">(i) The distance in km of A from E</p> <p style="margin-left: 40px;">(ii) The bearing of E from A <span style="float: right;">(8marks)</span></p>
3.	<p><b>1995 Q4 P1</b></p> <p>Manyatta village is 74 km North West of Nyangata village. Chamwe village is 42 km west of Nyangate.</p> <p>By using an appropriate scale drawing, find the bearing of Chamwe from Manyatta <span style="float: right;">( 2 marks)</span></p>
4.	<p><b>1995 Q21 P2</b></p> <p>A part B is on a bearing of <math>080^\circ</math> from a port A and at a distance of 95 km. A submarine is stationed at a port D, which is on a bearing of <math>200^\circ</math> from AM and a distance of 124 km from B.</p> <p>A ship leaves B and moves directly southwards to an island P, which is on a bearing of <math>140^\circ</math> from A. The submarine at D on realizing that the ship was heading from the island P, decides to head straight for the island to intercept the ship</p> <p>Using a scale Of 1 cm to represent 10 km, make a scale drawing showing the relative positions of A, B, D, P. <span style="float: right;">( 2 marks)</span></p> <p>Hence find</p> <p style="margin-left: 40px;">(i) The distance from A to D <span style="float: right;">( 2 marks)</span></p> <p style="margin-left: 40px;">(ii) The bearing of the submarine from the ship was setting off from B <span style="float: right;">( 1mark)</span></p> <p style="margin-left: 40px;">(iii) The bearing of the island P from D <span style="float: right;">( 1 mark)</span></p> <p style="margin-left: 40px;">(iv) The distance the submarine had to cover to reach the island P <span style="float: right;">( 2 marks)</span></p>
5.	<p><b>1996 Q20 P2</b></p> <p>Four towns R, T K and G are such that T is 84 km directly to the north of R, and K is on a distance of <math>295^\circ</math> from R at a distance of 60km. G is on a bearing of <math>340^\circ</math> from K and a distance of 30km.</p> <p>Using a scale of 1cm to represent 10km, make an accurate scale drawing to show the relative positions of the towns.</p> <p>Find:</p> <p style="margin-left: 40px;">(a) the distance and the bearing of T from K <span style="float: right;">(2marks)</span></p> <p style="margin-left: 40px;">(b) the distance and the bearing of G from T <span style="float: right;">(2mark)</span></p> <p style="margin-left: 40px;">(c) the bearing of R from G <span style="float: right;">(1mark)</span></p>

6.	<p><b>1997 Q23 P2</b></p> <p>Two aeroplanes, S and T, leave airport A at the same time, S flies on a bearing of <math>060^\circ</math> at 750 km/h while T flies on a bearing of <math>210^\circ</math> at 900km/h.</p> <p>(a) Using a suitable scale, draw a diagram to show the positions of the aeroplanes after two hours.</p> <p>(b) Use your diagram to determine</p> <p>(i) the actual distance between the two aeroplanes (2 marks)</p> <p>(ii) the bearing of T and S (1mark)</p> <p>(iii) the bearing of S and T (1mark)</p>
7.	<p><b>1998 Q22 P2</b></p> <p>Two aeroplanes P and Q leaves an airport at the same time. P lies on a bearing of <math>240^\circ</math> at 900 km/ h while Q flies due east at 750 km/ h.</p> <p>(a) Using a scale of 1 cm to represents 100km, make a scale drawing to show the position of the aeroplane after 40 minutes.</p> <p>(b) Use the scale drawing to find the distance between the two aeroplane after 40 minutes.</p> <p>(c) Determine the bearing</p> <p>(i) P from Q</p> <p>(ii) Q from P</p>
8.	<p><b>2002 Q22 P2</b></p> <p>Using the scale: 1cm represents 10km, construct a diagram showing the positions of B, C, Q and D. Determines the:</p> <p>i) Distance between B and C</p> <p>ii) Bearing of D from B.</p>
9.	<p><b>2003 Q19 P2</b></p> <p>A ship leaves port p for port R though port Q.Q is 200 km on a bearing of <math>220^\circ</math> from P.R is 420 km on the bearing of <math>140^\circ</math> from from Q.</p> <p>a) Using the scale 1:4,000,000, draw a diagram, showing the relative positions of the three ports P,Q, and R.</p> <p>b) By further drawing on the same diagram, determine how far R is to the west of p</p> <p>c) If the ship has sailed directly from P to R at an average speed of 40 knots, find how long it would have taken to arrive at R. (Take 1 nautical mile = 1.853 km)</p>

10.	<p><b>2004 Q19 P2</b></p> <p>For electricity posts, A, B, C, and D stand on a level ground such that B is 21 m on a bearing of <math>060^\circ</math> from A, C, is 15 m to the south of B and D is 12 m on a bearing of <math>140^\circ</math> from A.</p> <p>(a) (i) Using scale of 1 cm of 1 cm to represents 3 metres, draw a diagram to show the relative positions of the posts  (ii) Find the distances and the bearing of C from D</p> <p>(b) The height of the post at A is 8.4m. On a separate scale drawing, mark and determine the angle of depression of the foot of the post at C from the top of the top of the post at A.</p>
11.	<p><b>2009 Q23 P1</b></p> <p>Three points P,Q and R are on a level ground Q is 240 m from P on a bearing of <math>230^\circ</math> R is 120 m to the east of P.</p> <p>(a) Using a scale of 1 cm to represent 40m, draw a diagram to show the positions of P,Q and R in the space provided below. (2 marks)</p> <p>(b) Determine  (i) the distance of R from Q; (2 marks)  (ii) the bearing of R from Q (2 marks)</p> <p>(c) A vertical post stands at P and another one at Q.A bird takes 18 seconds fly directly from the top of the post at Q to the top of the post at P. Given that the angle of depression of the post at P from the top at Q is <math>9^\circ</math>,</p> <p>Calculate;  (i) the distance to the nearest centre the bird covers; (2 marks)  (ii) the speed of the bird in Km/h (2 marks)</p>
12.	<p><b>2010 Q20 P1</b></p> <p>The boundaries PQ, QR, RS and SP of a ranch are straight lines such that: Q is 16 km on a bearing of <math>040^\circ</math> from P;R is directly south of Q and east of P and S is 12 km on a bearing of <math>120^\circ</math> from R.</p> <p>Using a scale of 1 cm to represent 2 km.Show the above information in a scale drawing. (3mks)</p> <p>(a) From the scale drawing determine:  (i) The distance in kilometres of P from S.  (ii) The bearing of P from S.</p>
13.	<p><b>2011 Q15 P1</b></p> <p>Three posts x, y and z are such that y is 50km on a bearing of <math>060^\circ</math> from X while Z is 70km from Y and on a bearing of <math>300^\circ</math> from X.</p> <p>(a) Using a suitable scale, drawing a diagram to represent the above situation. (3marks)</p> <p>(b) Determine the distance, in km, of Z from x. (1 mark)</p>

14.

**2012 Q23 P1**

Three pegs R, S and T are on the vertices of a triangular plain field. R is 300m from S on a bearing of  $300^\circ$  and T is 450m directly south of R.

(a) using a scale of 1cm to represent 60m, draw a diagram to show the positions of the pegs.

(b) Use the scale drawing to determine:

(i) the distance between T and S in metres; (2marks)

(ii) the bearing of T from S. (1mark)

(c) Find the area of the field, in hectares, correct to one decimal place.

(4marks)