

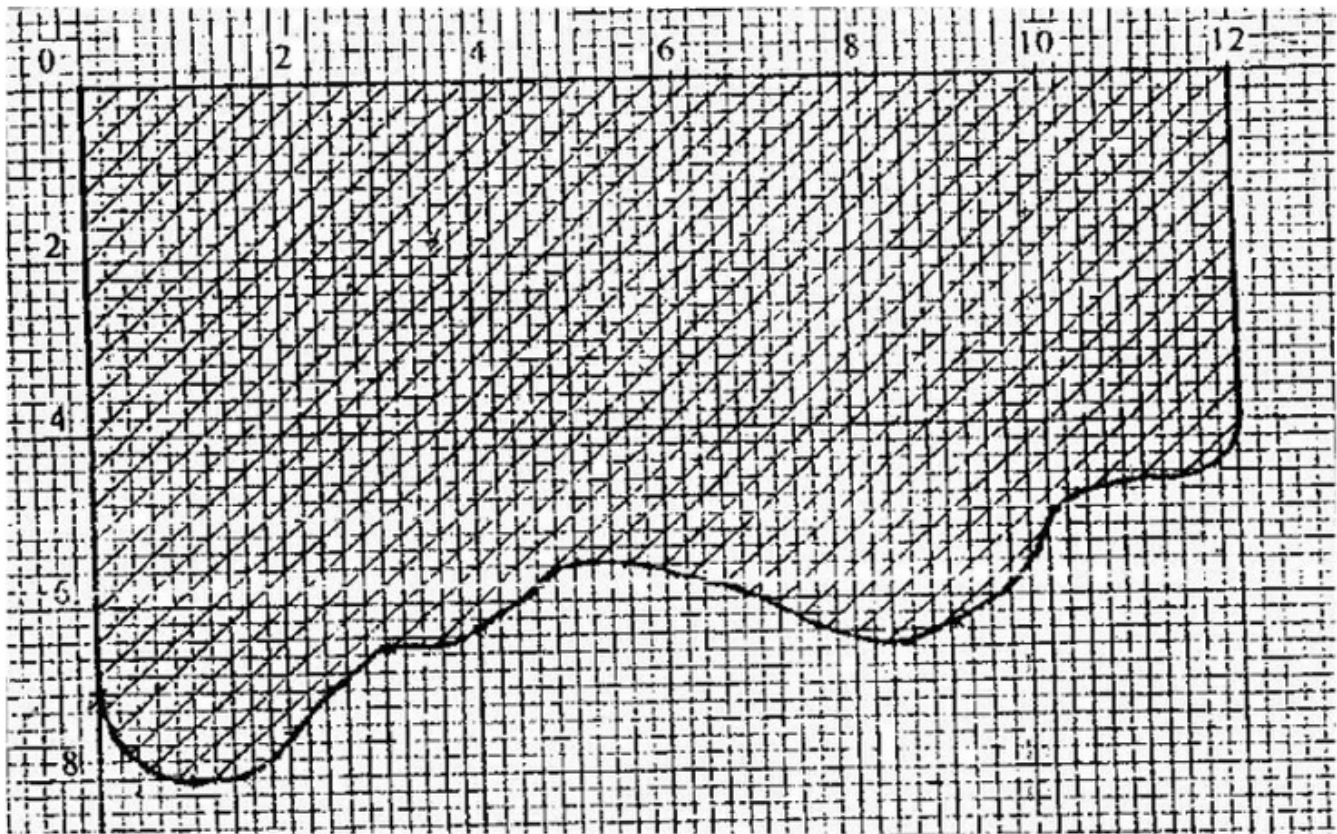
KCSE MATHEMATICS TOPICAL QUESTIONS WITH ANSWERS ON SCALE DRAWING

QUESTION 1

Manyatta village is 74 km North West of Nyangata village. Chamwe village is 42 km west of Nyangata. By using an appropriate scale drawing, find the bearing of Chamwe from Manyatta.

QUESTION 2

The shaded region below represents a forest. The region has been drawn to scale where 1 cm represents 5 km. Use the mid – ordinate rule with six strips to estimate the area of forest in hectares.



QUESTION 5

Two aeroplane P and Q leaves an airport at the same time. P lies on a bearing of 240° at 900 km/h while Q flies due east at 750 km/h.

- (a) Using a scale of 1 cm to represents 100km, make a scale drawing to show the position of the aeroplane after 40 minutes.
- (b) Use the scale drawing to find the distance between the two aeroplane after 40 minutes.
- (c) Determine the bearing
 - P from Q
 - Q from P

QUESTION 3

A part B is on a bearing of 080° 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 200° from AM and a distance of 124 km from B. A ship leaves B and moves directly southwards to an island P, which is on a bearing of 140 from A. The submarine at D on realizing that the ship was heading fro the island P, decides to head straight for the island to intercept the ship.

Using a scale of 1 cm to represent 10 km, make a scale drawing showing the relative positions of A, B, D, P. (2 marks)

Hence find

- i. The distance from A to D (2 marks)
- ii. The bearing of the submarine from the ship was setting off from B (1 mark)
- iii. The bearing of the island P from D (1 mark)
- iv. The distance the submarine had to cover to reach the island P (2 marks)

QUESTION 4

Four towns R, T, K and G are such that T is 84 km directly to the north R, and K is on a bearing of 295° from R at a distance of 60 km. G is on a bearing of 340° from K and a distance of 30 km. Using a scale of 1 cm to represent 10 km, make an accurate scale drawing to show the relative positions of the town.

Find

- (a) The distance and the bearing of T from K
- (b) The distance and the bearing G from T
- (c) The bearing of R from G

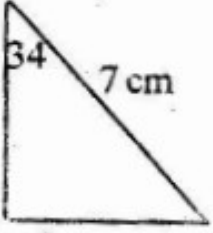
QUESTION 6

A forest is enclosed by four straight boundaries AB, BC, CD and DA. Point B is 25 km on a bearing of 315° from A, C is directly south of B on a bearing of 260° from A and D is 30 km on a bearing of 210° from C.

- (a) Using a scale of 1:500 000, represent the above information on a scale drawing. (3 marks)
- (b) Using the scale drawing, determine the:
 - (i) distance, in kilometres, of D from A; (2 marks)
 - (ii) bearing of A from D. (1 mark)
- (c) Calculate the area, correct to 1 decimal place, of the forest in square kilometres. (4 marks)

MARKING SCHEME

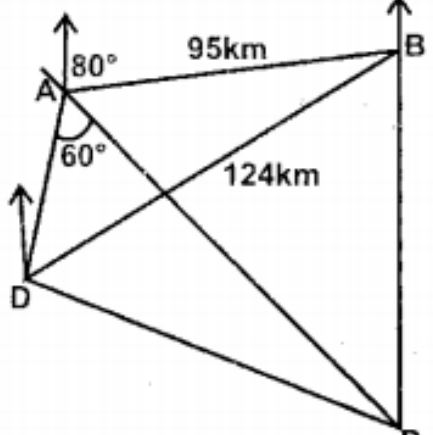
QUESTION 1

<p>4. Manyatta</p>  <p>5. $\frac{y-5}{x+8} = \frac{1}{4}$ $y = -\frac{1}{4}x + 3$</p>	<p>Bearing of Chamwe from Manyatta 169 ± 1</p>	<p>S1 B1 B1 ml A1</p>	<p>Appropriate scale Scale drawing (completely)</p>
2 marks			

QUESTION 2

<p>Area = $2(8 + 6.5 + 5.6 + 6 + 6.4 + 4.7)$ $= 2(8 + 6.5 + 5.6 + 6 + 6.4 + 4.7) \times 25$ $= 2 \times 37.2 \times 25 \times 100$ or equivalent $= 186000$ ha</p>	<p>M1 M1 A1</p>	<p>At least 4 reading within 10.1 For conversion to Km^2 or km to hectares</p>
5 marks		

QUESTION 3

<p>ΔABD constructed ΔABP constructed (i) $AD = 4.5 \pm 0.1 \text{ CM}$ Distance A to D = $4.5 \times 10 = 45 \text{ km}$ (ii) Bearing D from B = 241 ± 1 (iii) Bearing P from D = 123 ± 2 (iv) $DP = 12.9 \pm 0.2 \text{ CM}$ Distance D to P = $12.9 \times 10 = 129 \text{ km}$</p>	<p>B1 B1 B1 B1 B1 B1 B1</p>	
8 marks		

QUESTION 4

<p>20. Location of T Location of K Location of G (a) Distance TK = $80 \pm \text{km}$ Bearing of t from K: $043^\circ \pm 1$ (b) Distance GT = $72 \pm 2 \text{ km}$ Bearing of G from T: $245^\circ \pm 2^\circ$ (c) Bearing of R from G: $130^\circ \pm 2^\circ$</p>	<p>B1 B1 B1 B1 B1 B1 B1</p>	<p>Measure length $8.4 \pm 1 \text{ cm}$ $6.0 \pm 1 \text{ cm}$ $30 \pm 0.1 \text{ cm}$ Apply if either K or G is positive located If the diagram initially constructed</p>
8 marks		

QUESTION 5

22. a 600 km and 500 km seen or used
 (✓) scale used
 ✓ bearing and distance of P
 ✓ bearing and distance of Q
- b) $PQ = 10.6 \pm 0.1$
 $= 1060 \pm 10 \text{ km}$
- c) (i) $254^\circ \pm 1^\circ$
 (ii) $074 \pm 1^\circ$

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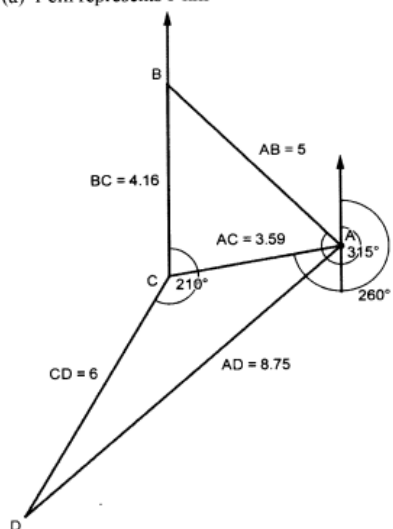
8

Apply MR if 1 hr is used

(✓) measurement and conversion of

(✓) Apply ✓ if one plane is ✓ by

QUESTION 6

No.	Marking Scheme	Marks	Comments
20.	<p>(a) 1 cm represents 5 km</p>  <p>(b)(i) Distance DA = $(8.8 \pm 0.1) \text{ cm}$ $= (8.8 \pm 0.1) \times 5 \text{ km}$ $= 44 \pm 0.5 \text{ km}$</p> <p>(ii) Bearing of A from D = $48^\circ \pm 1^\circ$</p> <p>(c) AC = $(3.6 \pm 0.1) \times 5 \text{ km} = 18 \pm 0.5 \text{ km}$</p> <p>Area of the forest</p> $= \frac{1}{2} \times 18 \times 25 \sin 55^\circ + \frac{1}{2} \times 30 \times 18 \times \sin 130^\circ$ $= 184.3 + 206.8$ $= 391.1 \text{ km}^2$	<p>B1 B1 B1</p> <p>M1 A1 B1 B1</p> <p>M1 M1 A1</p> <p>10</p>	<p>Location B Location C Location D</p> <p>Area of ACB Area of ADC</p> <p>Follow tho'</p>