GEOMETRY TOPIC

KCSE QUICK REVISION

Compilation of Possible Questions in Mathematics Likely to be examined in KCSE.

A Special Analysis of Prediction Questions that may be Tested in KCSE from this Topic in Form 1.

MATHEMATICS

SERIES 1

For Marking Schemes

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MWALIMU CONSULTANCY

GEOMETRY

1. A point B is on a bearing of 080^0 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 200^0 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 0f 1 cm to represent 10 km, make a scale drawing showing the relative positions of A, B, D, P.

Hence find

(i) The distance from A to D

(ii) The bearing of the submarine from the ship was setting off from B

(iii) The bearing of the island P from D

(iv) The distance the submarine had to cover to reach the island P

2. 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 295^0 from R at a distance of 60 km. G is on a bearing of 340^0 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

3. Two aeroplanes, S and T leave airports A at the same time. S flies on a bearing of 060 at 750 km/h while T flies on a bearing of 210^0 at 900km/h.

(a) Using a suitable scale, draw a diagram to show the positions of the aeroplane after two hours.

(b) Use your diagram to determine

(i) The actual distance between the two aeroplanes

(ii) The bearing of T from S

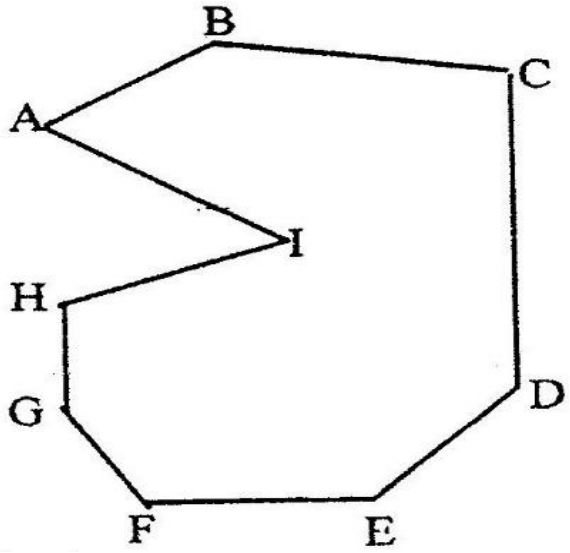
(iii) The bearing of S from T

4. A point A is directly below a window. Another point B is 15 m from A and at the same horizontal level. From B angle of elevation of the top of the bottom of the window is 300 and the angle of elevation of the top of the window is 350. Calculate the vertical distance.

(a) From A to the bottom of the window

(b) From the bottom to top of the window

5. Find by calculation the sum of all the interior angles in the figure ABCDEFGHI below



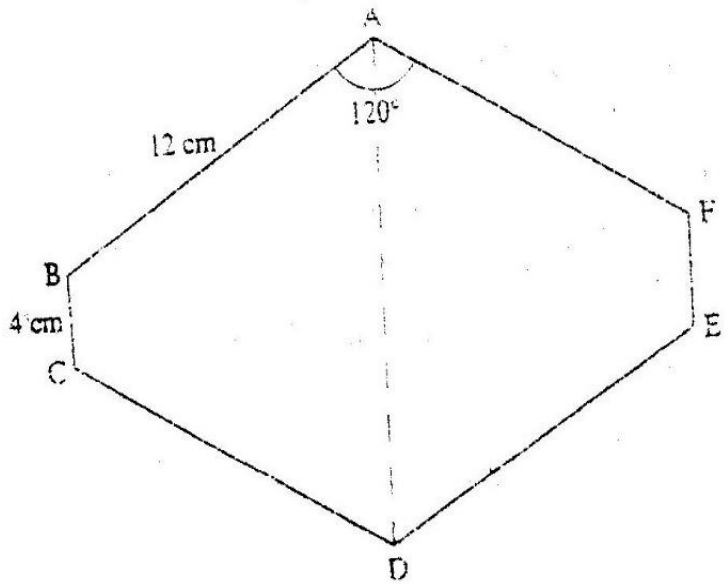
6. Shopping centers X, Y and Z are such that Y is 12 km south of X and Z is 15 km from X. Z is on a bearing of 330^0 from Y. Find the bearing of Z from X.

7. An electric pylon is 30m high. A point S on the top of the pylon is vertically above another point R on the ground. Points A and B are on the same horizontal ground as R. Point A due south of the pylon and the angle of elevation of S from A is 26^0. Point B is due west of the pylon and the angle of elevation of S from B is 32^0
Find the

(a) Distance from A and B

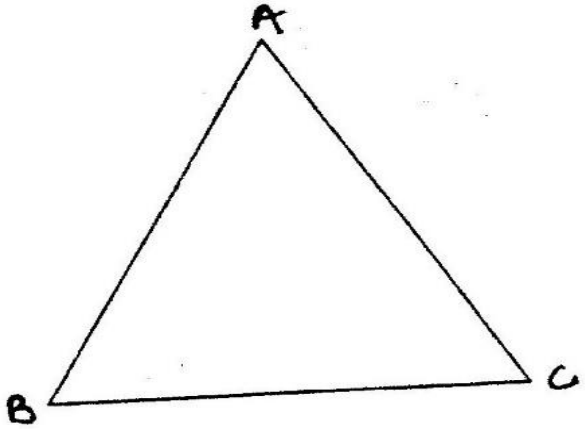
(b) Bearing of B from A

8. The figure below is a polygon in which AB = CD = FA = 12cm BC = EF = 4cm and BAF =- CDE = 120^0. AD is a line of symmetry.



Find the area of the polygon.

9. The figure below shows a triangle ABC.



a) Using a ruler and a pair of compasses, determine a point D on the line BC such that BD:DC = 1:2.
b) Find the area of triangle ABD, given that AB = AC.

10. A boat at point x is 200 m to the south of point Y. The boat sails X to another point Z. Point Z is 200m on a bearing of 310^0 from X, Y and Z are on the same horizontal plane.

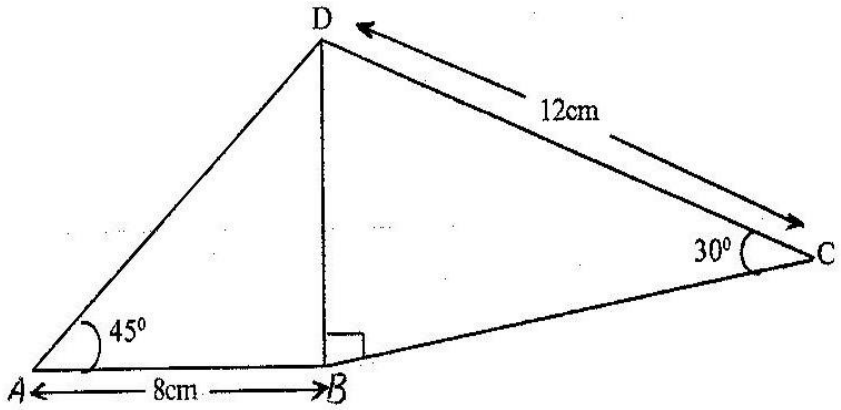
(a) Calculate the bearing and the distance of Z from Y

(b) W is the point on the path of the boat nearest to Y.

Calculate the distance WY

(c) A vertical tower stands at point Y. The angle of point X from the top of the tower is 6^0 calculate the angle of elevation of the top of the tower from W.

11. The figure below shows a quadrilateral ABCD in which AB = 8 cm, DC = 12 cm, ∠BAD = 45^0, ∠CBD = 90^0 and BCD = 30^0.

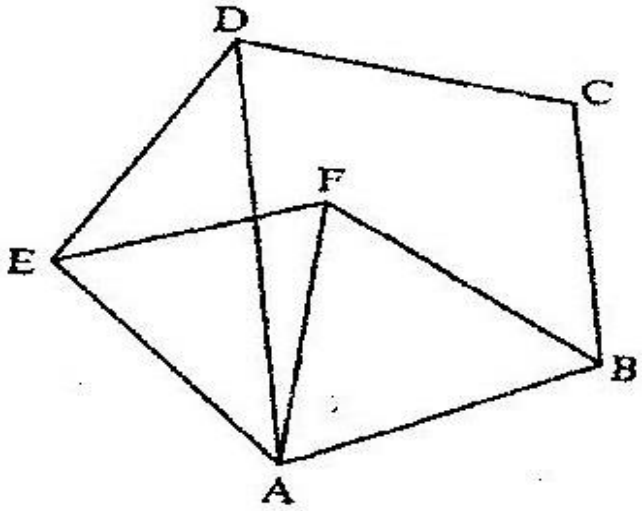


Find:

(a) The length of BD

(b) The size of the angle A D B

12. In the figure below, ABCDE is a regular pentagon and ABF is an equilateral triangle



Find the size of

a) ∠ ADE

b) ∠ AEF

c) ∠ DAF

13. In this question use a pair of compasses and a ruler only

(a) construct triangle ABC such that AB = 6 cm, BC = 8cm and ∠ABC 135^0 **(2 mks)**

(b) Construct the height of triangle ABC in a) above taking BC as the base **(1 mark)**

14. The size of an interior angle of a regular polygon is $3x^0$ while its exterior angle is $(x- 20)^0$. Find the number of sides of the polygon

15. Points L and M are equidistant from another point K. The bearing of L from K is 330^0. The bearing of M from K is 220^0.

Calculate the bearing of M from L

16. Four points B,C,Q and D lie on the same plane point B is the 42 km due south-west of town Q. Point C is 50 km on a bearing of 560^0 from Q. Point D is equidistant from B, Q and C.

(a) Using the scale 1 cm represents 10 km, construct a diagram showing the position of B, C, Q and D

(b) Determine the

(i) Distance between B and C

(ii) Bearing D from B

17. Two aeroplanes P and Q, leave an airport at the same time flies on a bearing of 240^0 at 900km/hr while Q flies due East at 750 km/hr

(a) Using a scale of 1v cm drawing to show the positions of the aeroplanes after 40 minutes.

(b) Use the scale drawing to find the distance between the two aeroplane after 40 minutes

(c) Determine the bearing of

(i) P from Q ans 254^0

(ii) Q from P ans 74^0

18. A port B is no a bearing of 080 from a port A and at a distance of 95 km. A submarine is stationed port D which is on a bearing of 200^0 from A, 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 140^0 from A. The submarine at D on realizing that the ship was heading for 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 position of A, B D and P.

Hence find:

(i) The distance from A and D

(ii) The bearing of the submarine from the ship when the ship was setting off from B

(iii) The baring of the island P from D

(iv) The distance the submarine had to cover to reach the island

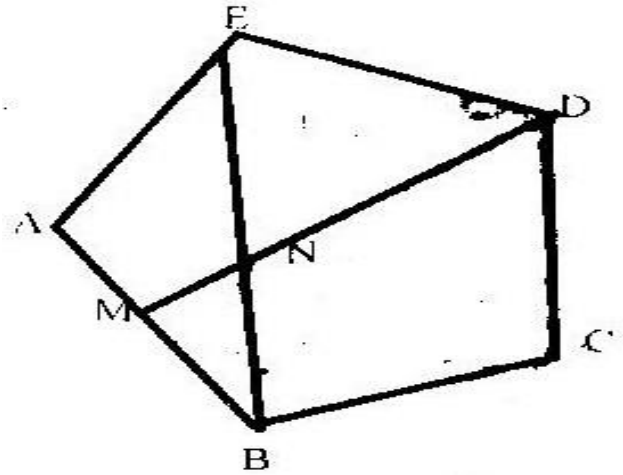
19. Four towns R, T, K and G are such that T is 84 km directly to the north R and K is on a bearing of 295^0 from R at a distance of 60 km. G is on a bearing of 340^0 from K and a distance of 30 km. Using a scale of 1 cm to represent 10 km, make an acute scale drawing to show the relative positions of the towns.

Find

(a) The distance and bearing of T from K

(b) The bearing of R from G

20. In the figure below, ABCDE is a regular pentagon and M is the midpoint of AB. DM intersects EB at N. (T7)



Find the size of

(a) ∠BAE

(b) ∠BED

(c) ∠BNM

21. Use a ruler and compasses in this question. Draw a parallelogram ABCD in which AB = 8cm, BC = 6 cm and BAD = 75. By construction, determine the perpendicular distance between AB and CD.

22. The interior angles of the hexagon are $2x^0$, $\frac{1}{2}x^0$, $x + 40^0$, 110^0, 130^0 and 160^0. Find the value of the smallest angle.

23. The size of an interior angle of a regular polygon is 156^0. Find the number of sides of the polygon.

For Marking Schemes/Answers

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