**FORM 2**

**MID TERM EXAM – JUNE 2016**

**MATHEMATIC**

**TIME 2 ½ HOURS**

**Name……………………………...................…………....Class………..Adm No. ………...**

**Instructions:**

* Write your name, class and adm no. in the space provided.
* This paper consist of section I and II
* Answer all questions in section I and II
* Show all your workings giving answers of each stage in the spaces provided below each question.
* Marks may be given for correct working even if the answer is wrong
* Mathematical tables maybe used except when stated otherwise
* Calculator should **NOT** be used.

**SECTION I**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | TOTAL |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**SECTION II**

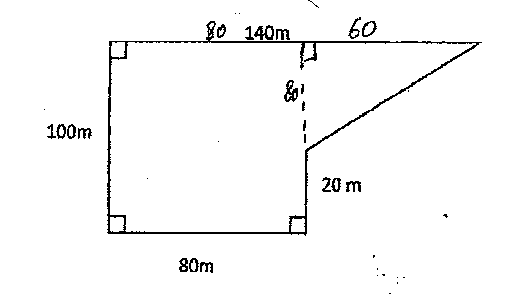
|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 17 | 18 | 19 | 20 | 21 | TOTAL |
|  |  |  |  |  |  |

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**GRAND TOTAL**

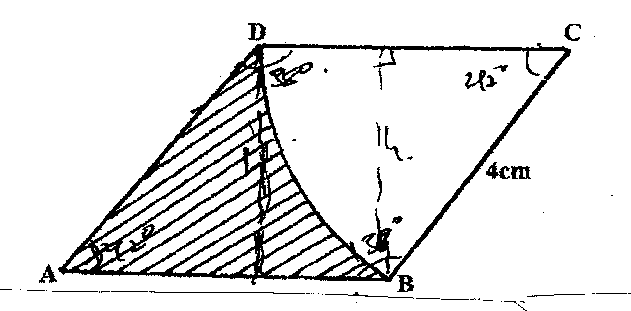
**SECTION I (50MKS)**

1. Evaluate the following (3 mks)
2. Solve the equation (3 mks)
3. Use the tables of reciprocals and square roots to solve for y. (3 mks)
4. Evaluate without using tables or calculators (4 mks)
5. Use logarithms to evaluate (4 mks)
6. The figure below shows the shape of Kamau’s farm with dimensions shown in meters.



Find the area of Kamau’s farm in hectares. (3 mks)

1. The length of a rectangle is increased by 20% while the width is decreased by 10%. Find the percentage change in area. (2 mks)
2. Given the ratio x : y = 2 : 3, find the ratio (7x – 3y) : (2x + 3y) (3 mks)
3. The figure below is a rhombus ABCD of sides 4cm. BD is an arc of circle centre C. given that <ABC = 1380. Find the area of shaded region. (4 mks)



1. 2.5 litres of water density 1 g/cm3 is added to 8 litres alcohol density 0.8 g/cm3. Calculate the density of the mixture. (3 mks)
2. Find the equation of a line which passes through (-1,-4) and is perpendicular to the line:

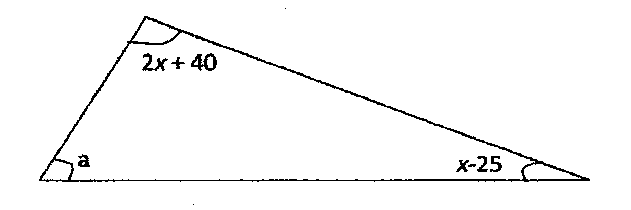
y + 2x – 4 =0 (3 mks)

1. Two consecutive odd number are such that the difference of twice the larger number and the smaller number is 21. Find the product of the numbers. (3 mks)
2. Solve the simultaneous equation. (3 mks)

2x – y = 3

x2 – xy = -4

1. .

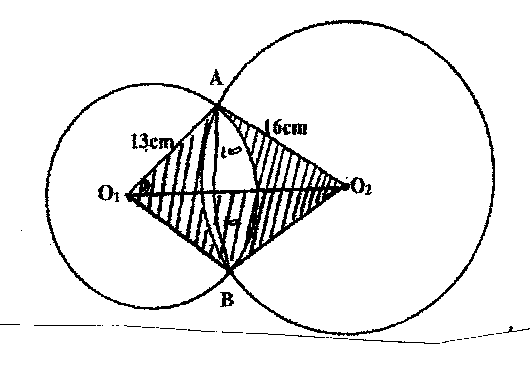


In the figure above, angle **a** is half the sum of the other angles. Evaluate the angles of the triangle. (3 mks)

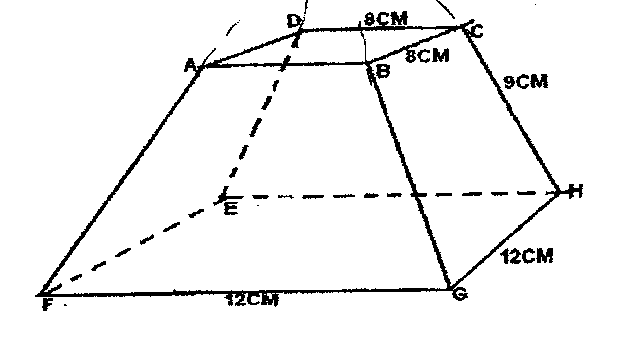
1. Simplify (3 mks)
2. Hamisi arrived in Nairobi from USA with 40 travelers cheques each with 75 US dollar. How much does she receive in Kshs from the bank on a day when 1 US dollar was equivalent to Kshs 81.40 and the bank charges commission at the rate of Kshs 100 per travelers cheque?

(3 mks)

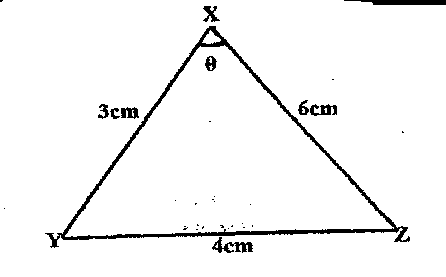
1. Two circles of radii 13cm and 16cm intersect such that they share a common chord of length 20cm. calculate the area of the shaded part () (10 mks)



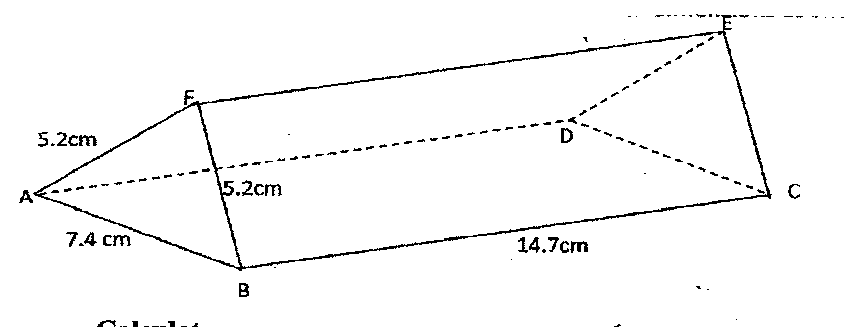
1. The figure below shows a solid frustum if pyramid with a square top of side 8 cm and a square base of side 12 cm. the slant edge of the frustum is 9 cm.



1. The slant edge of the solid pyramid from which the frustrum was cut. (3 mks)
2. The surface area of the frustrum. (7 mks)
3. (a) In the triangle XYZ below, find the angle ZXY. (5 mks)



(b) The diagram shows a right glass prism ABCDEF with dimensions as shown.



Calculate:

1. The perimeter of the prism (2 mks)
2. The volume of the prism. (3 mks)
3. The angle of depression of a point A on the ground from the top of a post is 180 and that of another point 8 on the same line as A nearer to the foot of the post is 25-. If A and B are 70m apart.
4. Draw a sketch to represent positions of A and B. (2 mks)
5. Using your sketch calculate
6. The height of the post from the ground level. Write your answer to 4 s.f.

(6 mks)

1. The distance of point A from the foot of the post. (2 mks)