**NAME…………………………………………………………………….. INDEX NO. ……………**

**121/1**

**MATHEMATICS**

**AUGUST 2021**

**2 ½ HRS**

**FORM 3**

**CASPA AMUKURA PARISH EXAM**

**Kenya Certificate of Secondary education**

**MATHEMATICS PAPER 1**

**INSTRUCTIONS TO CANDIDATES**

1.  *Write your name, Admission number and class in the spaces provided.*

*2. Sign and write date of the examination in the spaces provided.*

*3. The paper contains TWO sections: Section A and B*

*4. Answer ALL questions in section I and* ***STRICTLY ANY FIVE*** *questions from section II.*

*5. All working and answers must be written on the question paper in the spaces provided below each question.*

*6. Show all the steps in your calculations, giving your answers at each stage in the spaces below each question.*

*7. Marks may be awarded for correct working even if the answer is wrong.*

*8. Non-programmable silent electronic calculators and KNEC Mathematical tables may be used except where stated otherwise.*

**FOR EXAMINERS USE ONLY**

SECTION A

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

SECTION B

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | TOTAL |
|  |  |  |  |  |  |  |  |  |

**SECTION 1 (50MKS)**

**Answer all the questions in the section in the provided**

1. Express as a fraction in its simplified form

(3mks)

1. Evaluate using tables of squares, square roots and reciprocals (4mks

+ 56.32 correct of 4 s.f

1. A straight line L1 passing through T (-2,1) is perpendicular to another line L2 whose equation is 2x – 3y +4 = 0

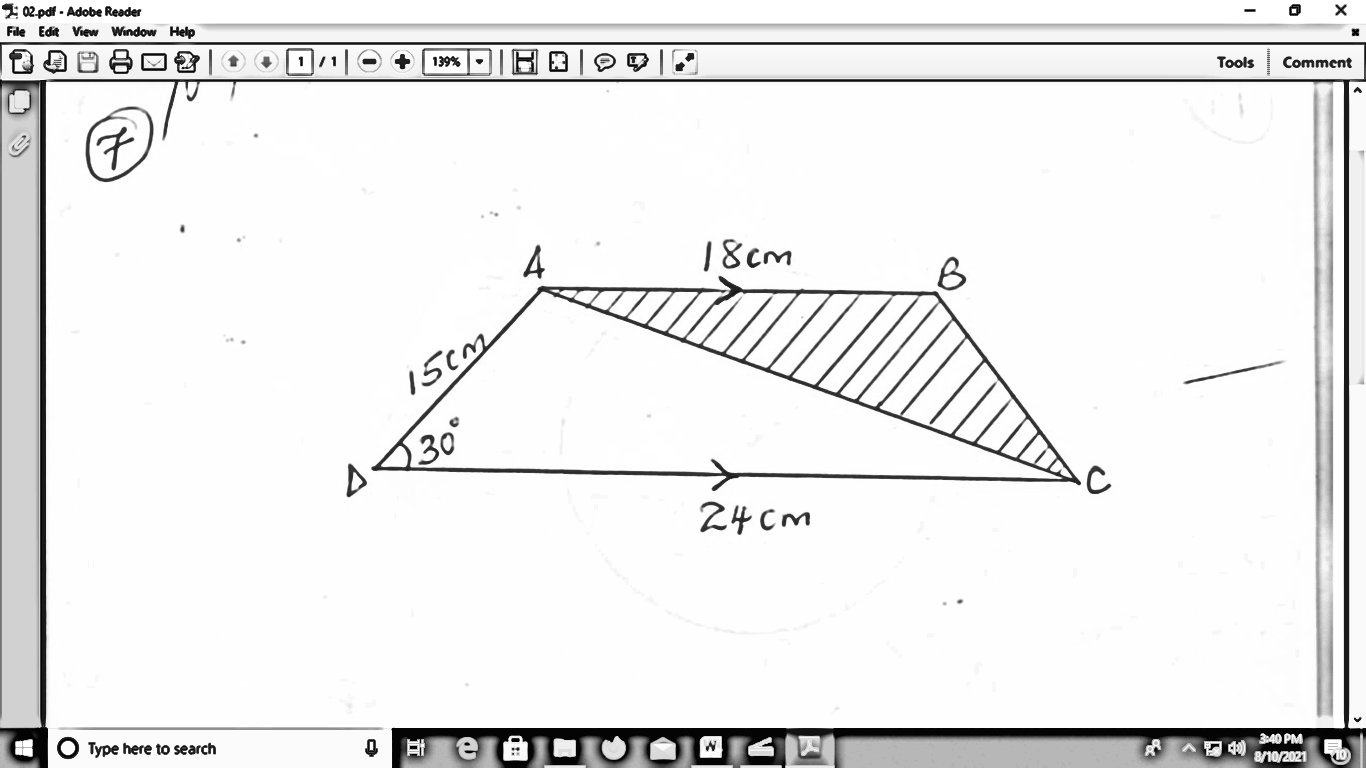
Find the equation of L1 in the form y= mx + c (3mks)

1. Solve for x

(3mks)

1. The interior angles of an irregular polygon are 120o, 140o, 136o and the rest are 108 o each. Determine the sides of the polygon (3mks)
2. Simplify (3mks)
3. In the figure ABCD, side AB is parallel to side DC Angle ADC = 30o, AB = 18 cm, AD = 15 cm and DC = 24 cm

18cm



Find the area of the shaded region (4mks)

1. Given that x is an a cute angle solve for x

Sin (3x +10o) = Cos 2x

Hence find tan ½ x correct to 3 d.p (3mks)

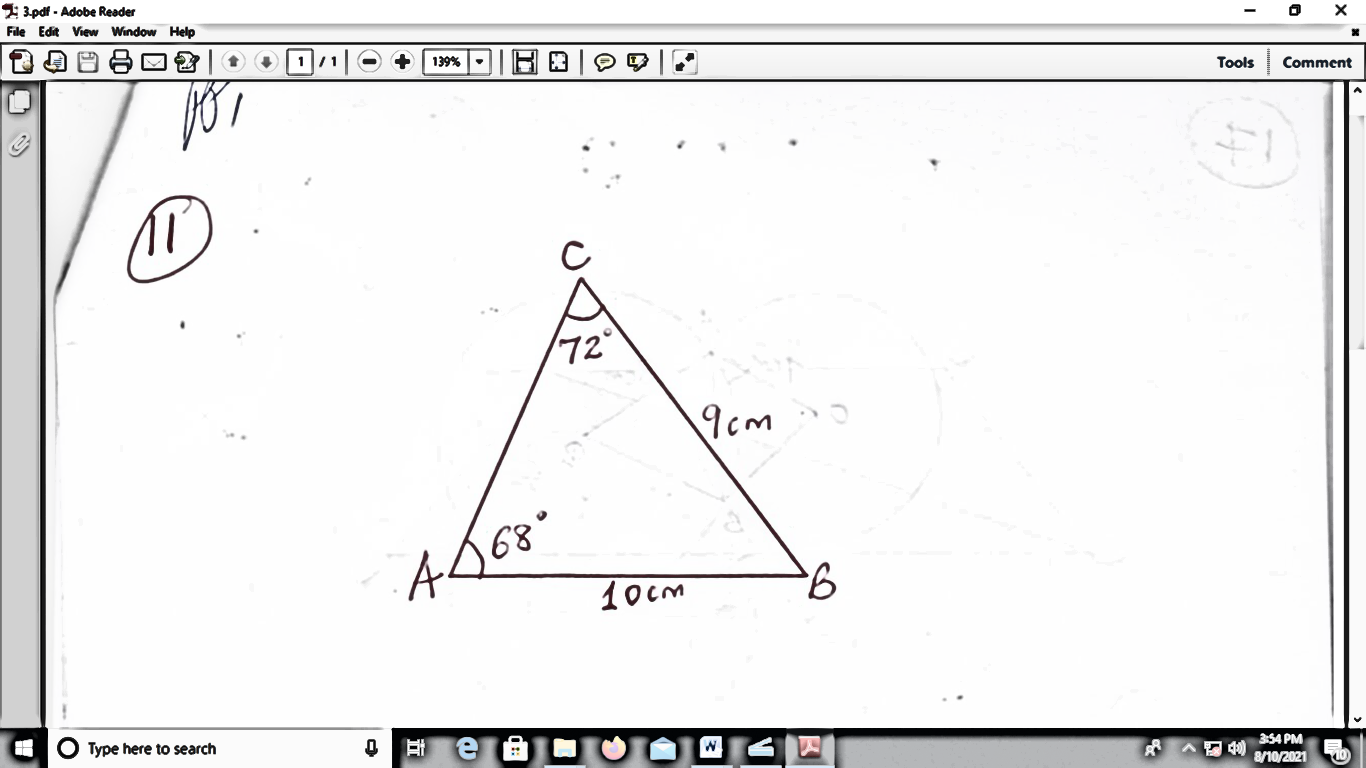
1. A hemispherical solid has a surface area of 441cm2 (use Calculate its volume correct to 2d.p (4mks)
2. Solve for x and y (4mks)

X + y = 4

Xy = 3

(4mks)

1. In the figure AB = 10 cm, BC = 9 cm



Find the area correct to 1 d.p

(2mks)

1. Two years to come a mother will be three times as old as her daughter. Four years ago the mother was 28 years older than the daughter. Determine the present age of the daughter (3mks)
2. Solve for .

Hence represent your solution on a number line (3mks)

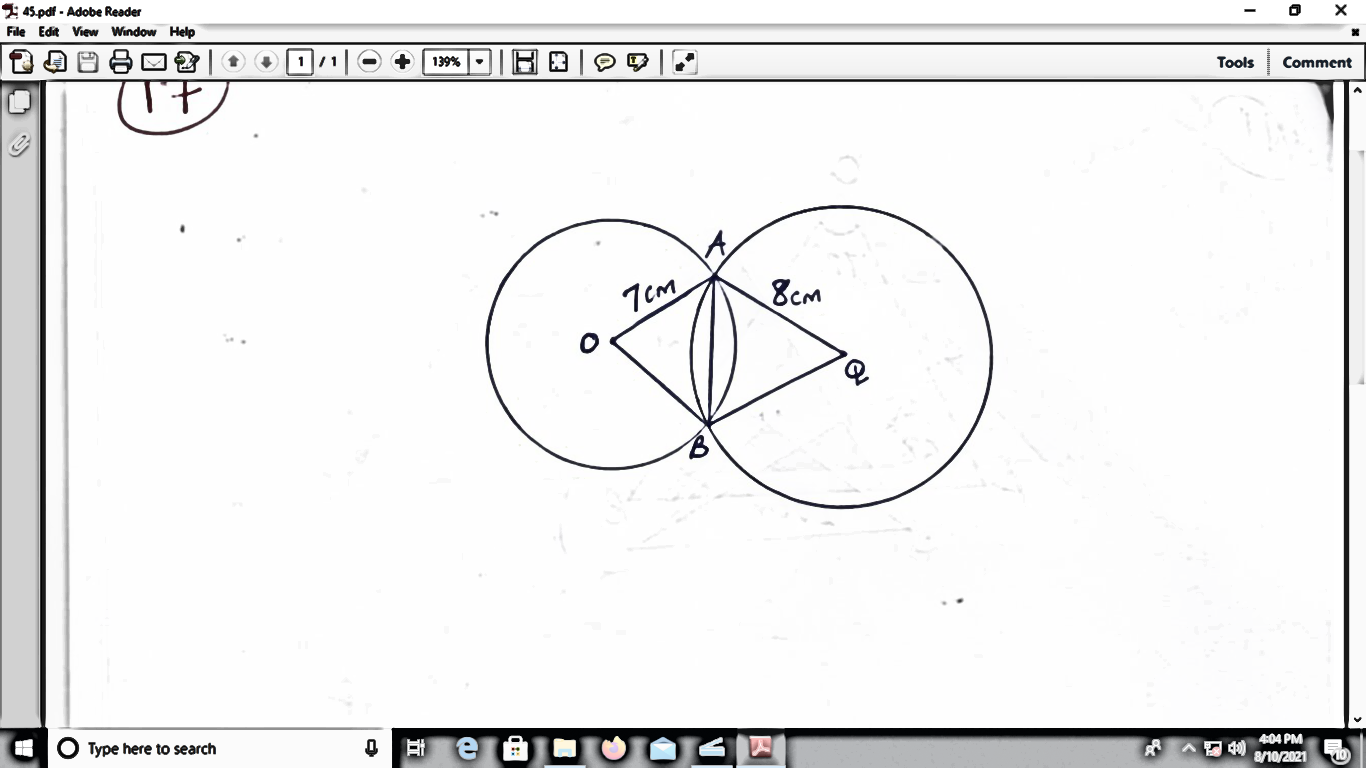
1. Given that x:y = 3: 2, y: z = 4:1 find the ratio y : z: x in its simplified form (2mks)
2. A cylindrical metal bar 12cm long has a volume of 27 cm3. Find the length of a similar metal bar whose volume is 64cm3. (3mks)
3. Given that

Find (3mks)

***SECTION B (50mks)***

***Answer any five questions in this section in the space provided***

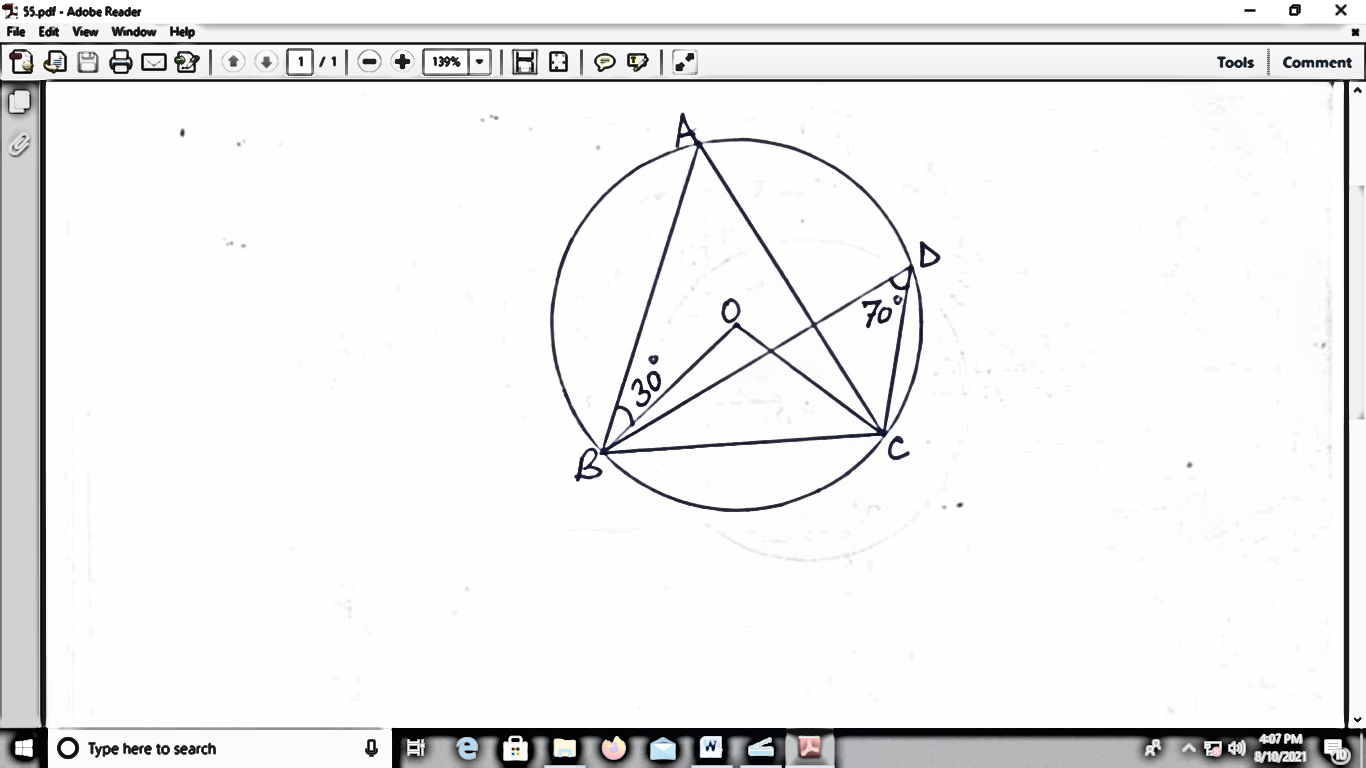
1. The figure shows two circles intersecting at points A and B where O and Q are centres. AO = 7cm, BQ = 8cm and AB = 9cm .



1. Determine the size of

(2mks)

ii) (2mks)

1. Calculate the area of the shaded region (6mks)
2. A lorry left Kisumu at 7.30am for Nairobi travelling at an average speed of 80km/h. At 8.15am Matatu left Kisumu following the same route towards Nairobi travelling at average speed of 100km/h. Given that the distance from Kisumu to Nairobi is 480km, determine
3. The distance covered by the lorry before the Matatu left Kisumu (2mks)
4. The relative speed, hence the time taken by the Matatu to catch up with the lorry (4mks)
5. The time of the day the Matatu caught up with the lorry (2mks)
6. The distance from Kisumu to the point where they caught up with each other (2mks)
7. In the figure ABC and D are point on the circumference of the circle. Whose centre is O. Angle BDC = 70o and angle ABO = 30o 

Giving reasons, find the size of each angle below

1. (2mks)
2. ∠BAD (2mks)
3. ∠ACO (2mks)
4. ∠OBC (2mks)
5. ∠ADC (2mks)
6. A group of members decided to raise sh. 80,000 toward a poultry project, by contributing equally. Fifteen more members joined the group before the contributions were made. Each member therefore ended up contributing sh. 1200 less
7. Write down two expressions showing each members contribution (2mks)
8. Hence find the original number of members in the group (6mks)
9. Find the ratio of final contribution to the original (planned) contribution (2mks)
10. a) Using a ruler and a pair of compasses only construct ABC such that AB = 4cm BC = 8=cm and BAC = 45o. Measure AC (4mks)
11. Drop a perpendicular from C to meet AB proceeded at X. Measure CX and BX (3mks)
12. Draw a parallelogram BCYX, hence measure angle BXY. (3mks)
13. The table below shows the marks scored by 32 students in an exam

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Marks % | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 |
| Students | 2 | 6 | 5 | 9 | 4 | 6 |

1. State (i) The modal class (1mk)
2. The modal frequency (1mk)
3. Determine correct to 4s.f
4. The Mean mark (4mks)
5. Median mark (4mks)
6. A (-3.2), B (-1,3) and C (-1,1) are vertices of triangle ABC. Draw
7. Triangle A1B1C1 is reflected in the line y=x obtain triangle ∆ A1B1C1

Draw ∆ A1B1C1 (4mks)

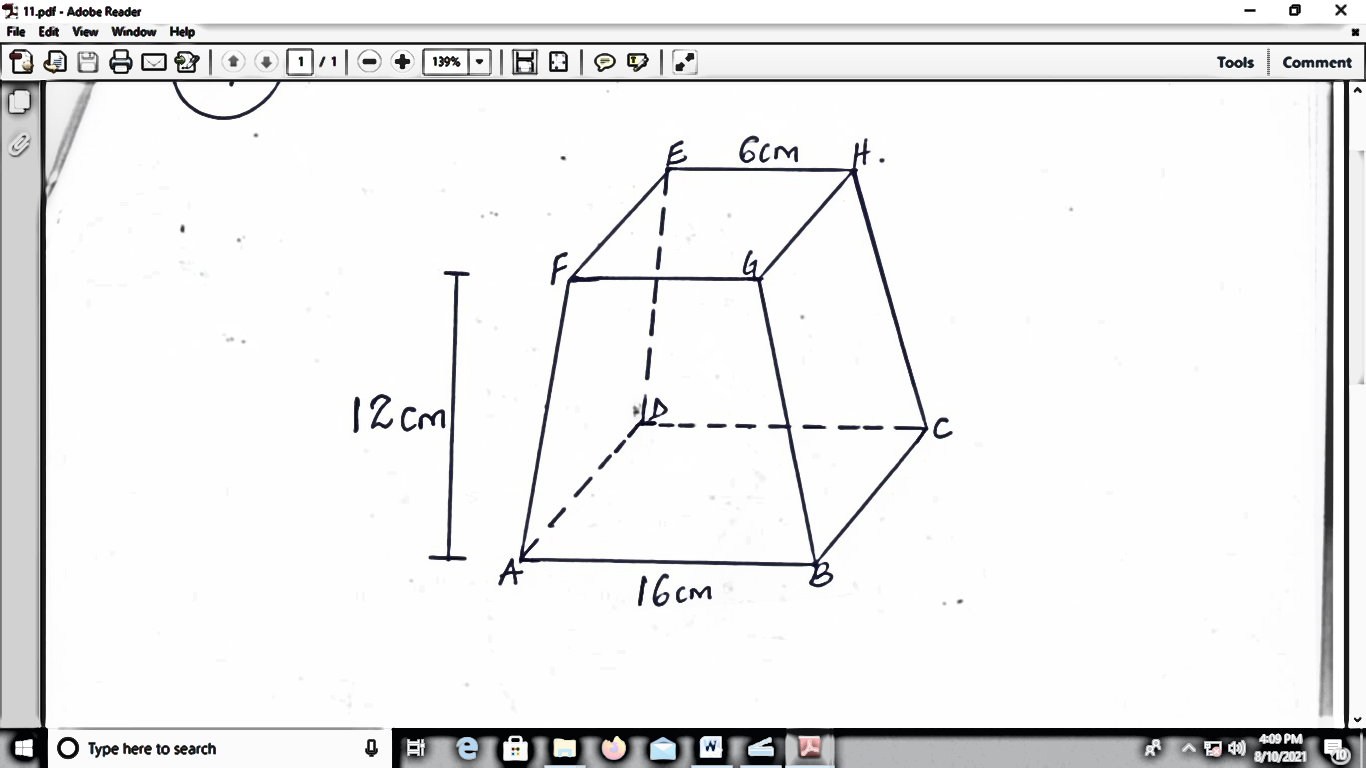
1. Triangle A 1B1C1 undergoes a rotation of-90o about the origin obtain triangle A11B11C11 .  Draw ∆ A11B11C11 (3mks)
2. Triangle A11B11C11 is finally enlarged using a scale factor of -2 with the centre at (0, 0) to obtain A111B111C111.

Draw triangle A111B111C111. (3mks)

(Use the same pair of axes to draw all the triangles)

1. The figure below shows a model of a solid in the shape of a frustum of a square based pyramid.

The height of the solid is 12cm with the top and bottom measurements of 6cm and 16cm respectively



Determine correct to the nearest whole number

1. The height of the original solid (2mks)
2. The volume of the solid (4mks)
3. The surface area (4mks)

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***CASPA***