

# FORM FOUR CLUSTER KCSE MODEL 7

## MATHEMATICS PAPER 1 QUESTIONS

### SECTION I (50 Marks)

1. Without using mathematical tables or calculators evaluate, leaving your answer as simplified fraction.

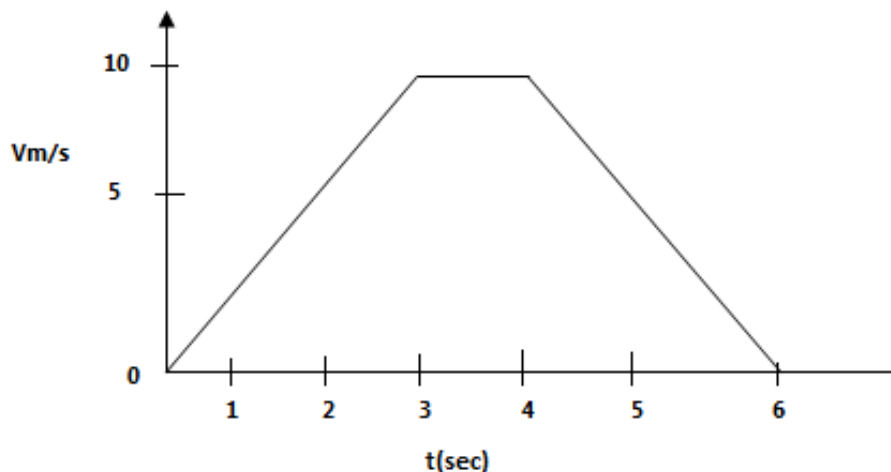
$$\frac{3\sqrt{1728}}{-3 + -16 \div -8 \times 4} \quad (3\text{mks})$$

2. Walimbwa bought 3 goats and 2 cows for Ksh 32,500 and when he bought one more goat and one more cow the cost increased in the ratio 19:13. Find the price of a goat and a cow. (3mks)

3. Simplify completely

$$\frac{x - 3xy}{3x^2 - 27x^2y^2} \quad (3\text{mks})$$

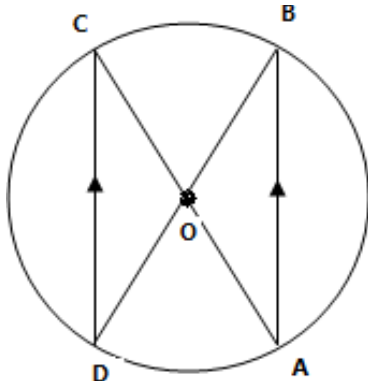
4. Find the equation of a straight line which is equidistant from the points P(-1,6) and Q(3,2), expressing it in the form  $ax+by=c$  where a,b and c are constants. (4mks)
5. A circular flower garden of radius xm is surrounded by a path  $1 \frac{1}{2}$  m wide. Find in terms of  $\pi$  and x in its simplest form an expression of the area of the path. (3mks)
6. The graph below shows velocity – time graph



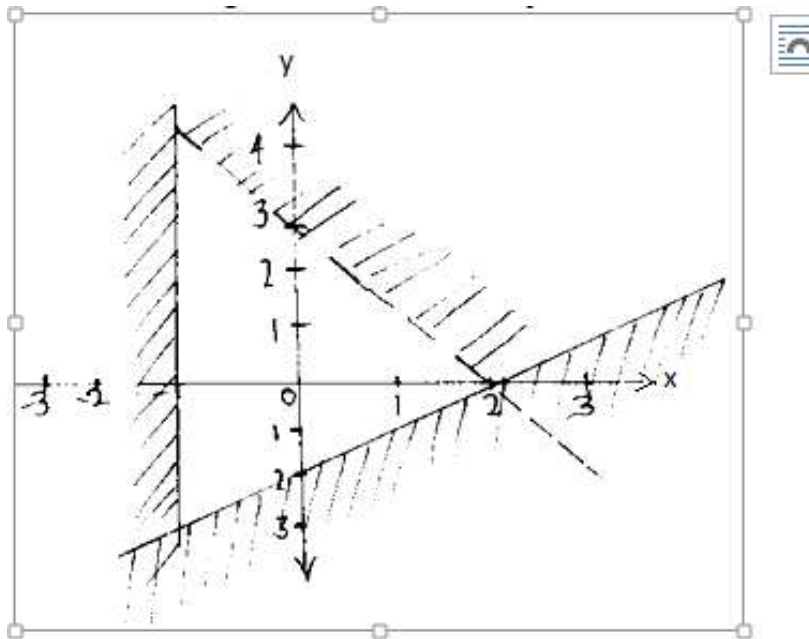
Use the graph to find the average velocity in m/s. (3mks)

7. A salesman earns a basic salary of ksh 12,000 per month. In addition he is paid commission as follows.  
 For sales up to ksh 200,000 0%  
 For sales above Ksh 200,000
8. In the figure, O is the centre of the circle and chords CD and AB are parallel. Prove that triangles ACD and ABC are congruent. (3mks)
- i).for the first ksh 50,000 1.5%

ii).for the next ksh 100,000 2.5%  
 For any amount above ksh 350,000 4%  
 During the month of June he sold goods worth ksh 425,000. What was his total pay that month. (4mks)



9. Form the inequalities that satisfy the unshaded region.



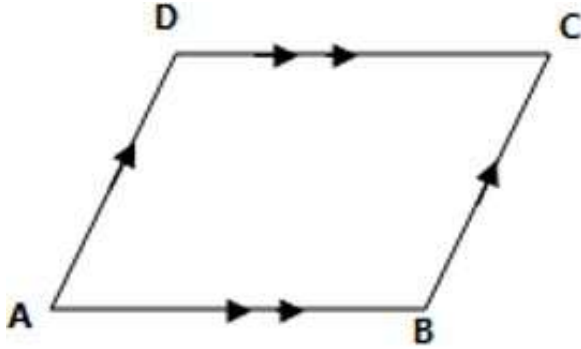
10. Data below represents marks obtained in a mathematics examination

Marks	No. of students
30 -39	3
40 -49	9
50 -59	14
60 -69	7
70 -79	8

a). State the class limit within which the modal class lie. (1mk)

b). Calculate the median mark to 1d.p. (2mks)

11). The figure below shows a parallelogram ABCD

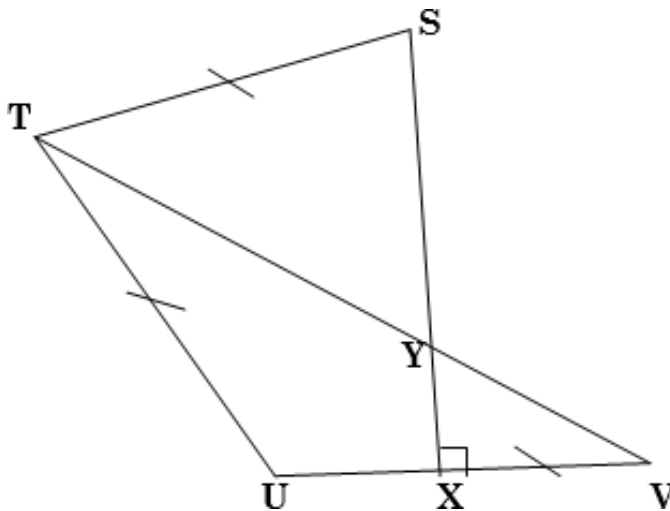


a) Using a ruler and a pair of compasses only, drop a perpendicular from B to intersect AD at N. (1mk)

b) Hence determine the area of the parallelogram. (3mks)

12. A pool of water with surface area of 0.8ha has a uniform depth of 4.5m. A pipe drains the pool at the rate of 250 litres per second. How many hours does it take to empty the pool with the pipe? (3mks)

13. In the diagram side ST, TU and UV are three sides of a regular pentagon. Given that X is the mid point of UV, determine the size of angle XYV. (3mks)



14.a) Write an expression in terms of x and y for the total value of a two digit number having x as the tens digit and y as the unit digit (1mk)

b) The number in (a) above is such that four times the sum of its digit is less than the value of the number by 6. When the digits are reversed, the value of the number increases by 9. Find the number. (3mks)

Solve for x in the following pairs of simultaneous equation.

15.

$$2^x + 3^y = 59$$

$$2^{x+3} - 3^{y+2} = 13$$

(3mks)

Students in Form 1, Form 2, Form 3 and Form 4 were to raise funds towards the school endowment fund. Form 3 raised Ksh x while Form 1 raised 1/3 of what Form 3 raised. Form 2 raised ksh.100 less than the total

amount raised by both Form 1 and Form 3. Form 4 raised ksh 200 more than Form 3. The total amount raised was Ksh 6,900. Find the value of x.  
(3mks)

## SECTION II (50 Marks)

**Answer only five questions in this section in the spaces provided.**

A bus moves from Bungoma town to Kapsokwany through Bukembe and Kamukuywa in that order. The distance between Bungoma and Kamukuywa is 70km and that from Bukembe to Kapsokwany is 88km. Between Bungoma and Bukembe, the bus travels at an average speed of 48km/h and takes 15minutes. Between Kamukuywa and Kapsokwany, the average speed of the bus is 45km/h. Find

a). The distance between Bukembe and Kamukuywa. (2mks)

b) The time taken between Kamukuywa and Kapsokwany. (2mks)

c) If the bus halts at Bukembe for 3 minutes and at Kamukuywa for 4 minutes and the average speed for the whole journey is 50km/h. Find its average speed between Bukembe and Kamukuywa. (4mks)

D) If the return journey was at 54km/hr as average speed, how long did the bus take to reach Bungoma. (2mks)

Field book entries made by a surveyor of a plot of land were recorded as follows.

Left offset	Points of base line	Right offset
	To B 1100 metres	
ND 300metres	To D 900metres	
	To C 400 metres	CM 500metres
	From A	

(4mks)

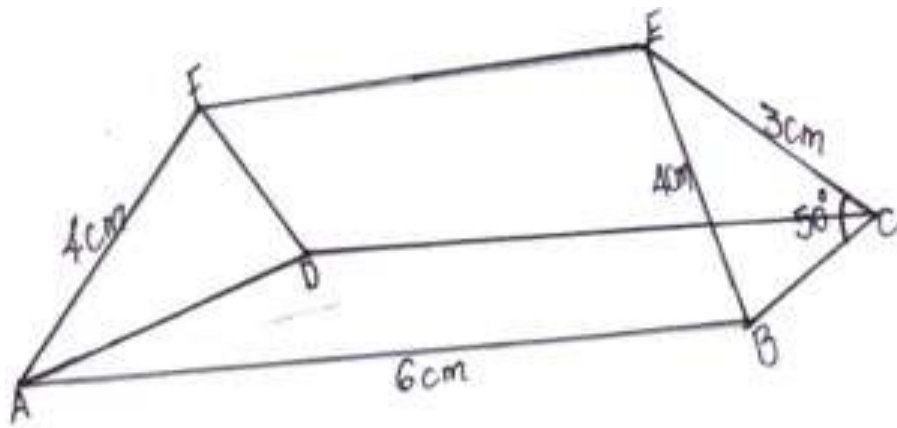
b) The owner would wish to plant trees on  $\frac{1}{4}$  of the land,  $\frac{2}{3}$  for grazing and the balance for horticulture. Calculate in hectares the exact piece of land under horticulture. (4mks)

the exact difference between land under grazing and under trees. (2mks)

Triangle PQR has vertices P(2,3) Q(1,2) and R(3,1)

a) Triangle P<sub>1</sub>Q<sub>1</sub>R<sub>1</sub> is the image of triangle PQR under rotation of negative quarter turn about the origin. Plot triangle PQR and P<sub>1</sub>Q<sub>1</sub>R<sub>1</sub> on the grid provided. (3mks)

The figure below shows a wooden wedge with a horizontal face ABCD in which AB=6cm, BE=4cm, CE=3cm and angle BCE=50° ABCD, ABEF and CDFE are rectangles.



- a) Draw the net of the wedge in the space below. (4mks)
- b) Calculate
  - i) the angle ABEF makes with the horizontal face. (2mks)
  - ii) the angle that the line AE makes with the horizontal. (4mks)