

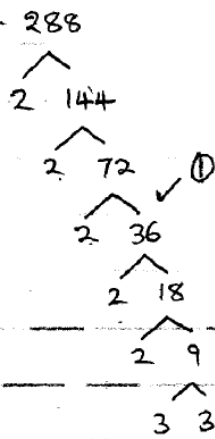
MATHEMATICS PAPER 1

FORM 3

PAPER 1 MARKING SCHEME

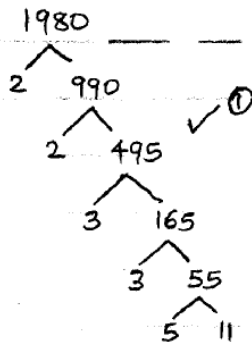
1. Numerator $\frac{3}{2} \times \frac{23}{5} = \frac{69}{10} - \frac{8}{5} = \frac{69-16}{10}$ $= \frac{53}{10} \checkmark \textcircled{1}$ Denominator $\frac{15^5}{2} \times \frac{2}{3} = 5$ $3\frac{1}{5} + 5 = 8\frac{1}{5} \checkmark \textcircled{1}$ $\frac{53}{10} \times \frac{5}{4} = \frac{53}{8} \checkmark \textcircled{1}$	1cm² rep 25ha (since 1ha = 10,000m²) Area of Square = 10x10 = 100cm² ✓ Actual area = 100x25ha = 2500ha. ✓ ✓ ⑥ 30seconds ⇒ 1 hour 5.45am Monday → Fri 7.45pm Total hours = 110hrs. ✓ Seconds lost = 110x30 = 3300sec $\frac{3300}{60} = 55 \text{ minutes} \checkmark \textcircled{1}$ $\begin{array}{r} 19.45 \\ - 55 \\ \hline 18.50 \end{array} \rightarrow 6.50pm \checkmark \textcircled{1}$																
2. let the number be x $3x+2 = 4(x-1) \checkmark \textcircled{1}$ $3x+2 = 4x-4$ $6 = x \checkmark \textcircled{1}$																	
3. GCD of 200, 300, 360 <table style="display: inline-table; vertical-align: middle;"><tr><td>2</td><td>200</td><td>300</td><td>360</td></tr><tr><td>2</td><td>100</td><td>150</td><td>180</td></tr><tr><td>5</td><td>50</td><td>75</td><td>90</td></tr><tr><td></td><td>10</td><td>15</td><td>18</td></tr></table> ✓ GCD = 4x5 = 20cm ✓ Area = 20x20 = 400cm² ✓ ✓	2	200	300	360	2	100	150	180	5	50	75	90		10	15	18	7. let the number be xy Total value = 10x+y Reverse = 10y+x x+y = 12 ✓ 10y+x - 2(10x+y) = 15 ✓ 10y+x - 20x - 2y = 15 8y - 19x = 15 but y = 12-x 8(12-x) - 19x = 15 96 - 27x = 15 27x = 81 ✓ x = 3 ✓ y = 9 ✓ Original number = 39. ✓
2	200	300	360														
2	100	150	180														
5	50	75	90														
	10	15	18														
4. 10 soldiers ⇒ 7days 1 soldier = 70days ✓ 6 soldiers = $\frac{70}{6}$ days = 11$\frac{2}{3}$ days 11$\frac{2}{3}$ - 7 = 4$\frac{2}{3}$ days ✓																	
5. 1:50000 1cm rep 50,000cm 1cm rep 500m 1cm² rep 250000m² ✓																	

8a)



$$288 = 2^5 \times 3^2 \quad \checkmark \textcircled{1}$$

b)



$$1980 = 2^2 \times 3^2 \times 5 \times 11 \quad \checkmark \textcircled{1}$$

9.

2	3	4	5	6	LCM
2	1	3	2	5	3
3	3	1	5	3	1
5	1	1	5	1	1

$$\text{LCM} = 5 \times 3 \times 2^2 = 60 \quad \checkmark \textcircled{1}$$

Number of sweets in the packet

$$60 + 1 = 61 \text{ sweets} \quad \checkmark \textcircled{1}$$

10.

$$\frac{89 \times x}{89} = \frac{4005}{89}$$

$$x = 45 \text{ - Second number.} \quad \checkmark \textcircled{1}$$

$$\begin{aligned} \text{Correct Product} &= 98 \times 45 \\ &= 4410. \end{aligned}$$

11

$$\sqrt{\frac{100}{9}} = \frac{\sqrt{100}}{\sqrt{9}} = \frac{10}{3} = 3\frac{1}{3} \quad \checkmark \textcircled{1}$$

$$\sqrt{\frac{64}{25}} = \frac{\sqrt{64}}{\sqrt{25}} = \frac{8}{5} \quad \checkmark \textcircled{1}$$

$$\frac{10^2}{3} \times \frac{8}{5} = \frac{16}{3} = 5\frac{1}{3} \quad \checkmark \textcircled{1}$$

12. $7(x - 2y) = 27$

$$7x + y = 9$$

$$7x - 14y = 189 \quad \text{Eliminate } x$$

$$7x + y = 9 \quad \checkmark \textcircled{1}$$

$$\frac{-15y}{-15} = \frac{180}{-15} \quad y = -12 \quad \checkmark \textcircled{1}$$

$$x = 2y + 27$$

$$= -24 + 27 = 3 \quad \checkmark \textcircled{1}$$

13. (a) $3xy^2$ (c) $4y^2z^6$

(b) $8st^5$ (d) $3S^{\frac{1}{3}}T^{\frac{2}{3}}$

(1 mark each)

14. Original area = $20 \times 15 = 300 \text{ cm}^2 \quad \checkmark \textcircled{1}$

New area = $22 \times 17 = 374 \text{ cm}^2 \quad \checkmark \textcircled{1}$

$$\frac{77}{300} \times 100 = 25\frac{2}{3}\% \quad \checkmark \textcircled{1}$$

15. $x = 3 \quad y = 3 \quad z = \frac{2}{3} \quad \checkmark \textcircled{1}$

$$\frac{3+3}{\frac{4}{3}+9} = \frac{6}{10\frac{1}{3}}$$

$$= \frac{18}{31} \quad \checkmark \textcircled{1}$$

16. Volume = $20 \times 30 \times 50$

$$= 30,000 \text{ cm}^3 \quad \checkmark \textcircled{1}$$

Mass = 22500g

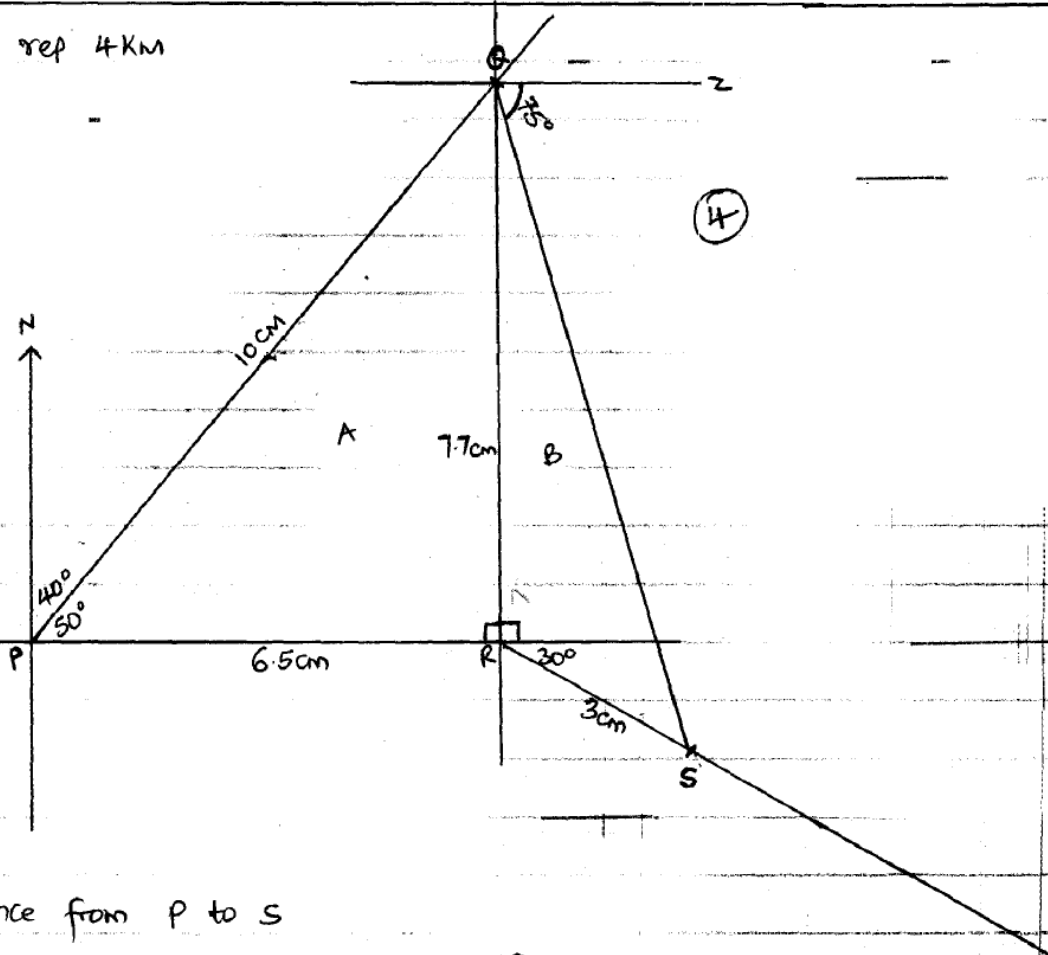
$$\frac{D}{V} = \frac{M}{V} = \frac{22500g}{30,000 \text{ cm}^3} \quad \checkmark \textcircled{1}$$

$$D = 0.75 \text{ g/cm}^3 \quad \checkmark \textcircled{1}$$

SECTION B.

17. 1cm rep 4KM

(a)



(b) Distance from P to S

$$9.2\text{cm} \times 4 = 36.8\text{KM} \checkmark \textcircled{1}$$

(ii) Distance of Q from S

$$9.6\text{cm} \times 4 = 38.4\text{KM} \checkmark \textcircled{1}$$

(iii) Bearing of S from Q

$$075^\circ \mid N75^\circ E \checkmark \textcircled{1}$$

(c) Area of PQRS.

let $PQR = A$ $QRS = B$.

$$A = \frac{1}{2} \times \overset{3.25}{6.5} \times 7.7 = 25.025\text{cm}^2 \checkmark \textcircled{1}$$

$$B = \frac{1}{2} \times \overset{1.5}{7.7} \times 3 \sin 120 = 10\text{cm}^2 \checkmark \textcircled{1}$$

$$\text{Total} = 35.03\text{cm}^2$$

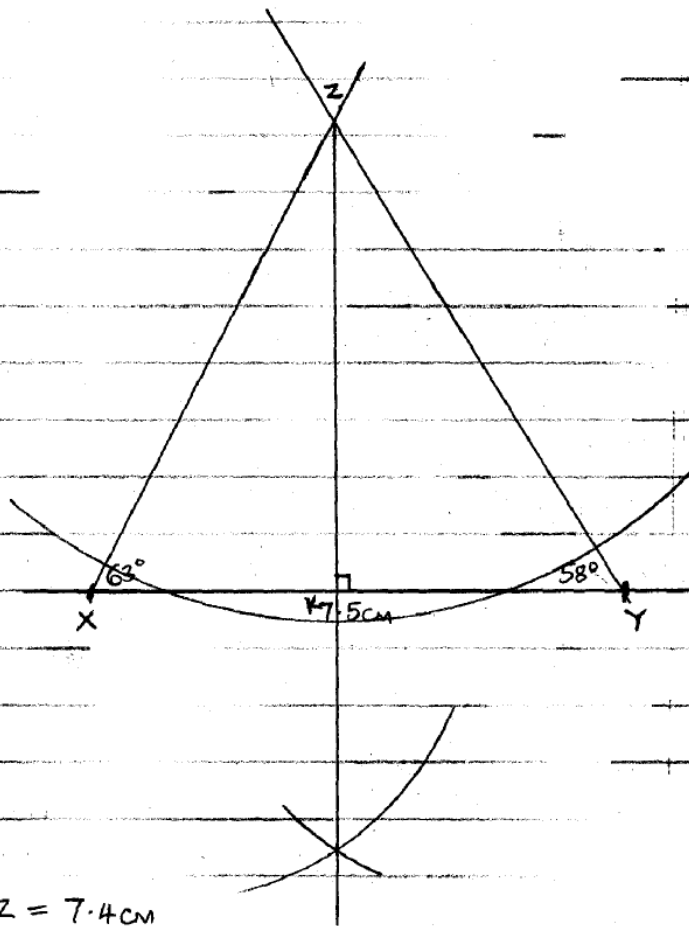
$$1\text{cm}^2 \text{ rep } 1600\text{ha} \checkmark$$

$$35.03\text{cm}^2 \quad ?$$

$$1600 \times 35.03 = 56048\text{ha} \checkmark \textcircled{1}$$

19.

(a)



(b) $XZ = 7.4 \text{ cm}$

(c) $ZK = 6.6 \text{ cm}$

3.3

(d) $A = \frac{1}{2} \times 7.5 \times 6.6 = 24.75 \text{ cm}^2$

18. Table 1.

$$2x + 3y = 17$$

x	1	2	3	4	5	6	✓①
y	5	$4\frac{1}{3}$	$3\frac{2}{3}$	3	$2\frac{1}{3}$	$1\frac{2}{3}$	

Table 2.

$$4x - y = 13$$

x	1	2	3	4	5	6	✓①
y	-9	-5	-1	3	7	11	

(ii) Where the two graphs intersect

$x = 4 \quad y = 3 \quad \checkmark \text{②}$

(c) $\frac{16+9}{2 \times 4 \times 3} = \frac{25}{24} = 1\frac{1}{24} \checkmark \text{①}$

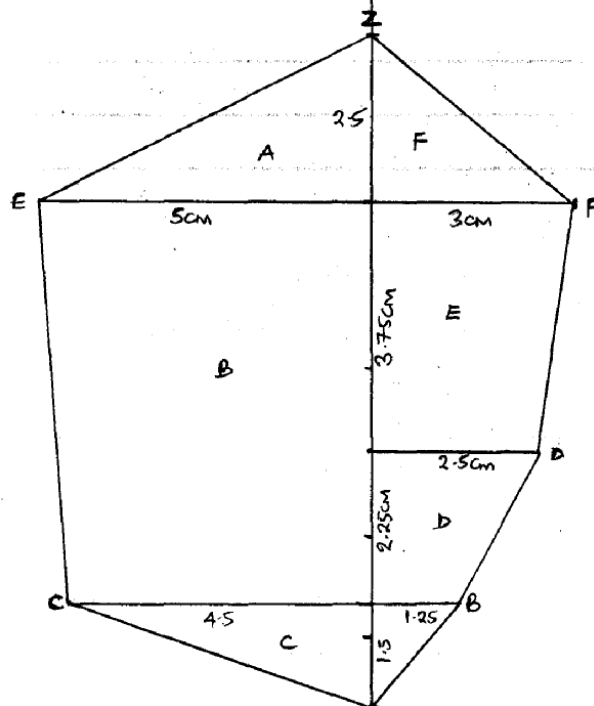
hence On the graph paper.

20.

Scale: 1cm rep 40M.

(5mks)

(a)



* Mark appropriately.

* Award 1 mark for scale.

Area

$$A = \frac{1}{2} \times 2.5 \times 5 = 6.25 \text{ cm}^2$$

$$B = \frac{1}{2} \times 9.5 \times \frac{3}{1} = 28.5 \text{ cm}^2$$

$$C = \frac{1}{2} \times 4.5 \times 1.5 = 3.375 \text{ cm}^2$$

$$D = \frac{1}{2} \times 3.75 \times 2.25 = 4.21875 \text{ cm}^2$$

$$E = \frac{1}{2} \times 5.5 \times 3.75 = 10.3125 \text{ cm}^2$$

$$F = \frac{1}{2} \times 2.5 \times 3 = 3.75 \text{ cm}^2$$

$$\text{Total} = 56.40625 \text{ cm}^2$$

Scale:

1cm rep 40M

1cm² rep 1600M²

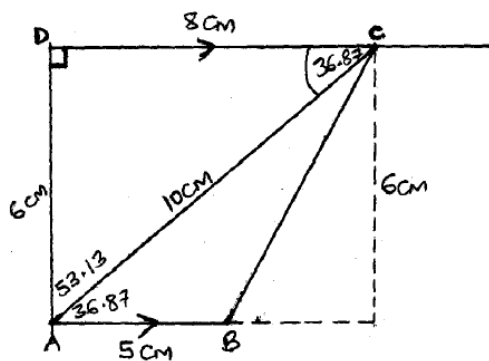
$$56.40625 \text{ cm}^2$$

$$= \frac{90250 \text{ M}^2}{10,000}$$

$$= 9.025 \text{ ha.}$$

21

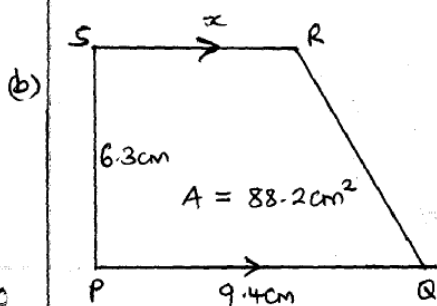
(a)



(i) $\tan^{-1}\left(\frac{8}{6}\right) = 53.13^\circ$

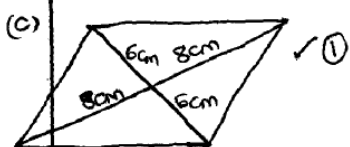
$\frac{1}{2} \times 5 \times 6 = 15 \text{ cm}^2 \checkmark \textcircled{2}$

(ii) $\frac{1}{2} \times 5 \times h = 15 \text{ cm}^2$
 $5h = 15$
 $h = 3 \text{ cm.} \checkmark \textcircled{2}$



$88.2 = \frac{1}{2} \times (9.4 + x) \times 6.3 \checkmark \textcircled{2}$

$9.4 + x = 28 \checkmark \textcircled{1}$
 $x = 18.6 \text{ cm}$



$\frac{1}{2} \times 8 \times 6 \times 2 \checkmark \textcircled{1}$
 $= 96 \text{ cm}^2 \checkmark \textcircled{1}$

22. Buying Price:

$600 \times 120 = \text{Shs } 72000$

Number of eggs = 600×30
 $= 18000 \text{ eggs}$

Bad eggs = $\frac{10}{100} \times 18000$
 $\Rightarrow 1800 \text{ eggs}$

Remainder = $18000 - 1800$
 $\Rightarrow 16200 \text{ eggs.}$

Number of smaller trays
 $= \frac{16200}{6} = 2700 \text{ trays}$

Selling Price = 2700×30
 $= \text{Shs } 81000.$

(a) $\frac{72000}{18000} = \text{Shs } 4 \checkmark \textcircled{2}$

(b) $2700 \times 30 = \text{Shs } 81000 \checkmark \textcircled{2}$

(c) $\frac{1800}{6} \times 30 = \text{Shs } 9000 \checkmark \textcircled{2}$

(d) Profit = $81000 - 72000$
 $= \text{Shs } 9000 \checkmark \textcircled{2}$

(e) $\frac{9000}{72000} \times 100$
 $= 12.5\% \checkmark \textcircled{2}$

23(a)

$$\begin{array}{r} 5.30 \\ - 7.15 \\ \hline 10.15 \end{array}$$

10hrs 15 minutes ✓ ②

(b) 7.15 am ✓ ②

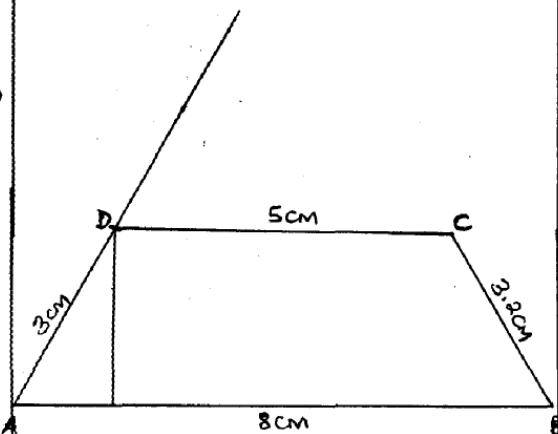
(c) 8.30 am ✓ ②

(d) 12.50 PM ✓ ②

(e) 3.20 PM ✓ ②

24

(a)
(i)



Scale; 1 cm rep 100 m

(ii)

Area; $\frac{1}{2} \times (13) \times 2.6 \text{ cm} \checkmark \text{ ①}$

$$= 16.9 \text{ cm}^2 \checkmark \text{ ①}$$

1 cm² rep 10,000 m² ✓ ①

1 cm² rep 1 ha

16.9 cm²

$$= 16.9 \text{ ha.} \checkmark \text{ ①}$$