MARKING GUIDE

SECTION A: 40 MARKS

*Answer **all** the questions in this section.*

*Questions **1** to **20** carry **two** marks each.*

1. Work out: $\frac{1}{5} + \frac{3}{5}$

$\frac{1}{5} + \frac{1}{5} = \frac{1+3}{5} = \frac{4}{5}$

B_2 on sight

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2. Write 57 in Roman numerals.

57= 50+7

50	7
L	VII

57 = LVII

M_1 for converting

A_1 for 57 = LVII

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3. Work out the multiplicative inverse of 3.

Let the multiplicative inverse be y

$3 \times y = 1$

$3y = 1$

$\frac{3y}{3} = \frac{1}{3}$

$y = \frac{1}{3}$

M_1 for $3 \times y = 1$

A_1 for $y = \frac{1}{3}$

Reject without working

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4. Simplify: 5h – 10h + 8h

(5h – 10h) + 8h
– 5h + 8h
3h

(5h + 8h) – 8h
13h – 8h
3h

M_1 for collecting like terms
A_1 for 3h

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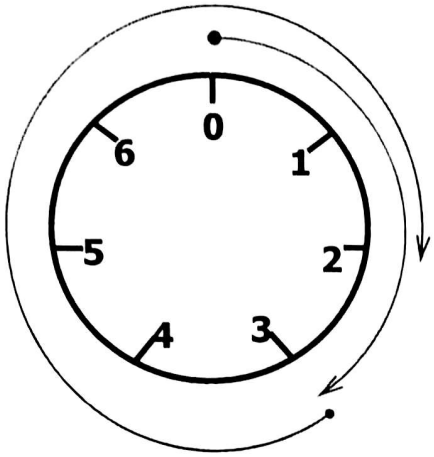
5. Mr. Opio used sh 9,600 to buy some books. If each book was bought at sh 1,200, how many books did he buy?

$\left(\frac{sh.9600}{sh.1200}\right) books$

8 books

M_1 for correct division
A_1 for 8 books

6. Show 3+6 (finite 7) on the dial below.



B_1 for the correct diagram

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7. What numeral is expanded to give; $(5\times100) + (9\times10^{-2})$?

$(5\times100) + (9\times10^{-2})$
$500 + 9 \times \frac{1}{10^2}$
$500 + \frac{9}{10\times10}$
$500 + \frac{9}{100}$
$500 + 0.09$

$$\begin{array}{r} 500.00 \\ +\ \ 0.09 \\ \hline 500.09 \end{array}$$

M_1 for correct working
A_1 for 500.09

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8. How many 250 gramme packets can be obtained from 2 kilogrammes of rice?

1 kg = 1,000 g
2 kg = 2 × 1,000 g
2 kg = 2,000 g

Number of packets
$(\frac{2{,}000\ g}{250\ g})$ packets
8 packets

M_1 for 2,000 g
A_1 for 8 packets

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9. Round off **3742** to the nearest hundreds.

Th	H	T	O
3	7	4	2

Round down to 0
RPV (100)

Rounding number = 100×0 = 0

$$\begin{array}{r} 3700 \\ +\ \ 0 \\ \hline 3700 \end{array}$$

Therefore, 3742≈3700

M_1 for adding 3700+0
A_1 for 3742≈3700

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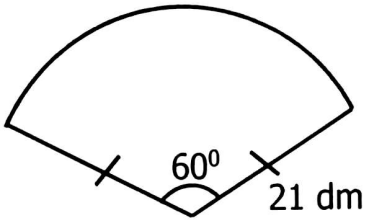
10. Using distributive property, work out (79 ÷ 5) – (19 ÷ 5)

$(79\div5) - (19\div5)$
$(79 - 19)\div5$
$60\div5$
12

M_1 for $(79 - 19)\div5$
A_1 for 12
Strictly mark distributive property

11. Find the area of the given sector. (Take $\pi = \frac{22}{7}$)



M_1 for correct working

A_1 for 231dm²

Area = <sector $\times \pi r^2$

$= \frac{60}{360} \times \frac{22}{7} \times 21 \text{ dm} \times 21 \text{ dm}$

$= \frac{1}{6} \times \frac{22}{1} \times 3 \text{ dm} \times 21 \text{ dm}$

$= \frac{1}{3} \times \frac{11}{1} \times 3 \text{ dm} \times 21 \text{ dm}$

$= 1 \times 11 \times 1 \text{ dm} \times 21 \text{ dm}$

$= 231 \text{ dm}^2$

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12. Three men can build a hut in 20 days. How many more men are needed to build the same hut in 12 days working at the same rate?

20 days ⇒ 3 men
1 day ⇒ (20 × 3) men
1 day ⇒ 60 men
12 days ⇒ $\frac{60}{12}$ men
12 days ⇒ 5 men
More men
(5 – 3) more men
2 more men

M_1 for 12 days ⇒ 5 men
A_1 for 2 more men

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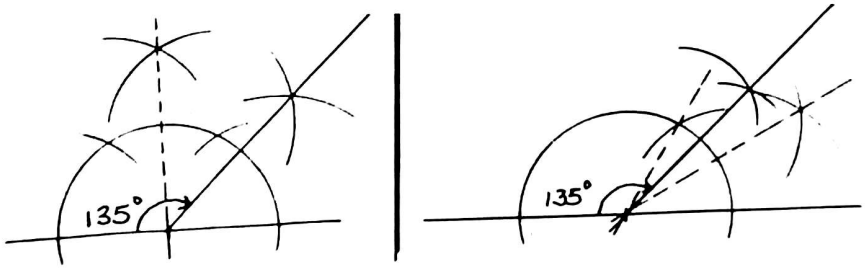
13. Using a ruler and a pair of compasses only, construct an angle of 135⁰ at point **R**.



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14. Solve $(12_{three})^2$

$(12_{three})^2 = 12_{three} \times 12_{three}$

$$\begin{array}{r} 1\ 2_{three} \\ \times\ 1\ 2_{three} \\ \hline 1\ 0\ 1 \\ +\ 1\ 2 \\ \hline 2\ 2\ 1_{three} \end{array}$$

$2 \times 2 = 4$
$4 \div 3 = 1$ rem 1
$2 \times 1 = 2$
$2 + 1 = 3$
$3 \div 3 = 1$ rem 0

M_1 for correct multiplication
A_1 for correct answer

15. A trader sold a watch at sh 35,000 and made a loss of sh 12,000. Find the price at which he bought the watch.

B.P = S.P + Loss

	sh	3	5	0	0
0					

M_1 for adding
A_1 for sh 47,000

Encourage learners to always add vertically.
Reject answers with the symbol /=

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16. If $2^{g+1} = 16$, find the value of g.

$2^{g+1} = 16$

2	16
2	8
2	4
2	2
	1

$2^{g+1} = 2^4$
$g+1 = 4$
$g + 1 - 1 = 4 - 1$
$g = 3$

M_1 for $2^{g+1} = 2^4$
A_1 for g=3
Encourage the learner to factorize 16 as part of his/her work

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17. Work out the median of p+2, p+4, p+1 and p+8.

(p+1), (p+2), (p+4), (p+8)

Median $= \frac{p+2+p+4}{2}$
$= \frac{2p+6}{2}$
$= \frac{2p}{2} + \frac{6}{2}$
$= p + 3$

M_1 for $\frac{p+2+p+4}{2}$
A_1 for $p + 3$

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18. Two numbers 30 and y are in the ratio of 3:1 respectively. Find the GCF of the numbers.

$30:y = 3:1$
$\frac{30}{y} = \frac{3}{1}$
$y \times \frac{30}{y} = \frac{3}{1} \times y$
$30 = 3y$
$\frac{30}{3} = \frac{3y}{3}$
$10 = y$
y = 10

2	30	10
5	15	5
	3	1

GCF = 2 × 5
GCF = 10

M_1 for $y = 10$
A_1 for GCF = 10

19. 20% of a number is equal to a quarter of 40. Find the number.

Let the number be a
20% of a = $\frac{1}{4}$ of 40
$\frac{20}{100} \times a = \frac{1}{4} \times 40$
$\frac{a}{5} = 10$
$5 \times \frac{a}{5} = 10 \times 5$
a = 50

M_1 for equation
A_1 for a = 50

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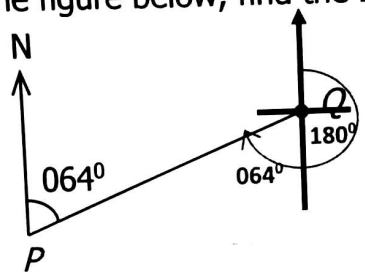
20. In the figure below, find the bearing of *P* from town *Q*.



180^0
$+ 064^0$
244^0

M_1 for adding
A_1 for 244^0

SECTION B: 60 MARKS

*Answer **all** the questions in this section.*
Marks for each question are indicated in brackets.

21. At a party attended by 240 guests. 60% were served chicken and the rest were served fish.

(a) Find the percentage of guests that were served with fish. *(02 marks)*

Let the percentage be y.
y + 60% = 100%
y + 60%-60% = 100% - 60%
y = 40^0

or
100% – 60% = 40%

M_1 for correct working
A_1 for 40%
Reject answers without %

(b) How many more guests were served with chicken than fish? *(03 marks)*

Chicken
$\frac{60}{100} \times 240$ = 144 guests
Fish
$\frac{40}{100} \times 240$ = 96 guests
More guests
144 – 96 = 48 more guests

Method 2
Difference in perecentage
60% – 40% = 20%
Number of guests
$\frac{20}{100} \times 240$ = 48 guests
48 more guests

B_1 for 144 guests (chicken)
B_1 for 96 guests (fish)
A_1 for 48 more guests

22. The average of three consecutive even numbers is 26. If the first number is y, find the numbers. *(04 marks)*

Method 1

1st no	2nd no	3rd no	Mean
y	y+2	y+4	26

$$\text{Average} = \frac{\text{Sum of data}}{\text{Number of data}}$$

$$26 = \frac{y+y+2+y+4}{3}$$

$$26 = \frac{3y+6}{3}$$

$$3\times 26 = \frac{3(3y+6)}{3}$$

$$78 = 3y+6$$

$$78-6 = 3y+6-6$$

$$72 = 3y$$

$$\frac{72}{3} = \frac{3y}{3}$$

$$y = 24$$

Method 2

Sum of numbers = $26\times 3 = 78$

1st no	2nd no	3rd no	Mean
y	y+2	y+4	26

$y + y + 2 + y + 4 = 78$ — M_1 for correct equation

$3y + 6 = 78$

$3y + 6 - 6 = 78 - 6$ — M_1 for $y = 24$

$3y = 72$ — B_1 for 26

$\frac{3y}{3} = \frac{72}{3}$ — B_1 for 28

$y = 24$

1st no: $y = 24$

2nd no: $y + 2 = 24 + 2 = 26$

3rd no: $y + 4 = 24 + 4 = 28$

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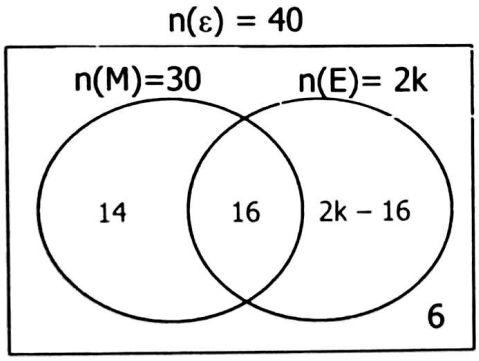
23. In a class of 40 pupils, 30 like Mathematics (M), 2k like English (E) and 14 like mathematics only while 6 like neither of the two subjects.

(a) Complete the Venn diagram below. *(03 marks)*



Both

$30 - 14 = 16$

B_1 for 16 in the intersection set

B_1 for $2k - 16$ in set $E - M$

B_1 for 14 in set $M - E$

(b) Find the value of k. *(02 marks)*

$30 + 2k - 16 + 6 = 40$ — M_1 for correct equation

$30 + 6 - 16 + 2k = 40$

$36 - 16 + 2k = 40$

$20 + 2k = 40$

$20 - 20 + 2k = 40 - 20$

$2k = 20$ — A_1 for $k = 10$

$\frac{2k}{2} = \frac{20}{2}$

k = 10

24. Jane, Liz and Teo shared some apples in the ratio of 3:2:5 respectively. Both Jane and Teo shared a total of 112 apples.

(a) How many apples did Liz get? *(03 marks)*

Total Ratio = 3 + 2 + 5 = 10
Total Ration of Jane and Teo = 3 + 5 = 8
Fraction of Jane and Teo = $\frac{8}{10}$
Let the total number of apples be a.
$\frac{8}{10} \times a = 112$

$\frac{8a}{10} = 112$

$\frac{8a}{10} \times 10 = 112 \times 10$
$8a = 1120$
$\frac{8a}{8} = \frac{1120}{8}$
$a = 140$

Liz's fraction is $\frac{2}{10}$
$\frac{2}{10} \times 140$ apples
28 apples
Therefore, Liz got 28 apples

M_1 for forming a correct equation
M_1 for obtaining the total number of apples
A_1 for 28 apples (Liz)
Accept other correct methods

(b) Given that every four apples were sold at sh 5,000, how much money would Jane earn from all her apples? *(03 marks)*

Jane apples are $\frac{3}{10} \times 14 = 42$

Cost of each apple is $\frac{\text{sh } 5,000}{4}$ = sh 1,250

Cost of 42 apples is sh 1,250×42 = sh 52,500

Therefore, Jane would earn sh 52,500

M_1 for Jane's number of apples
M_1 for the cost of one apple
A_1 for sh 52,500

25. (a) Find the least number of cakes that can be shares by 8 boys or 12 girls leaving a remainder of 3 cakes. *(02 marks)*

No. of cakes = LCM + Rem

2	8	12
2	4	6
2	2	3
3	1	3
	1	1

No. of cakes = (2×2×2×3) + 3
= 24 + 3
= 27 cakes

M_1 for correct prime factorization
A_1 for 27 cakes

(b) Express 24 as a product of its prime factors. *(02 Marks)*

24 = 2×12
= 2×2×6
= 2×2×2×3

M_1 for correct prime factorization
A_1 24 = 2×2×2×3

26. (a) **Express 2.333... as a rational number in its lowest terms.** *(02 marks)*

Let the number be a.
$a = 2.333...$ (1)
$10 \times a = 10 \times 2.333...$
$10a = 23.333...$ (2)

$10a = 23.333...$ (2)
$-\ \ a = 2.333...$
$9a = 21.000...$

$9a = 21$
$\frac{9a}{9} = \frac{21}{9}$
$a = \frac{7}{3}$

M_1 for subtracting equation 2 – equation 1
A_1 for $a = \frac{7}{3}$

(b) **Evaluate:** $\dfrac{0.08 + 0.2}{0.9 - 0.5}$ *(03 marks)*

$0.08 + 0.20 = 0.28$
$0.9 - 0.5 = 0.4$

$0.28 \div 0.4$
$\frac{28}{100} \div \frac{4}{10}$
$\frac{28}{100} \times \frac{10}{4}$
$\frac{7}{10} = 0.7$

M_1 for $0.28 \div 0.4$
M_1 for simplifying
A_1 for 0.7

Reject $\frac{7}{10}$

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27. (a) **What angle is a ninth of its supplement?** *(03 marks)*

Let the angle be n.
Its supplement $= 180^0 - n$
$n = \frac{1}{9}$ of $180^0 - n$

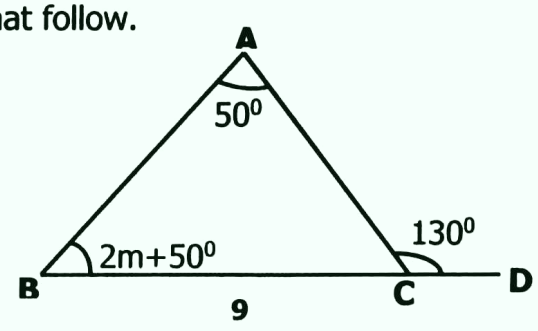
$n = \frac{1}{9} \times 180^0 - n$

$n = \frac{180^0 - n}{9}$

$9 \times n = 9(\frac{180^0 - n}{9})$
$9n = 180^0 - n$
$9n + n = 180^0 - n + n$
$10n = 180^0$
$\frac{10n}{10} = \frac{180}{10}$
$n = 18^0$

M_1 for supplement $(180^0 - n)$
M_1 for correct equation
A_1 18^0

(b) **In the figure below, angle ABC = $2m+20^0$, angle BAC = 50^0 and angle ACD = 130^0. Study the figure and answer the questions that follow.**



9

(01 mark)

(i) Calculate the size of angle ACB.

$<ACB = 180^0 - 130^0$ (supplementary angles)
$<ACB = 50^0$

B_1 for $<ACB = 50^0$

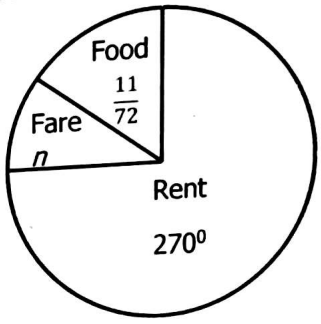
(01 mark)

(ii) Find the value of m in degrees.

$2m + 50^0 + 50^0 = 130^0$
$2m + 100^0 = 130^0$
$2m + 100^0 - 100^0 = 130^0 - 100^0$
$2m = 30^0$
$\frac{2m}{2} = \frac{30}{2}$
$m = 15^0$

B_1 for $m = 15^0$
Accept other approaches

28. The pie chart below shows how Mr. Mbidde used his July salary. Study it and answer the questions that follow.



(03 Marks)

(a) Find the value of *n*.

Sector for food in degrees
$\frac{11}{72} \times 360^0 = 55^0$

$n + 55^0 + 270^0 = 360^0$
$n + 325^0 = 360^0$
$n + 325^0 - 325^0 = 360^0 - 325^0$
$n = 35^0$

B_1 for food
M_1 for equation
A_1 for $n = 35^0$

(b) Given that Mr. Mbidde earns sh 450,000 as his monthly salary, how much did he spend on food? *(02 marks)*

$\frac{11}{72} \times$ sh 450,000
Sh 68,750

Or
$\frac{55}{360}$ x sh 450,000
sh 68,750

M_1 for correct working
A_1 for = sh 68,750

(c) Express the value of rent as a ratio of the whole salary. *(01 mark)*

$\frac{270}{360} = \frac{27}{36} = \frac{3}{4}$ *B_1 for 3:4*

= 3:4

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29. A motorist started a journey of 109 km at 8:20 a.m. riding at 30 km/h. At 9:50 a.m., his motorcycle broke down and the repair took him half an hour. At what speed did the motorist ride after the repair if he reached his destination at 12:20 p.m.? *(04 marks)*

Speed = Remaining distance ÷ Time taken after repairing

Dist. Covered before repairing

$D_1 = S \times T$

Time: 9 : 50
− 8 : 20
1 : 30

Time= $1\frac{1}{2}$ hour

$D_1 = \frac{30\ km}{1\ h} \times \frac{3\ h}{2}$

$D_1 = (15 \times 3)$ km

$D_1 = 45$ km

Remaining distance

$D_2 = 109$ km − 45 km

$D_2 = 64$ km

Time taken to travel after repairing

Departure time:
9 : 50
+ 0 : 30
10 : 20 a.m.

Time taken:
12 : 20
− 2 : 20
2 : 00 hours

B_1 for $D_1 = 45$ km
B_1 for $D_2 = 64$ km
B_1 for 2 hours
A_1 for 32 km/h

Speed = D ÷ T
= 64 km ÷ 2 hour
= 32 km/h

Therefore, the motorist rode at 32 km/h

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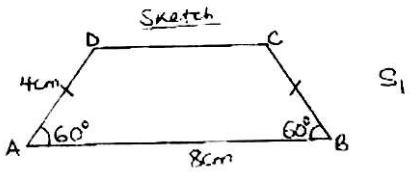
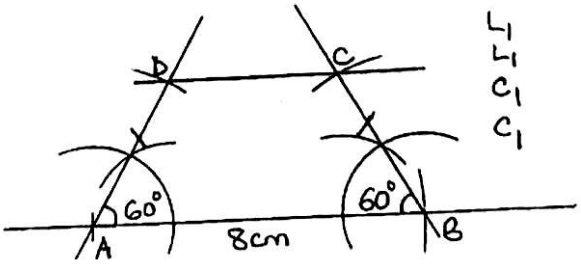
30. (a) Using a ruler and a pair of compasses only, construct a quadrilateral ABCD such that side AB = 8 cm, side AD = BC = 4 cm, and angle DAB = angle CBA = 60^0. *(05 marks)*





(b) Work out the perimeter of the quadrilateral. *(01 mark)*

P= 8 cm + 4 cm + 4 cm + 4.1 cm
P= 20.1 cm

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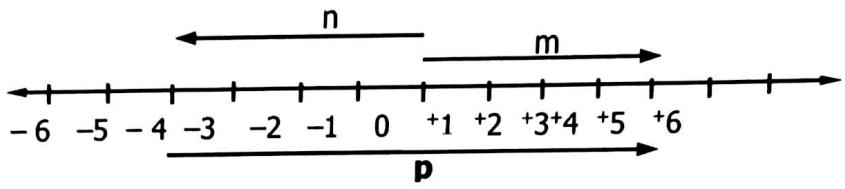
31. Use the number line below to answer the questions that follow.



(a) Write the integers represented by arrows. *(01 mark each)*

(i) **m = ⁺4 or 4**
(ii) **n = ⁻4**
(iii) **p = ⁺8 or 8**

B_1 for every correct entry

(b) Write a mathematical sentence shown on the number line above. *(01 mark)*

m − n = p
⁺4 − ⁻4 = ⁺8

or ⁺4 − ⁻4 = ⁺8
ct: ⁺4 − ⁻4

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32. Below is a price list. Use it to answer the questions that follow.

Quantity	**Price**
1 kg of sugar	sh 8,000
$\frac{1}{2}$kg of rice	sh 2,000
1 kg of beans	sh 4,200
1 apple	sh 1,200

(a) Jane bought 2 kg of sugar, $1\frac{1}{2}$ kg of beans and 3 apples. How much did she pay altogether? *(04 marks)*

Sugar
Sh 8,000×2 = sh 16,000
Beans
$\frac{1}{2}$×sh 4,200 = sh 6,300
Apples
Sh 1,200×3 = sh 3,600

Total amount
Sh 16,000
Sh 6,300
+ Sh 3,600
Sh 25,900

B_1 for sh 16,000 (sugar)
B_1 for sh 6,300 (beans)
B_1 for sh 3,600 (apples)
A_1 for sh 25,900 (total)
- *Reject answers without sh and the name of items*
- *Reject answers with /=*

(b) How much money can one pay for 1,500 g of rice? *(02 marks)*

$\frac{1}{2}$ kg = $\frac{1}{2}$ × 1,000 g
= 500 g
500 g ⇒ sh 2,000
1 g ⇒ sh 2,000 ÷ 500
1 g ⇒ sh 4
1500 g ⇒ sh 4 × 1,500
1500 g ⇒ sh 6,000

Therefore, one can pay sh 6,000 for 1,500 g of rice

M_1 for correct working
A_1 for sh 6,000

Accept different correct approaches

END