6

SURE KEY EXAMS

SUREKEY

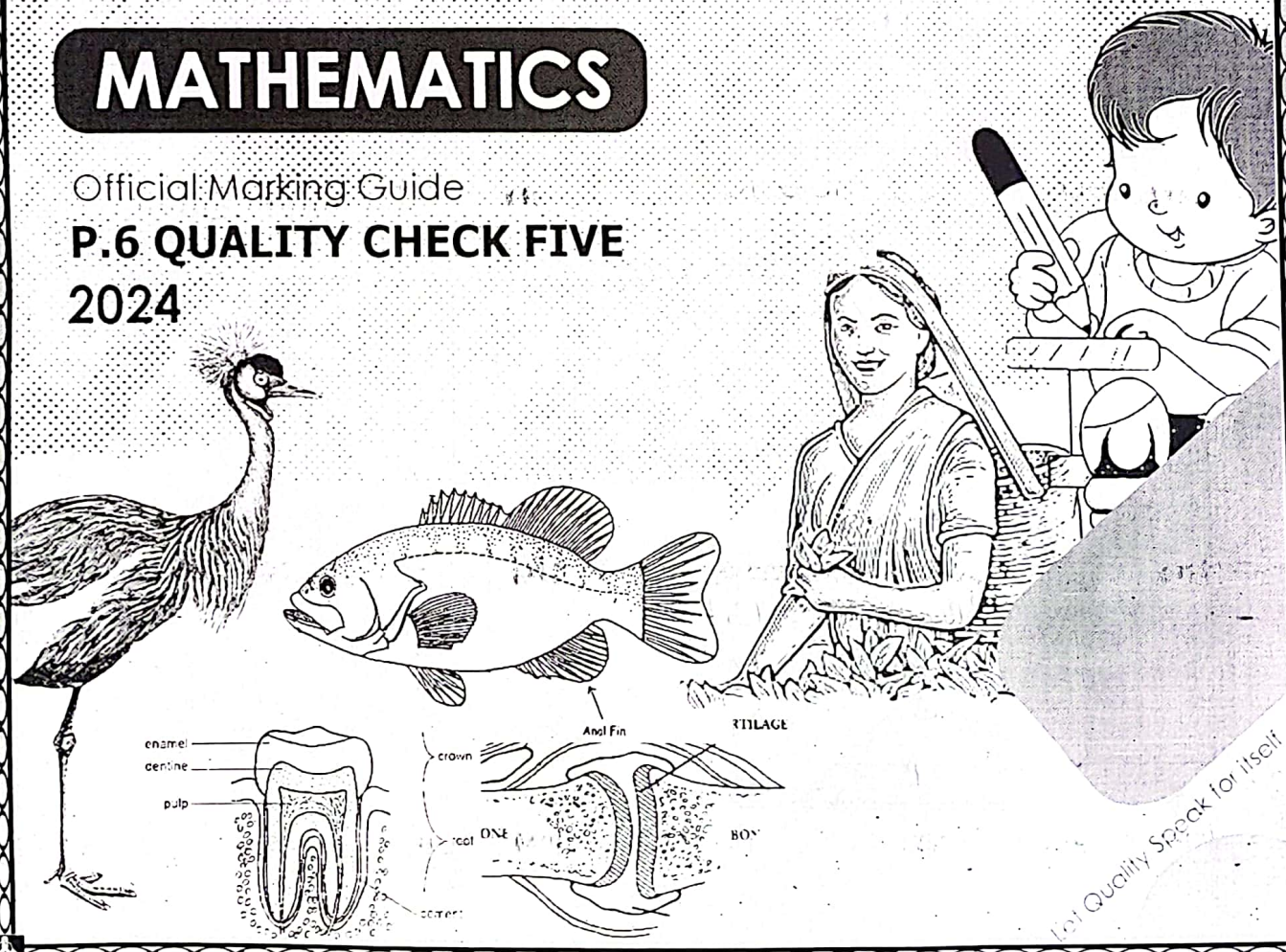
EXAMINATIONS BOARD

MATHEMATICS

Official Marking Guide

P.6 QUALITY CHECK FIVE

2024



SECTION A: 40 MARKS

Answer **all** questions in this Section.
Questions **1** to **20** carry two marks each

1. Workout the product of 32 and 3.

$$\begin{array}{r} 32 \\ \times\ 3 \\ \hline 96 \end{array}$$

2. Find the value of $3^2 + 2^2 + 5^1$.

$(3\times3) + (2\times2) + 5$

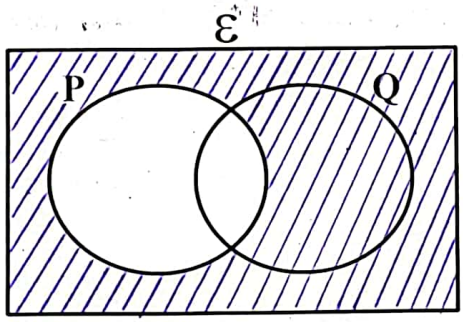
$9 + 4 + 5$

18

3. Write 6049 in words.

Six thousand, forty nine

4. In the Venn diagram below, shade the complement of Set P.



5. Solve the equation $3p - 5 = 13$.

$3p - 5 + 5 = 13 + 5$

$\frac{3p}{3} = \frac{18}{3}$

$p = 6$

6. Express CDLXXIV into Hindu Arabic numeral system.

CD	LXX	IV
400	70	4

400 + 70 + 4

474

7. Given that  stands for 12 pupils. Draw Picto-symbols to represent 72 pupils.

12 pupils → 1 picture

72 pupils → $\frac{72}{12}$

6 pictures

8. A man weighs 80kg and this 4 times the weight of the daughter. Calculate their total weight.

Daughter

$\frac{80^{20}}{4_{1}}$ kg

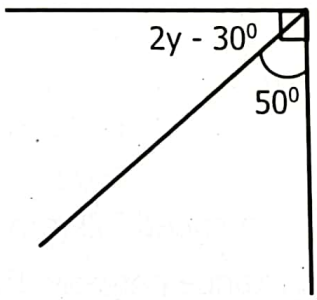
20kg

Total Weight

80kg + 20kg

100kg

9. In the diagram below, workout the value of y in degrees.



$2y - 30^\circ + 50^\circ = 90^\circ$

$2y + 20^\circ = 90^\circ$

$2y + 20^\circ - 20^\circ = 90^\circ - 20^\circ$

$\frac{2y}{2} = \frac{70^\circ}{2}$

$y = 35^\circ$

10. Write in short; (3 x 100) + (4 x 1000) + (7 x 1) + (0.8).

300 + 4000 + 7 + 0.8

4000.0
300.0
7.0
+ 0.8
4307.8

11. A tomato seller sells a heap of 12 tomatoes at Sh.400. At how much money does the seller sell 2 tomatoes?

12 tomatoes → sh. 400

1 tomato → $\frac{\text{sh. } 400}{12}$

2 tomatoes → $\frac{\text{sh. } 400}{12} \times 2^{1}$

$= \frac{400}{6}$

$66 \text{ r } 2$

$6 \overline{)400}$

$\underline{36}$

40

$\underline{36}$

4

$= \text{sh. } 66\frac{2}{3}$

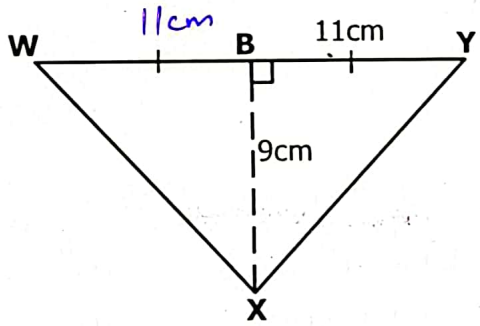
12. Find the sum of the 4th and the 7th composite numbers.

Composite numbers = {4, 6, 8, 9, 10, 12, 14, 16, ...}

Sum = 9 + 14

= 23

13. Workout the area of the triangle **WXY**.



$\text{Area} = \frac{b \times h}{2}$

$= \frac{22\text{cm} \times 9\text{cm}}{2}$

$= 11\text{cm} \times 9\text{cm}$

$= 99\text{ cm}^2$

14. It takes $4\frac{1}{2}$ hours for a Coach bus moving at a speed 72km/h to move from Kampala to Gulu. What is the distance between the two cities?

$D = S \times T$

$= \frac{72\text{km}}{1\text{hr}} \times \frac{9\text{hr}}{2_1}$

$= 36\text{km} \times 9$

$= 324\text{km}$

15. The prime factors of a number are; $\{2_1, 2_2, 3_1, 3_2 \text{ and } 5_1\}$. Find the number.

$= (2 \times 2) \times (3 \times 3) \times (5)$

$= 4 \times 9 \times 5$

$= 20 \times 9$

$= 180$

16. A dice is rolled once. What is the probability that a number less than 6 will appear on top?

$P = \frac{n(\Delta C)}{n(TC)}$

$\Delta C = \{1, 2, 3, 4, 5\}$

$n(\Delta C) = 5$

$TC = \{1, 2, 3, 4, 5, 6\}$

$n(TC) = 6$

$P = \frac{1}{6}$

17. The table shows the marks scored by pupils in a test.

Marks	60	40	65
No. of pupils	3	1	1

Find the median mark.

40, 60, 60, 60, 65

Median = 60

18. A school consumes 1050kg of posho in 30 days. How many kilograms can last the school for 8 days?

30days → 1050kg

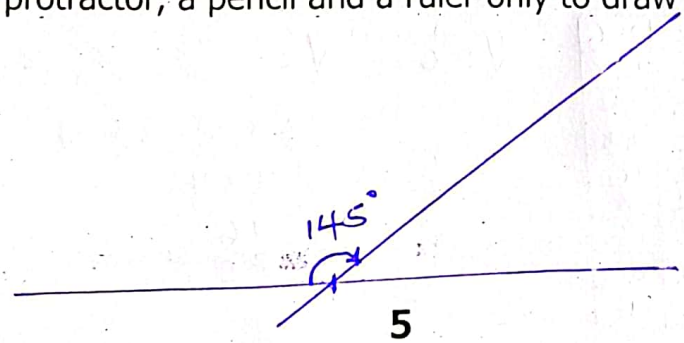
1day → $\frac{1050}{30}$ kg

1day → 35kg

8days → 35 × 8

8days → 280kg

19. Use a protractor, a pencil and a ruler only to draw an angle of 145^0.



20. Three consecutive odd numbers add up to 27. Find the first number.

Let the first be y

1st → y

2nd → y+2

3rd → y+4

$y + y+2 + y+4 = 27$

$3y + 6 = 27$

$3y + 6 - 6 = 27 - 6$

$\frac{3y}{3} = \frac{21}{3}$

$y = 7$

∴ The first number is 7

SECTION B: 60 MARKS

Answer **all** questions in this section

Marks for each question are indicated in brackets.

21. Given the digits 3, 4, 1 and 8;

a) Write the smallest and the largest 4-digit numbers that can be formed using the above digits. (02 Marks)

Smallest → 1,348

largest → 8,431

b) Use powers to write the largest number in expanded form. (02 Marks)

10^3	10^2	10^1	10^0
8	4	3	1

$= (8 \times 10^3) + (4 \times 10^2) + (3 \times 10^1) + (1 \times 10^0)$

c) Round off the smallest number formed to the nearest hundreds. (02 Marks)

TH	H	T	O
1	3	4	8
+	0	0	0
1	3	0	0

1348 ≈ 1300

22. a) Workout the square root of 256. (02 Marks)

$\sqrt[4]{256}$ =

2	256
2	128
2	64
2	32
2	16
2	8
2	4
2	2
	1

$\sqrt[4]{256} = \sqrt[4]{2^2 \times 2^2 \times 2^2 \times 2^2}$

$= (2 \times 2) \times (2 \times 2)$

$= 4 \times 4$

$= 16$

b) Using; $\frac{1}{2}n(n+1)$, workout the 17th triangular number. (02 Marks)

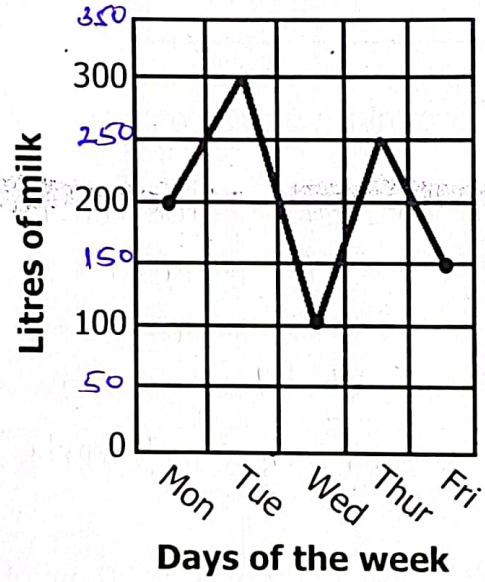
$\frac{1}{2} \times 17(17+1)$

$\frac{1}{2} \times 17 \times 18^{9}$

17×9

153

23. The graph below shows the litres of milk packed in a week on a dairy farm. Use it to answer the questions that follow.



$\frac{(100-0)}{2}$

$\frac{100}{2}$

50 litres

a) How many litres of milk were produced on Thursday? (01 Mark)

250 litres

b) On which day did the farm produce 150 litres of milk? (01 Mark)

On Friday

c) If the farm sells milk using 20-litre jerrycans at Sh.32,000 per jerrycan, how much money did the farm collect on Tuesday? (03 Marks)

Tuesday → 300L.

20L → 1 jerrycan

300L → $\frac{300}{20}$

15 jerrycans

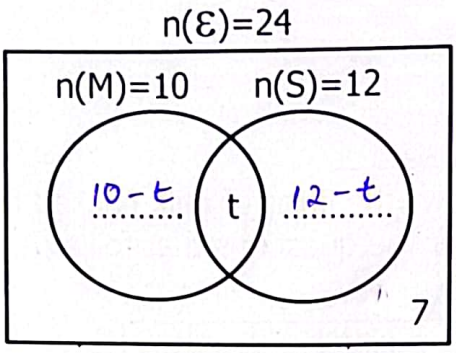
1 jerrycan → sh. 32,000

15 jerrycans → sh. 32,000 × 15

15 jerrycans → sh. 480,000

24. A class has 24 girls, of these, 10 girls like Mathematics (M), 12 girls like Social Studies (S), 7 girls do not like the two subjects while t girls like both subjects.

a) Complete the Venn diagram below with the above data. (02 Marks)



b) Calculate the number of girls who like only one subject. (04 Marks)

Value of t

$10-t+t+12-t+7=24$

$10+12+7-t=24$

$29-t=24$

$29-29-t=24-29$

$-t=-5$

$-1\times -t=-1\times -5$

$t=5$

$= n(M)\text{ only} + n(S)\text{ only}$

$= (10-t)+(12-t)$

$= (10-5)+(12-5)$

$= 5+7$

$= 12\text{ girls}$

25. At a certain school, two bells ring at intervals of 30 minutes and 45 minutes for Nursery and Primary sections respectively.

a) After how many hours will both bells ring together? (03 Marks)

LCM:

2	30	45
3	15	45
3	5	15
5	5	5
	1	1

$= (2\times 3)\times(3\times 5)$

$= 6\times 15$

$= 90$ minutes

60 minutes $= 1$ hr

90 minutes $= \frac{90}{60} = \frac{3}{2}$ hr.

$= 1\frac{1}{2}$ hr

b) If both bells ring together at 10:20a.m., when will they ring for the second time together? (02 marks)

1 hr = 60 minutes

$\frac{1}{2}$ hr $= \frac{1}{2}\times 60$

$= 30$ minutes

Hrs	Min
10	20
+ 1	30
11	50 a.m

26. The items in the list below were bought for a child when going back to school.

- 8 counter books at Sh.4,000 per book.
- A dozen of pens at Sh.6,000
- 11 pencils at Sh.300 each pencil

a) What is the cost of 8 pens according to the price scale of pens? (02 Marks)

1 dozen = 12 pens

12 pens → sh. 6000

1 pen → $\frac{\text{sh. } 6000}{12}$

1 pen → sh. 500

8 pens → sh. 500 × 8

8 pens → sh. 4000

b) Calculate the total expense for all the items bought. (03 Marks)

Pencils

sh. 300 × 11

sh. 3300

Counter books

sh. 4000 × 8

sh. 32000

Total expense

sh. 32,000

sh. 6,000

sh. 3,300

sh. 41 300

27. In a staff meeting, $\frac{1}{5}$ of the teachers were served with Novida Soda, $\frac{1}{4}$ with Coca Cola and some teachers were served with Mineral water.

a) Find the fraction of teachers who were served with Mineral water. (03 Marks)

$1 - \left(\frac{1}{5} + \frac{1}{4}\right)$

$1 - \left(\frac{1}{5} \times \frac{4}{20}\right) + \left(\frac{1}{4} \times \frac{5}{20}\right)$

$1 - \left(\frac{4+5}{20}\right)$

$1 - \frac{9}{20}$

$\frac{20}{20} - \frac{9}{20}$

$\frac{11}{20}$

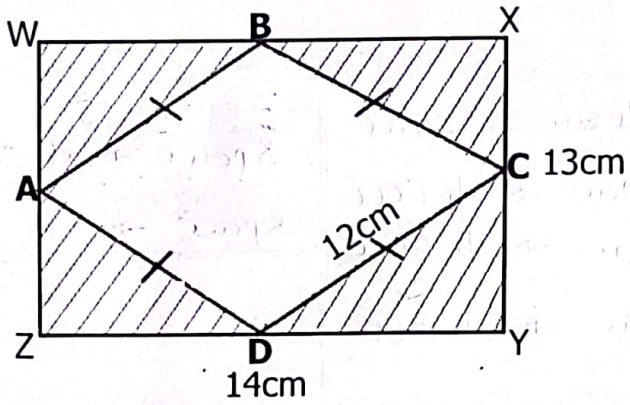
b) Given that 30 teachers were served with Coca Cola, calculate the total number of teachers who were in the meeting. (02 Marks)

$30 \div \frac{1}{4}$

$30 \times \frac{4}{1}$

120 teachers.

28. The diagram below shows a cloth **ABCD** laid on a rectangular table **WXYZ**. Parts of the table that are not covered by the cloth are shaded. Study the diagram and use it to answer the questions follow



a) Calculate the area of the cloth **ABCD**. (02 Marks)

ABCD is a square.

$A = S \times S$

$= 12cm \times 12cm$

$= 144cm^2$

b) Find the area of the shaded parts of the table **WXYZ**. (03 Marks)

Area of Rectangle

$A = L \times W$

$= 14cm \times 13cm$

$= 182cm^2$

Area of shaded parts

$= 182\ cm^2$

$-144\ cm^2$

$38\ cm^2$

29. a) If $43_{five} = 32_k$. Find the value of k. (03 Marks)

$(4 \times 5^1) + (3 \times 5^0) = (3 \times k^1) + (2 \times k^0)$

$(4 \times 5) + (3 \times 1) = (3 \times k) + (2 \times 1)$

$20 + 3 = 3k + 2$

$23 = 3k + 2$

$23 - 2 = 3k + 2 - 2$

$21 = 3k$

$\frac{3k}{3} = \frac{21}{3}$

$k = 7$

$\therefore$ k is base 7 (Seven)

b) Convert 15_{ten} to binary base. (02 Marks)

$15 \div 2 = 7$ rem 1

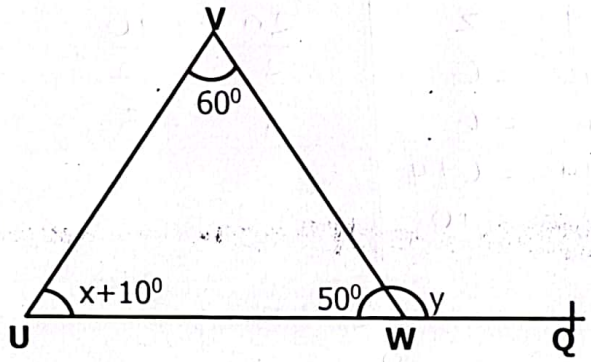
$7 \div 2 = 3$ rem 1

$3 \div 2 = 1$ rem 1

$1 \div 2 = 0$ rem 1

$\therefore 15_{ten} = 1111_{two}$

30. The figure UVW below is a triangle and UWQ is a straight line.



a) Find the value of x. (03 Marks)

$x + 10^\circ + 60^\circ + 50^\circ = 180^\circ$

$x + 120^\circ = 180^\circ$

$x + 120^\circ - 120^\circ = 180^\circ - 120^\circ$

$x = 60^\circ$

b) Workout the value of y in degrees. (02 Marks)

$50^\circ + y = 180^\circ$

$50^\circ - 50^\circ + y = 180^\circ - 50^\circ$

$y = 130^\circ$

31. Given that x = 2, y = 4 and z = 6.

Find;

i) the value of $x^2 + yz$. (02 Marks)

$(x \times x) + (y \times z)$

$(2 \times 2) + (4 \times 6)$

$4 + 24$

28

ii) the value of a given: $ax - y = z$. (02 Marks)

$(a \times x) - y = z$

$(a \times 2) - 4 = 6$

$2a - 4 = 6$

$2a - 4 + 4 = 6 + 4$

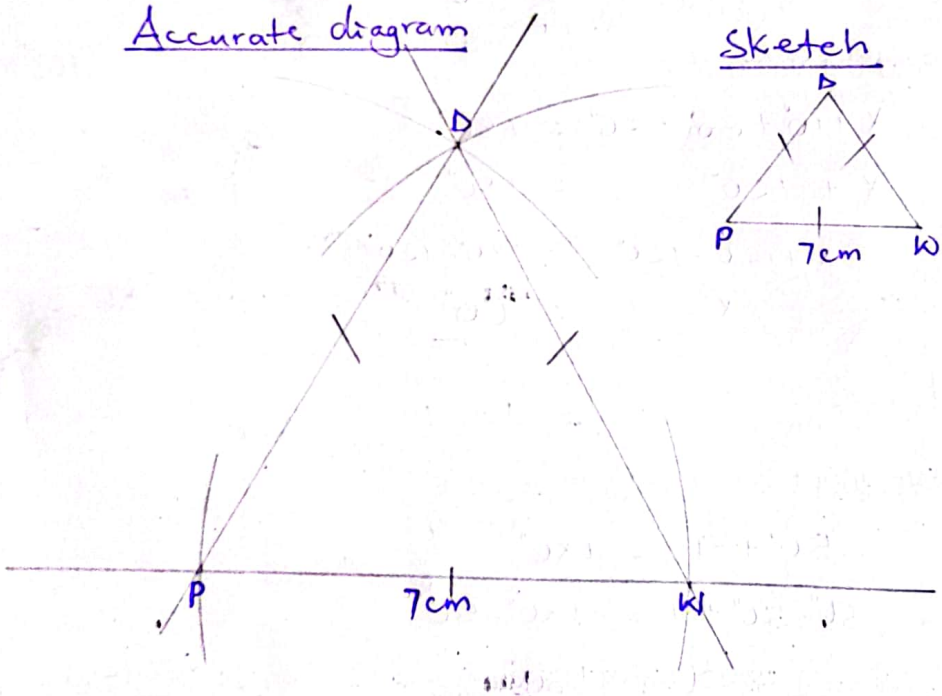
$2a = 10$

$\frac{2a}{2} = \frac{10}{2}$

$a = 5$

32. a) Using a ruler, a pencil and a pair of compassed only, construct an equilateral triangle **PWD** of side length 7cm. (04 Marks)

Accurate diagram



Sketch

b) Calculate the perimeter of the triangle above. (02 Marks)

Perimeter = 3s

= 3 × 7cm

= 21cm

END