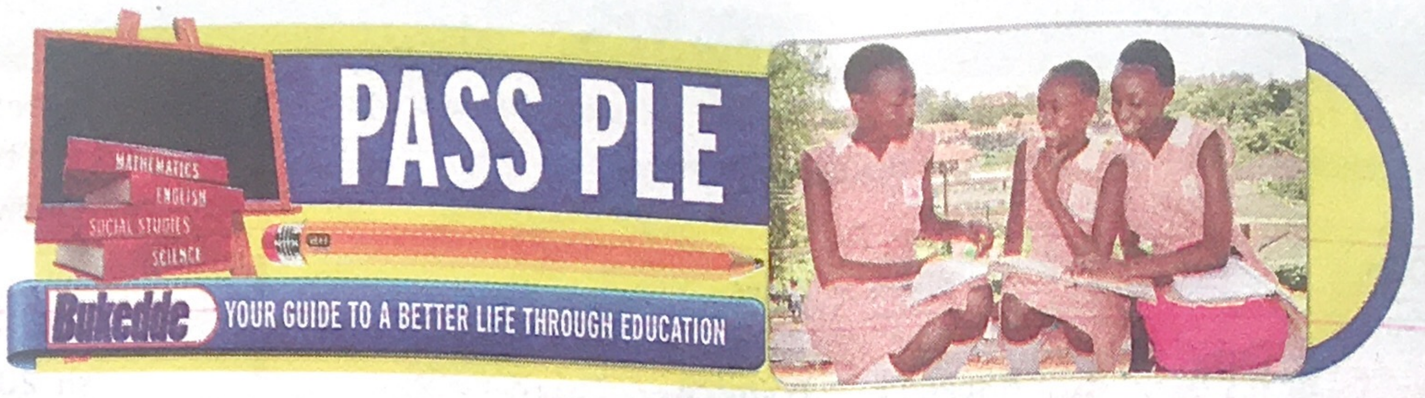


BUKEDDE: ANSWERS TO THE MATHEMATICS MOCK EXAMINATION, 2023

SECTION A

1. Find the missing number in the statement shown below.

$$\begin{array}{r} 7\ 2\ 6 \\ +\ 1\ \boxed{7} \\ \hline 7\ 4\ 3 \end{array}$$

B2

2. Set R = {1, 2,3, 4, 5, 6}. What is the probability of choosing a triangular number from set R?

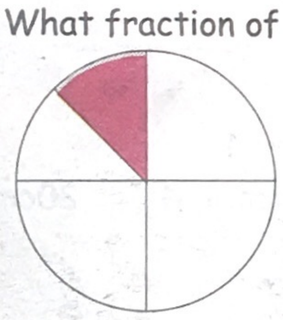
$$\text{Prob} = \frac{n(DC)}{n(TC)} = \frac{\{1, 3, 6\}}{\{1, 2, 3, 4, 5, 6\}} = \frac{3}{6}$$ M1 A1

3. Expand 256 using values.

H	T	O
100	10	1
2	5	6

$= (2 \times 100) + (5 \times 10) + (6 \times 1)$ M1
$= 200 + 50 + 6$ A1

4. What fraction of the figure below is unshaded?



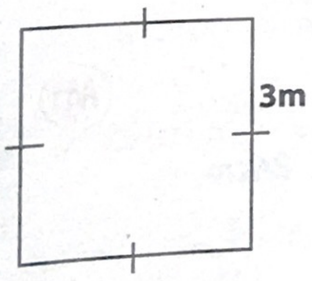
B1 B1

$\frac{8}{8} - \frac{1}{8} = \frac{7}{8}$

5. Ada scored 45, 90 and 75 in different Maths tests. Calculate her mean score.

$\text{Mean} = \frac{45 + 90 + 75}{3} = \frac{210}{3} = 70$ M1 A1

6. The figure below represents the floor of a bathroom. Calculate its area in square centimetres.



$A = S \times S$
$= 3m \times 3m = 9m^2$ M1

$1m^2 = 10{,}000cm^2$
$9m^2 = 9 \times 10{,}000cm^2 = 90{,}000cm^2$ A1

7. Bamuteze bought a small techno phone at sh. 30,000. He later sold it to Mary at a loss of 10%. How much did Mary pay for the phone?

$\frac{10}{100} \times 30{,}000$
$= 10 \times \text{sh. } 300$
$= \text{sh. } 3{,}000$

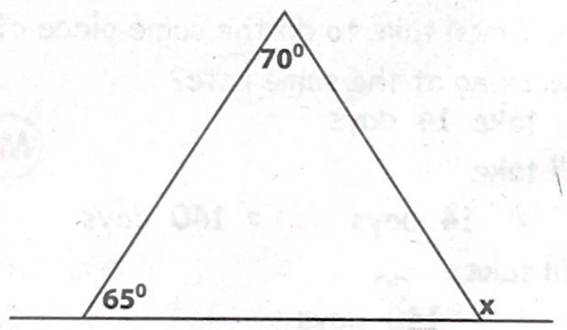
OR

sh. 30,000
- sh. 3,000
sh. 27,000

OR

$100\% - 10\% = 90\%$
$= \frac{90}{100} \times \text{sh. } 30{,}000$
$= 90 \times \text{sh. } 300 = \text{sh. } 27{,}000$

8. Study the figure below. Find angle X.



$x = 65^0 + 70^0$ M1
$x = 135^0$ A1

9. Work out: (-7) x (+4)

$-7 \times +4 = -28$ B2

10. While travelling at a speed of 80km per hour, Mama covered a distance of 200km. Calculate the time taken.

$T = D \div S$
$= 200km \div 80km/hr$
$= \frac{200km}{80km/hr}$ M1
$= 200km \times \frac{1\ hr}{80km} = \frac{20}{8}$
$= 2\frac{4}{8} = 2\frac{1}{2}\ hr$ A1

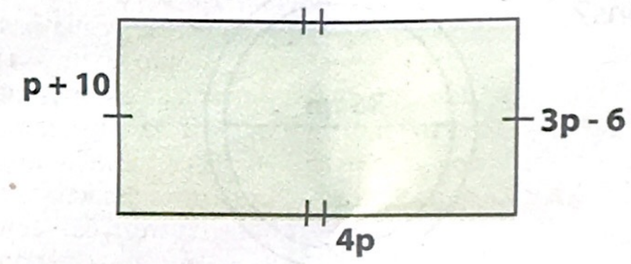
11. Convert 324_{five} to base ten.

5^2	5^1	5^0	
3	2	4	five

M1

$= (3 \times 5^2) + (2 \times 5^1) + (4 \times 5^0)$
$= (3 \times 5 \times 5) + (2 \times 5) + (4 \times 1)$
$= 75 + 10 + 4$
$= 89_{ten}$ A1

12. Study the figure below and find the value of P



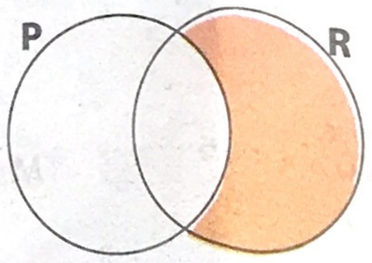
$3p - 6 = p + 10$
$3p - 6 + 6 = p + 10 + 6$ M1
$3p = p + 10 + 6$
$3p - p = p - p + 10 + 6$
$2p = 16$
$\frac{2p}{2} = \frac{16}{2}$
$p = 8$ A1

13. If 3402 sweets are shared equally among 14 girls how many sweets does each girl get?

$$\begin{array}{r} 0\ 2\ 4\ 3 \\ 14 \overline{)\ 3\ 4\ 0\ 2} \\ -\ 0\ \downarrow \\ \hline 3\ 4\ \downarrow \\ -\ 2\ 8\ \downarrow \\ \hline 6\ 0\ \downarrow \\ -\ 5\ 6\ \downarrow \\ \hline 4\ 2 \\ -\ 4\ 2 \\ \hline -\ \ - \end{array}$$ M1

$3402 \div 14 = 243$ A1

14. Shade set R only in the Venn diagram below.



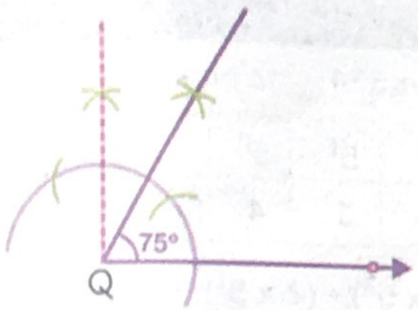
B2

15. Work out the number of trees a farmer can plant in a straight line along a distance of 200 metres at an interval of 5 metres.

$No = \frac{Distance}{Space} = \frac{200m}{5m}$ M1

$= 40$ poles A1

16. Using a ruler and a pair of compasses only, construct an angle of 75^0 at point Q.



17. A car takes $2\frac{1}{2}$ hours to cover a certain journey at 90km/hr but takes $3\frac{1}{2}$ hours to return through the same route. Calculate the average speed for the whole journey.

$D = S \times T$

$= \frac{90km}{hr} \times \frac{5 \text{ hrs}}{2} = 225km$

$A.speed = \frac{T.Distance}{T.Time}$ M1

$= \frac{(225 + 225)km}{(2\frac{1}{2} + 3\frac{1}{2})hr} = \frac{450km}{6hrs}$

$= 75km/hr$ A1

18. Write the number whose standard form is 6.58×10^3.

$6.58 \times 10^3 = 6.58 \times 10 \times 10 \times 10$

$= \frac{658}{100} \times 1000$ M1

$= 658 \times 10 = 6580$ A1

19. Mr. Vuni barrowed sh. 200,000 from a savings group that charges an interest rate of 4% per month. How much interest did he pay after 5 months?

$I = PTR$

$= sh.\ 200{,}000 \times 5 \times 4\%$ M1

$= 200{,}000 \times 5 \times \frac{4}{100}$

$= sh.\ 2000 \times 5 \times 4$

$= sh.\ 40{,}000$ A1

20. Work out: $8.4 \div 0.07$

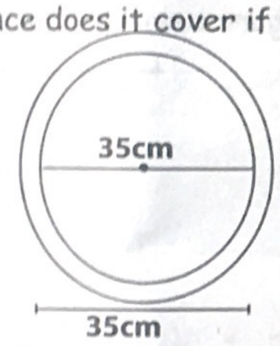
$= \frac{84}{10} \div \frac{7}{100}$ M1

$= \frac{84}{10} \times \frac{100}{7}$

$= 12 \times 10 = 120$ A1

SECTION B

21. The diagram below represents a bicycle tyre. How much distance does it cover if it makes 3 revolutions?



$C = \frac{22}{7} \times 35cm$ M1

$= 22 \times 5cm$

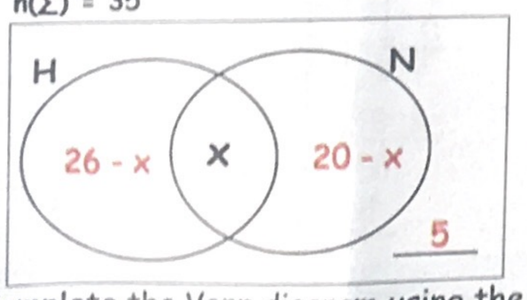
$= 110cm$

$3 \times C = 3 \times 110cm$ M1

$= 330cm$ A2

22. In a class of 35 students, 26 play Hockey (H), 20 play Netball (N) play both games while 5 play neither of the games.

$n(\Sigma) = 35$



B1

a) Complete the Venn diagram using the information above.

b) Find the value of x.

$5 + 26 - x + x + 20 - x = 35$ M1

$(5 + 26 + 20) - x = 35$

$51 - x = 35$ M1

$51 - 51 - x = 35 - 51$

$-x = -16$

$-x \times -1 = -16 \times -1$

$x = 16$ A1

23. a) Ten men can do a piece of work in 14 days. How long will 7 men take to do the same piece of work while working at the same rate?

10 men take 14 days

1 man will take M1

$= 10 \times 14 \text{ days} = 140 \text{ days}$

7 men will take

$= \frac{140}{7} \text{ days} = 20 \text{ days}$ A1

c) If $\frac{x}{5} = 20\%$, what is the value of x?

$\frac{x}{5} = \frac{20}{100}$ M1

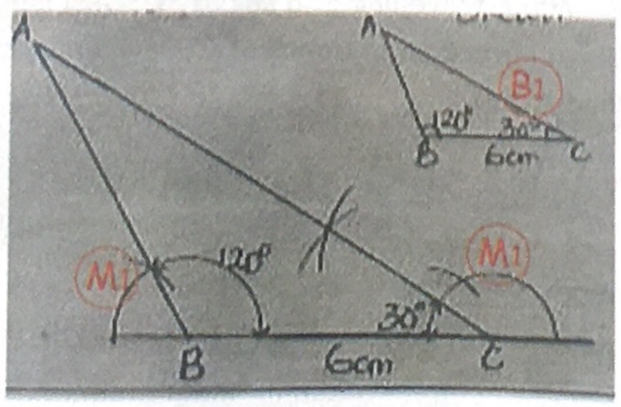
$100 \times \frac{x}{5} = \frac{20}{100} \times 100$

$20x = 20$

$x = 1$ A1

24. a) Using a pair of compasses and a ruler only, construct a triangle ABC in which BC = 6cm, angles $ABC = 120^0$ and angle $BCA = 30^0$

sketch

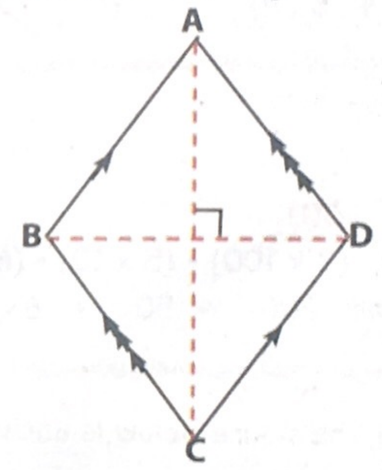


b) Measure AC

$AC = 10.6cm$

$BA = 6cm$ A1

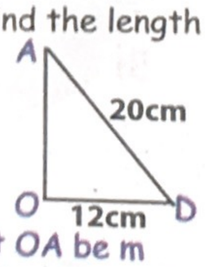
25. The diagram below is a rhombus ABCD. It has a perimeter of 80cm, diagonal BD =24cm.



a) Find the length of AC

$S = P \div 4$

$= 80cm \div 4 = 20cm$



Let OA be m

$m^2 + (12cm)^2 = 20cm)^2$

$m^2 + 12 \times 12 = 20 \times 20$

$m^2 + 144cm^2 = 400cm^2$

$m^2 + 144cm^2 - 144cm^2 = 400cm^2 - 144cm^2$

$m^2 = 256cm^2$ M1

$\sqrt{m^2} = \sqrt{256cm^2}$

$\sqrt{m \times m} = \sqrt{16cm \times 16cm}$

$m = 16cm$

Length AC = 2 x OA

$= 2 \times 16cm = 32cm$ A1

b) Find its area.

$A = \frac{1}{2} \times b \times h$ M1

$= \frac{1}{2} \times 32cm \times 24cm$

$= 384cm^2$ A1

26. Mama bought the following items:
- 3 kg of posho at sh. 4,000 per kg
- $\frac{1}{4}$ kg of fish at sh. 20,000 per kg
- 500g of beef at sh. 7,000

a) How much did Mama spend altogether?

Posho = 3 x sh. 4,000
= sh.12,000

Fish = $\frac{1}{4}$ x sh. 20,000 (5000)
= sh. 6,000 M1

Beef = sh. 7,000

TOTAL COST = sh. 12000
sh. 5000
+ sh. 7000
sh. 24000 A1

b) Mama got a change of sh. 1000. Find the amount of money she had before buying the items.

Amount = Exp + Change
sh. 24000
+ sh. 1000
sh. 25000 M1 A1

27. a) Solve: 3(p - 2) - 4(p - 2) = 9

3 x p - 3 x 2 - 4 x p - -4 x 2 = 9
3p - 6 - 4p + 8 = 9
3p - 4p - 6 + 8 = 9 M1
-p + 2 = 9
-p + 2 - 2 = 9 - 2
-p = 7
-p x -1 = 7 x -1
p = -7 A1

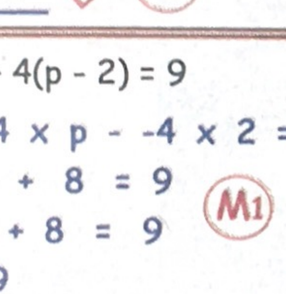
b) Kadelo is four times as old as his son. Their total age is 50 years. How old is kadelo's son?

Let Kadelo's sons age be k

Son	Kadelo	Total
k	4 x k	50 yr

k + 4k = 50yr
5k = 50yr M1
$\frac{5k}{5} = \frac{50yr}{5}$
k = 10yrs
Kadelo's son is 10 years A1

28. Study the figure below.



a) Work out the area of the shaded part.

$A = \pi r^2 - \pi r^2$
$= \frac{22}{17} \times 14cm \times 14cm$ B1
$= 22 \times 2cm \times 14cm = 496cm^2$

$\frac{22}{71} \times 7cm \times 7cm$
$= 154cm^2$

Shaded part: 496cm²
- 154cm²
342cm² A1

b) Calculate the circumference of the larger circle.

C = π2r
$= \frac{22}{17} \times 2 \times 14cm$ M1
$= 22 \times 2 \times 2 = 88cm$ A1

29. Willy banked sh.200,000 for 1 year 3 months in a certain bank; He got an interest of sh.12500 at the end of that period. Find the percentage interest rate of this bank.

sh. 12500 = sh. 200000 x $\frac{12}{12}$ x $\frac{r}{100}$ M1

sh. 12,500 = sh. 50,000 x $\frac{5r}{100}$ M1

sh. 12,500 = sh. 500 x 5r
sh. 12,500 = sh. 2500r
sh. 12,500 / sh. 2500 = sh. 2500r / sh. 2500 M1
5 = r // r = 5 r = 5% A1

30. a) Work out: 5 x 7 = ____(finite 8)

5 x 7 = ... (finite 8)
35 = ... (finite 8) M1
$\frac{35}{8}$ = 4 rem 3

Therfore:
5 x 7 = 3 (finite 8) A1

b) If today is Saturday, what day of the week was it 42 days ago?

Days of the week + No of days = today finite 7

Let the day of the week be n
n + 42 = 6 (finite 7) M1
n + 42 - 42 = 6 - 42 (finite 7)
$n = \frac{-35}{7}$ 5 rem 1
= 1 + 7 since the remainder is -ve
-6 finite 7
That day was a Saturday 42 days ago A1

31. Study the table below showing scores in math test.

Name	Njuba	Opi	Juma	Owino	Mwebe
Marks obtained	86	45	X	72	83

a) If the mean score was 70, find the value of x.

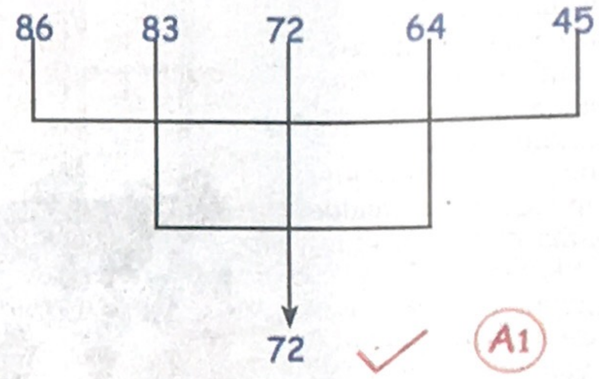
Mean = $\frac{x + 86 + 45 + 72 + 83}{5}$

$70 = \frac{x + 286}{5}$
$5 \times 70 = \frac{(x + 286) \times 5}{1}$
350 = x + 286 M1
350 - 286 = x 286 - 286
64 = x
x = 64 A1

b) Arrange the marks in descending order.

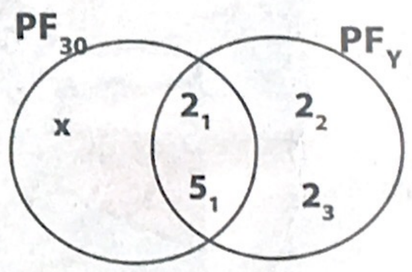
86 , 83 , 72 , 64 , 45 B1

c) What was the median mark?



A1

32. Study the Venn diagram below:



a) Find the value of:

i) x
x x 2_1 x 5_1 = 30
x x 2 x 5 = 30 M1
10x = 30
$\frac{10x}{10} = \frac{30}{10}$
x = 3 A1

ii) y
$y = 2_1 \times 5_1 \times 2_2 \times 2_3$
= 2 x 5 x 2 x 2
= 40 B1

b) Work out the LCM of 30 and y.

LCM = $F_{30} \cup F_9$
= x x 2_1 x 2_2 x 2_3 x 5_1
= 3 x 2 x 2 x 2 x 5
= 120 A1