GTLE PAST QUE.

MATHEMATICS CONTENT

(JHS)

SIR EKOW AND

HIS TEAM

FOR GOD AND MOTHER GHANA.

Each question is followed by FOUR options lettered A - D. Circle the correct option

QUE 1

What is the place value of the underlined figure in 2·536$\underline{7}$8?

A. Hundredth
B. Tenth.
C. Ten thousandth
D. Thousandth

QUE 2

You entered a classroom and saw on the blackboard the addition problem below

13 + 15 = 31.

What base has been used in the addition?

A. 5 B. 6 C. 7 D. 9.

QUE 3

If 75% of students in a class passed a test, what fraction of the students in the class failed the test?

A. 1/4 B. 3/13 C. 9/20 D. 3/4

QUE 4

Which of the following sets is well defined?

A. {Man, Kofi, Red, 14}
B. {Ink, Mango, Green, Nail}
C. {Car, Road, Glass, Book}
D. {Seth, Mary, Jacob, Evelyn}.

QUE 5

Ama and Kofi shared some amount of money in the ratio 2:3. If Kofi's share was GH₵ 750.00, what was Ama's share?

A. GH₵ 600.00 B. GH₵ 550.00
C. GH₵ 500.00 D. GH₵ 400.00

QUE 6

There are three baskets of oranges: basket one contains 95 oranges, basket two contains x oranges and basket three contains 2x oranges. How many oranges are in the three baskets in all?

A. 96x B. 95+3x
C. 95+2x² D. 98x.

QUE 7

The sum of two numbers is 8 and their product is 15. What are the numbers?

A. (3, 5) B. (-3, -5)
C. (3, -5) D. (-3, 5)

QUE 8

Given that $f(x) = 2x - 3$
Find the element whose image is 5.

A. 7 B. 6 C. 5 D. 4

QUE 9

Express 6 days is to 3 weeks as a ratio in its simplest form.

A. 1 : 2 B. 2 : 1
C. 2 : 7 D. 7 : 2

Compiled by SIR KNG (0547158102)

QUE 10

Five men are able to clear a piece of land in 2 hours. How long would it take four men to clear that same piece of land, if they work at the same rate?

A. 2 hours 40mins
B. 2 hours 30 mins
C. 2 hours 20 mins
D. 2 hours 10 mins

QUE 11

There are 432_{seven} baskets.

If there are 143_{seven} oranges

in each basket, how many oranges are there all together?

A. 102036_{seven}

B. 103036_{seven}
C. 113036_{seven}
D. 131036_{seven}

QUE 12

In a card-picking activity, Mansa selected a card that contains three numbers. The second number is thrice the first, whilst the third number is one-half the first number. If the sum of the numbers is 90, what is the biggest number?

A. 40 B. 50 C. 55 D. 60

QUE 13

Esi and Kwasi are 12 and 8 years old, respectively. They shared 60 mangoes in the ratio of their ages. How many mangoes did Esi get?

A. 42 B. 40 C. 36 D. 18

QUE 14

Joseph bought three pens and two pencils at the cost of GH₵5.20. Jane also bought four pens and one pencil from the same shop and paid GH₵5.60. If Edna buys ten pens, how much would she pay, approximated to the nearest cedi?

A. GH₵6.00 B. GH₵8.00
C. GH₵12.00 D. GH₵16.00

QUE 15

Ama counted some oranges in groups that follow a sequential pattern with a common difference. If the sixth group is twice the third group and the first group consist of three oranges, what is the number of oranges in the tenth group?

A. 22 B. 26 C. 30 D. 34

QUE 16

The measure of the angles of a triangle are represented as; $2x+15$, $x+20$ and $3x+25$. Find the actual measures of the angles of the triangle.

A. {60, 70, 80}

B. {55, 40, 85}

C. {50, 60, 80}

D. {45, 50, 95}

QUE 17

Find the gradient of the line with the equation $6x-2y-12=0$

A. -3 B. $-\frac{1}{3}$ C. $\frac{1}{3}$ D. 3

QUE 18

A shepherd has N number of sheep. Two of the sheep are killed by a hyena. Write an expression to represent the number of sheep left.

A. $N+2$

B. $N-2$

C. $N-3$

D. $N-4$

QUE 19

The following data are the ages of eye patients who went for a medical check-up and their ages arranged in ascending order are as follows; x, 22, 25, 30, 40, 50, 60, 70 and 80

Find the value of x if the range of the data is 60.

A. 15 B. 18 C. 20 D. 21

QUE 20

In a mixed class, if the probability of selecting a girl is $\frac{3}{4}$, how many pupils are in the class, if the boys are 15?

A. 50 B. 60 C. 70 D. 80

QUE 21

There are 100 cars in a car park, 28 of them are blue and 34 are red. If a car is selected at random from the park, what is the probability that it is NEITHER blue nor red?

A. $\frac{31}{50}$ B. $\frac{19}{50}$ C. $\frac{17}{50}$ D. $\frac{7}{25}$

QUE 22

The mean age of 17 boys in a class is 18 years. When another boy is added the mean remained unchanged. What is the age of the boy added?

A. 14 years B. 16 years
C. 17 years D. 18 years

QUE 23

A boy stands at point P(3,5) and throws a stone to hit point Q(6,9) on a cartesian coordinate plane. What is the distance between the boy and the stone?

A. 4 units B. 5 units
C. 6 units D. 7 units

QUE 24

Evaluate the expression

$$\frac{(a-2b)}{(3c+5d)}$$

when $a=14$, $b=-12$ $c=-3$ and $d=-2$

A. -3 B. -2 C. 2 D. 3

QUE 25

Ama is half the age of her father. In 5 years to come, the sum of their ages will be 70 years. What is Ama's age now?

A. 60 years B. 40 years
C. 20 years D. 10 years

QUE 26

If the cosine of an acute angle is $\frac{3}{5}$. Find the sine of the same angle.

A. $\frac{3}{5}$ B. $\frac{4}{4}$ C. $\frac{5}{4}$ D. $\frac{4}{5}$

QUE 27

What is the median of the following marks obtained by 20 students in a class during a Mathematics quiz?

4, 4, 4, 4, 4, 5, 5, 5, 6, 6, 6, 7, 7, 7, 7, 7, 8, 8, 8, 8.

A. 5 B. 6 C. 7 D. 8

QUE 28

The mean weight of six boys is 10kg. When the weight of another boy is added the new mean weight becomes 9kg. Find the weight which was added.

A. 3kg B. 6kg C. 9.5kg D. 9.9kg

QUE 29

Kofi Baidu has a cylindrical tank of volume $11000m^3$. If the diameter of the base is 100m, determine its height. (Take $\pi = \frac{22}{7}$).

A. 1.4m B. 1.6m C. 1.8m D. 2.0m

QUE 30

A boat moved from Abe due North to Akpe a distance of 20 nautical miles. It then turned 120° clockwise to Yeppe, a distance of 25 nautical miles. If Yeppe is East of Abe, how far is Abe from Yeppe?

A. 17 Nautical miles
B. 15 Nautical miles
C. 14 Nautical miles
D. 13 Nautical miles.

QUE 31

The letters in the word HIPPOPOTAMUS are placed in a box. What is the probability of taking out a letter that is a vowel?

A. $\frac{1}{12}$ B. $\frac{3}{12}$ C. $\frac{5}{12}$ D. $\frac{7}{12}$

QUE 32

Write a relation to represent the mapping in the table below.

X	0	1	2	3	4
Y	1	-1	-3	-5	-7

A. $x \rightarrow 2x - 1$

B. $x \rightarrow 1 - 2x$

C. $x \rightarrow x + 1$

D. $x \rightarrow 2x + 1$

QUE 33

A JHS 1 student modelled a regular octagon. What is the size of each interior angle of the octagon?

A. 100° B. 135° C. 1080° D. 1980°

QUE 34

A rectangular field has the measures 1010_2 metres and 20_3 metres. What is the area of the field, leaving your answer in base 10?

A. $80m^2$ B. $60m^2$ C. $50m^2$ D. $40m^2$

QUE 35

Find the value of x for which the equation $113_x = 23$ is valid.

A. $x = 7$

B. $x = 6$

C. $x = 5$

D. $x = 4$

QUE 36

In a survey of students visiting two cities, Kumasi and Ho, 61% had visited Kumasi before, 8% had visited both cities and 10% had visited neither. What percentage of students have visited Ho before?

A. 37% B. 35% C. 29% D. 27%

QUE 37

Agatha draws a straight line whose gradient is 4. What will be the equation of a straight line which is Parallel to Agatha's line and passing through the Point (1, 2)?

A. $y + 4x - 2 = 0$
B. $y - 4x - 2 = 0$
C. $y - 4x + 2 = 0$
D. $y + 4x + 2 = 2$

QUE 38

On a Cartesian coordinate plane, Ama draws a straight line whose equation is $2y + 3x - 12 = 0$. On the same plane, Kofi draws a straight line whose equation is $y + x - 5 = 0$. At what point will these two straight lines meet?

A. (2, 3) B. (-2, 3) C. (2, -3) D. (-2, -3)

QUE 39

If 18 men harvest a rice Plantation in 6 days, how many men would finish the harvesting in 4 days, assuming the men worked at the same rate?

A. 12 men
B. 15 men
C. 27 men
D. 30 men

QUE 40

A trader sold 250 articles of the same type and cost for GH¢525,000.00 at a profit of 25%. Calculate the cost of each article.

A. GH¢1500.00 B. GH¢1680.00
C. GH¢2000.00 D. GH¢2250.00

QUE 41

When a certain number is subtracted from 10, and the result is multiplied by 2, the final result is 4. Find the no.

A. 8 B. 12 C. 16 D. 24

QUE 42

Mark is 30 years old. Yaw is half as old as Mark. Paul is 10 years older than Yaw. How old is Paul?

A. 30 years B. 25 years
C. 20 years D. 15 years

QUE 43

A man standing on a straight line with equal intervals moved first to the number 3 then to 1, and maintained the same difference. What is the 7th number in the sequence of movements?

A. -4 B. -5 C. -6 D. -9.

QUE 44

Mr. Mensah spent 1/5 of his monthly salary on food, 1/4 on rent and 1/2 on school fees. What fraction of his monthly salary is left for other expenses?

A. 1/20 B. 3/20 C. 7/20 D. 8/20

QUE 45

A cylindrical tank measuring 7 metres as radius and 10 metres depth was filled with water to its full capacity. Half of the volume of water was used, $250m^3$ of water went waste. What fraction of water remains in the tank? (Take $\pi = 22/7$)

A. $16/77$ B. $26/77$ C. $36/77$ D. $46/77$

QUE 46

A trader sold 100 boxes of fruit at GH¢8000.00 per box, 800 boxes at GH¢6000.00 per box and 600 boxes at GH¢4000.00 per box. Find the average selling price per box.

A. GH¢1200.00 B. GH¢5086.67
C. GH¢5333.33 D. GH¢6000.00

QUE 47

The mean age of 8 people who attended a club meeting is 78. A new member joins the club and their average age becomes 76. If the new member is the youngest and the range of their ages is 31. What is the age of the eldest person in the club?

A. 90 B. 91 C. 92 D. 93

QUE 48

In a netball competition, the probability of Ama hitting her target is $3/4$ while that of Esi hitting her target is $3/5$. What is the probability that only one of them hit the target?

A. $3/20$ B. $7/20$ C. $9/20$ D. $11/20$

QUE 49

Rearrange the following fractions in descending order of magnitude:

0·5, 0·8, 0·25 and 0·75

A. 0·5, 0·8, 0·75 and 0·25

B. 0·25, 0·5, 0·75 and 0·8

C. 0·75, 0·8, 0·25 and 0·5

D. 0·8, 0·75, 0·5 and 0·25

QUE 50

In an end of term examination result the lower quartile is 24 and the upper quartile is 64. What is the semi-interquartile range of the examination result?

A. 20 B. 44 C. 64 D. 88

QUE 51

A student spent GH¢154·00 out of the GH¢175·00 remittance received from her uncle. What fraction of the money is left?

A. $\frac{2}{25}$ B. $\frac{3}{25}$ C. $\frac{22}{25}$ D. $\frac{23}{25}$

QUE 52

Kofi's age in the next ten years will be four times his age five years ago. How old is Kofi now?

A. 5 B. 6 C. 10 D. 15

QUE 53

The angle of elevation of the top of a building is 25° from a point 70 meters away on a level ground. What is the height of the building to one decimal place?

A. 36·2 meters

B. 34·6 meters

C. 32·6 meters

D. 26·3 meters.

Solution to past Questions

QUE 1

2 · 5 3 6 **7** 8

↓

Ten thousandth

ANS C

QUE 2

$$\begin{array}{r} 13_7 \\ +\ 15_7 \\ \hline 31_7 \end{array}$$

ANS C

QUE 3

75% — Students who passed

25% — Students who failed

Fraction of students who failed

$$25\% = \frac{25}{100} = \frac{1}{4}$$

ANS A

QUE 4

A set is a well defined collection of objects of the same kind.

ANS D

NB: {Seth, Mary, Jacob, Evelyn} are names of people.

QUE 5

Ama : Kofi

2 : 3

3 — GH¢750

2 — ?

$$\frac{2}{3} \times GH¢750$$

GH¢500

ANS C

QUE 6

B1	B2	B3
95	x	2x

Total number of oranges
$95 + x + 2x$
$95 + 3x$ Ans B

Ans B QUE 7

let the first number $= x$
the second number $= y$

Sum of the two numbers is 8
$x + y = 8$ — eqn ①

Their product is 15
$xy = 15$ — eqn ②

Solving the two equations simultaneously.
$x + y = 8$ — eqn ①
$xy = 15$ — eqn ②

Make y the subject in eqn ①
$x + y = 8$
$y = 8 - x$

Put $y = 8 - x$ into eqn ②
$xy = 15$
$x(8 - x) = 15$
$8x - x^2 = 15$
$-x^2 + 8x - 15 = 0$
$(x - 5)(x - 3) = 0$

$x - 5 = 0$	$x - 3 = 0$
$x = 5$	$x = 3$.

Put $x = 5$ or $x = 3$ into eqn ①

when $x = 5$	when $x = 3$
$x + y = 8$	$x + y = 8$
$5 + y = 8$	$3 + y = 8$
$y = 8 - 5$	$y = 8 - 3$
$y = 3$	$y = 5$

Therefore, $x = 3$, $y = 5$ OR
$x = 5$, $y = 3$.

Ans A

QUE 8

$f(x) = 2x - 3$

$5 = 2x - 3$

$5 + 3 = 2x$

$8 = 2x$

$\frac{8}{2} = \frac{2x}{2}$

$4 = x$

$x = 4$

ANS D.

QUE 9

6 days : 3 weeks

Convert 3 weeks to days

1 week — 7 days

3 weeks — ?

$\frac{3 \text{ weeks}}{1 \text{ week}} \times 7 \text{ days}$

21 days

2 : 7

6 days : 21 days

2 : 7 ANS C.

(compiled by SIR KWS (0541158502))

QUE 10

This is an indirect proportion

5 men — 2 hours

4 men — ?

$\frac{5 \text{ men}}{4 \text{ men}} \times 2 \text{ hours}$

2.5 hours

2.5 hours = 2 hours 30 mins

ANS B.

QUE 11

No of baskets = 432_7

No of oranges in each basket = 143_7

Total no of oranges

$$\begin{array}{r} 4\,3\,2_7 \\ \times\ 1\,4\,3_7 \\ \hline 1\,6\,2\,6 \\ +\ 2\,3\,6\,1 \\ \quad 4\,3\,2 \\ \hline 1\,0\,2\,0\,3\,6_{\text{seven}} \end{array}$$

ANS A

QUE 12

Let ;

1st no	2nd no	3rd no
x	$3x$	$\frac{1}{2}x$

Sum of the numbers is 90

$$x + 3x + \frac{1}{2}x = 90$$

$$\frac{9}{2}x = 90$$

multiply each term by the L.C.M (ie 2)

$$2\left(\frac{9}{2}x\right) = 2(90)$$

$$2\left(\frac{9}{2}x\right) = 2(90)$$

$$\frac{9x}{9} = \frac{180}{9}$$

$$x = 20$$

1st no	2nd no	3rd no
20	60	10

The biggest no is 60

Ans D.

QUE 13

Esi	:	Kwasi
12	:	8

Total ratio = 12 + 8

= 20

20 —— 60 mangoes

12 —— ?

$$\frac{12}{20} \times 60 \text{ mangoes}$$

36 mangoes

Ans C.

QUE 14

Let the cost of a pen = x

and the cost of a pencil = y

$3x + 2y = 5.20$ — eqn ①

$4x + y = 5.60$ — eqn ②

Solving the two equations gives

$x = 1.2$ and $y = 0.8$

The cost of 10 pens

$10x$	GH₵ 12.00
10×1.2	
12	

Ans C

QUE 15

1st group
$a = 3$

6th group
$a + 5d$

3rd group
$a + 2d$

$a = 3$ — eqn ①

6th group = 2 (3rd group)
$a + 5d = 2(a + 2d)$
$a + 5d = 2a + 4d$
$a + 5d = 2a + 4d$ — eqn ②

Put $a = 3$ into eqn ②

$a + 5d = 2a + 4d$
$3 + 5d = 2(3) + 4d$
$3 + 5d = 6 + 4d$
$5d - 4d = 6 - 3$
$d = 3$

10th group
$a + 9d$
$3 + 9(3)$
$3 + 27$
30,

ANS C

QUE 16

$(2x + 15)$, $(x + 20)$ and $(3x + 25)$

The sum of the interior angles of a triangle is 180°

$(2x + 15) + (x + 20) + (3x + 25) = 180$
$2x + 15 + x + 20 + 3x + 25 = 180$
$6x + 60 = 180$
$6x = 180 - 60$
$6x = 120$
$\frac{6x}{6} = \frac{120}{6}$
$x = 20^\circ$

Actual measures of each angle

$2x + 15$	$x + 20$	$3x + 25$
$2(20) + 15$	$20 + 20$	$3(20) + 25$
$40 + 15$	40°	$60 + 25$
55°		85°

The angles are 55°, 40° and 85°

ANS B.

QUE 17

$6x - 2y - 12 = 0$

Make y the subject

$6x - 12 = 2y$

$\frac{6x}{2} - \frac{12}{2} = \frac{2y}{2}$

$3x - 6 = y$

$y = 3x - 6$

↓

Gradient

Ans D

NB: The gradient is the coefficient of x after making y the subject in the above equation

QUE 18

Total no of sheep = N

No of sheep killed = 2

Total no of sheep left = N - 2

Ans B.

QUE 19

Smallest no = x

Biggest no = 80

Range = Biggest no - smallest no

$60 = 80 - x$

$x = 80 - 60$

$x = 20$

Ans C.

QUE 20

Let the total no of pupils = x

No of boys = 15

No of girls = $x - 15$

$$P(G) = \frac{\text{no of girls}}{\text{total no of pupils}}$$

$$\frac{3}{4} = \frac{x-15}{x}$$

$$\frac{3}{4} = \frac{x-15}{x}$$

$$3x = 4(x-15)$$

$$3x = 4x - 60$$

$$60 = 4x - 3x$$

$$60 = x$$

$$x = 60$$

Hence, there are 60 pupils in the class

Ans B.

QUE 21

Total no of cars = 100

No of Blue cars = 28

No of Red cars = 34

No of cars that are Neither Blue nor Red

$100 - 28 - 34$

38

$$P(\text{Neither Blue nor Red}) = \frac{38}{100}$$

$$= \frac{19}{50}$$

Ans B.

Compiled by Sir King (0574858422)

QUE 22

$$\bar{x}_{17} = \frac{S_{17}}{17}$$

$$18 = \frac{S_{17}}{17}$$

$$\frac{18}{1} = \frac{S_{17}}{17}$$

$$18 \times 17 = S_{17}$$

$$306 = S_{17}$$

$$S_{17} = 306$$

Let the age of the boy $= x$

$$\bar{x}_{18} = \frac{S_{17} + x}{18}$$

$$18 = \frac{306 + x}{18}$$

NB: The mean remained unchanged

$$\frac{18}{1} = \frac{306 + x}{18}$$

$$18 \times 18 = 306 + x$$

$$324 = 306 + x$$

$$324 - 306 = x$$

$$18 = x$$

$$x = 18$$

Hence, the age of the boy is 18 years

Ans D

QUE 23

$P(3, 5)$ $\quad$ $Q(6, 9)$

$x_1 \; y_1$ $\quad$ $x_2 \; y_2$

Distance between P and Q

$$|PQ| = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$|PQ| = \sqrt{(6-3)^2 + (9-5)^2}$$

$$|PQ| = \sqrt{3^2 + 4^2}$$

$$|PQ| = \sqrt{9 + 16}$$

$$|PQ| = \sqrt{25}$$

$$|PQ| = 5 \text{ units}$$

Ans B

QUE 24

$\frac{(a-2b)}{(3c+5d)}$ $a=14$ $b=-12$ $c=-3$ $d=-2$

$\frac{14-2(-12)}{3(-3)+5(-2)}$

$\frac{14+24}{-9-10}$

$\frac{38}{-19}$

-2

Ans B

QUE 25

Ama's age	Father's age
$\frac{1}{2}x$	x

In 5 years to come

Ama's age	Father's age
$\frac{1}{2}x+5$	$x+5$

The sum of their ages will be 70

$(\frac{1}{2}x+5)+(x+5)=70$

$\frac{1}{2}x+5+x+5=70$

$\frac{3}{2}x+10=70$

$\frac{3}{2}x=70-10$

$\frac{3}{2}x=60$

multiply each term by L.C.M (ie 2)

$2(\frac{3}{2}x)=2(60)$

$3x=120$

$\frac{3x}{3}=\frac{120}{3}$

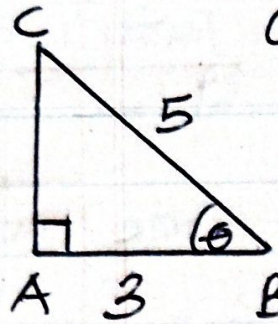
$x=40$

Ama's age	Father's age
20 years	40 years

Hence, Ama's age is 20 years.

Ans C.

QUE 26



$\cos\theta = \frac{3}{5}$ → Adjacent / → Hypotenuse

From Pythagorean theorem

$|BC|^2 = |AB|^2 + |AC|^2$

$5^2 = 3^2 + |AC|^2$

$25 = 9 + |AC|^2$

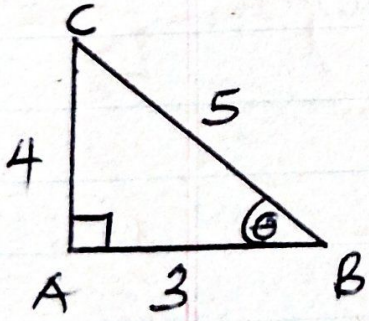
$25 - 9 = |AC|^2$

$16 = |AC|^2$

$\sqrt{16} = \sqrt{|AC|^2}$

$4 = |AC|$

$|AC| = 4$



$\sin\theta = \frac{|AC|}{|BC|} = \frac{4}{5}$

Ans D.

QUE 27

4, 4, 4, 4, 4, 5, 5, 5, 6, 6, 6, 7, 7, 7, 7, 7, 8, 8, 8, 8.

Median is the middle number after the data has been arranged in order of magnitude (ascending or descending order).

$\text{Median} = \frac{6+6}{2}$

$\text{median} = \frac{12}{2}$

$\text{Median} = 6$

Ans B.

QUE 28

$\bar{x}_6 = \frac{S_6}{6}$

$10 = \frac{S_6}{6}$

$\frac{10}{1} = \frac{S_6}{6}$

$60 = S_6$

$S_6 = 60$

Let the weight of the boy $= x$

$\bar{x}_7 = \frac{S_6 + x}{7}$

$9 = \frac{60 + x}{7}$

$\frac{9}{1} = \frac{60 + x}{7}$

$63 = 60 + x$

$63 - 60 = x$

$3 = x$

$x = 3$

$x = 3kg.$

Hence, the boy weighs 3kg.

ANS A

QUE 29

$V = 11000 m^3$ $d = 100m$

$r = 100/2 = 50m$

$V = \pi r^2 h$

$11000 = \frac{22}{7} \times (50)^2 \times h$

$11000 = \frac{55000}{7} h$

multiply each term by the LCM (ie 7)

$7(11000) = 7\left(\frac{55000}{7}\right)h$

$77000 = 55000h$

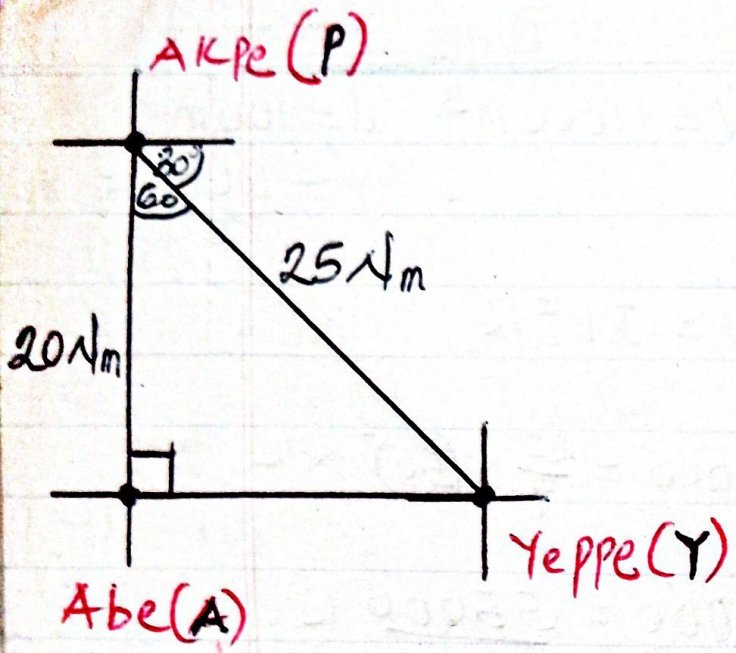
$\frac{77000}{55000} = \frac{55000h}{55000}$

$1.4 = h$

$h = 1.4m$

ANS A

QUE 30



Using Pythagorean theorem

$|PY|^2 = |AP|^2 + |AY|^2$

$25^2 = 20^2 + |AY|^2$

$625 = 400 + |AY|^2$

$625 - 400 = |AY|^2$

$225 = |AY|^2$

$\sqrt{225} = \sqrt{|AY|^2}$

$15 = |AY|$

$|AY| = 15$

Hence, Abe is 15 nautical miles from Yeppe.

ANS B.

QUE 31

Total no of letters = 12

no of vowel letters = 5

$P(\text{vowel}) = \frac{\text{no of vowel letters}}{\text{Total no of letters}}$

$= \frac{5}{12}$

ANS C

QUE 32

$y = mx + c$

$m = \frac{\text{difference in } y\text{-values}}{\text{difference in } x\text{-values}}$

$m = \frac{-3 - -1}{1} = \frac{-3+1}{1} = -2$

$y = -2x + c$

when $x = 0, y = 1$

$1 = -2(0) + c$

$1 = 0 + c$

$1 = c$

$c = 1$

$y = -2x + 1$

$y = 1 - 2x$

OR

$x \rightarrow 1 - 2x$

ANS B

QUE 33

An octagon has 8 sides

$n = 8$

$$\text{Interior angle} = \frac{(n-2)\,180}{n}$$

$$= \frac{(8-2)180}{8}$$

$$= \frac{6 \times 180}{8}$$

$$= \frac{1080}{8}$$

$$= 135^\circ$$

Ans B

QUE 34

$L = 1010_2 m \quad W = 20_3 m$

Convert $1010_2 m$ to base ten

$$1010_2$$ (positions 3 2 1 0)

$(1\times2^3)+(0\times2^2)+(1\times2^1)+(0\times2^0)$

$(1\times8)+(0\times4)+(1\times2)+(0\times1)$

$8 + 0 + 2 + 0$

$10 m$

Convert $20_3 m$ to base ten

$$20_3$$ (positions 1 0)

$(2\times3^1)+(0\times3^0)$

$(2\times3)+(0\times1)$

$6 + 0$

$6 m$

$\text{Area} = L \times W$

$= 10 \times 6$

$= 60 m^2$

Ans B

QUE 35

$113_x = 23$

Convert 113_x to base ten

$$\overset{2}{1}\overset{1}{1}\overset{0}{3}_x = 23$$

$(1 \times x^2) + (1 \times x^1) + (3 \times x^0) = 23$

$(1 \times x^2) + (1 \times x) + (3 \times 1) = 23$

$x^2 + x + 3 = 23$

$x^2 + x + 3 - 23 = 0$

$x^2 + x - 20 = 0$

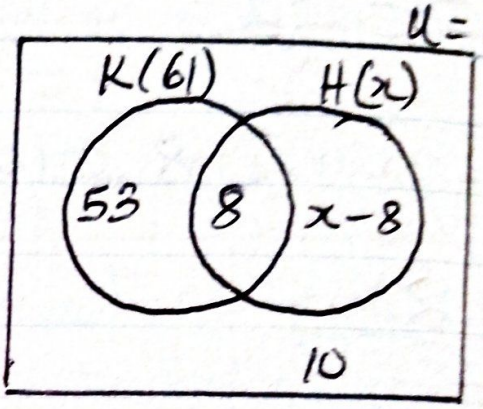
$(x - 4)(x + 5) = 0$

$x - 4 = 0$	$x + 5 = 0$
$x = 4$	$x = -5$

$x = 4$, since a base **cannot** be negative.

Ans D

QUE 36



$53 + 8 + x - 8 + 10 = 100$

$63 + x = 100$

$x = 100 - 63$

$x = 37\%$

Ans A

QUE 37

$m = 4$ $\quad P(1, 2)$ (x_1, y_1)

$y - y_1 = m(x - x_1)$

$y - 2 = 4(x - 1)$

$y - 2 = 4x - 4$

$y - 4x - 2 + 4 = 0$

$y - 4x + 2 = 0$

Ans C

Compiled by SIR MUTA (0754158/1502)

QUE 38

To find the meeting point of the two lines, solve the two equations simultaneously.

$2y + 3x - 12 = 0$ (Line 1)
$2y + 3x = 12$ — eqn ①

$y + x - 5 = 0$ (Line 2)
$y + x = 5$ — eqn ②

$2y + 3x = 12$ — eqn ①
$y + x = 5$ — eqn ②

multiply eqn ② by 2
$2y + 2x = 10$ — eqn ③

eqn ① − eqn ③

$2y - 2y + 3x - 2x = 12 - 10$
$x = 2$

Put $x = 2$ into eqn ①

$2y + 3x = 12$
$2y + 3(2) = 12$
$2y + 6 = 12$
$2y = 12 - 6$
$2y = 6$

$\frac{2y}{2} = \frac{6}{2}$
$y = 3$
$P(2, 3)$

Ans A

QUE 39

This is an indirect proportion

6 days —— 18 men
4 days —— ?

$\frac{6}{4} \times 18$

27 men

Ans C

QUE 40

SP = GH₵525,000
P% = 25%

125 —— GH₵525,000
100 —— ?

Cost Price

$\frac{100}{125} \times$ GH₵525,000

GH₵ 420,000

The cost price for 250 articles is GH₵ 420,000

Cost price for one article

$\frac{420,000}{250} =$ GH₵1680.00

Ans B

QUE 41

Let the number = a

When the no is subtracted from 10

$10 - a$

The result is multiplied by 2

$2(10 - a)$

Final result is 4

$2(10 - a) = 4$

$20 - 2a = 4$

$20 - 4 = 2a$

$16 = 2a$

$\frac{16}{2} = \frac{2a}{2}$

$8 = a$

$a = 8$

Hence, the number is 8.

ANS A

QUE 42

Let their ages be;

Mark	Yaw	Paul
x	$\frac{1}{2}x$	$\frac{1}{2}x + 10$

Mark is 30 years old

$x = 30$

Paul's age

$\frac{1}{2}x + 10$

$\frac{1}{2}(30) + 10$

$15 + 10$

25 years

ANS B

QUE 43

3, 1, -1, ---

$a = 3 \quad d = 1 - 3 = -2$

$u_7 = a + 6d$

$= 3 + 6(-2)$

$= 3 - 12$

$= -9$

ANS D

QUE 44

Let his monthly salary = y.

Expenditure on Food

$\frac{1}{5}y$

Expenditure on Rent

$\frac{1}{4}y$

Expenditure of school fees

$\frac{1}{2}y$.

Total expenditure on food, Rent & school fees

$\frac{1}{5}y + \frac{1}{4}y + \frac{1}{2}y = \frac{19}{20}y$.

Amount left

$y - \frac{19}{20}y$

$\frac{1}{20}y$.

Fraction left

$\frac{1}{20}$

Ans A

QUE 45

$r = 7m$ $d(h) = 10m$

$V = \pi r^2 h$

$V = \frac{22}{7} \times 7^2 \times 10$

$V = 1540$

$V = 1540m^3$

Amount of water in the tank is $1540m^3$.

Half of $1540m^3$

$\frac{1}{2}$ of 1540

$\frac{1}{2} \times 1540 = 770m^3$

Amount of water remained in the tank

$1540 - 770 - 250$

$520m^3$

Fraction of water left in the tank

= Amount of water remained / Total Amount of water

$= \frac{520}{1540} = \frac{26}{77}$ Ans B

QUE 46

Selling Price of 100 boxes

100 x GH₵8000

GH₵ 800,000

Selling Price of 800 boxes

800 x GH₵6000

GH₵ 4,800,000

Selling Price of 600 boxes

600 x GH₵ 4000

GH₵ 2,400,000

Total number of boxes

100 + 800 + 600

1500 boxes

Selling Price for 1500 boxes

GH₵800,000 + GH₵4,800,000 + GH₵2,400,000

= GH₵ 8,000,000

Average selling Price Per box

$$= \frac{\text{Selling Price for 1500 boxes}}{\text{Total number of boxes}}$$

$$= \frac{8,000,000}{1500} = 5333.33$$

GH₵ 5333.33

Ans C

QUE 47

$$\bar{x}_8 = \frac{S_8}{8}$$

$$78 = \frac{S_8}{8}$$

$$\frac{78}{1} = \frac{S_8}{8}$$

$$624 = S_8$$

$$S_8 = 624$$

Let the oldest person's age = a

Range = a - 60

31 = a - 60

31 + 60 = a

91 = a

a = 91 years

Ans B

Let the new member's age = x

$$\bar{x}_9 = \frac{S_8 + x}{9}$$

$$76 = \frac{S_8 + x}{9}$$

$$\frac{76}{1} = \frac{624 + x}{9}$$

$$684 = 624 + x$$

$$684 - 624 = x$$

$$60 = x$$

$$x = 60$$

Meaning the age of the youngest person is 60 years.

QUE 48

$P(A) = 3/4$ $P(\bar{A}) = 1 - 3/4 = 1/4$

$P(E) = 3/5$ $P(\bar{E}) = 1 - 3/5 = 2/5$

$P(\text{only one}) = [P(A) \text{ and } P(\bar{E})]$ OR

$[P(\bar{A}) \text{ and } P(E)]$.

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

$= 3/10 + 3/20$

$= 9/20$

ANS C

QUE 49

0·5, 0·8, 0·25 and 0·75

Sol

0·50, 0·80, 0·25 and 0·75

Descending order (biggest to smallest)

0·8, 0·75, 0·5 and 0·25

ANS D.

QUE 50

$Q_1 = 24$ $Q_3 = 64$

Semi-interquartile range

$$\frac{Q_3 - Q_1}{2} = \frac{64 - 24}{2}$$

$$\frac{40}{2} = 20$$

ANS A.

QUE 51

Money left

175 − 154

GH₵ 21

Fraction left

$$\frac{\text{Money left}}{\text{Total remittance}}$$

$$\frac{21}{175} = \frac{3}{25}$$

ANS B

Compiled by SIR IAN (0547158169)

QUE 52

Let Kofi's Present age = x

In the next ten years
$(x+10)$ years

Five years ago
$(x-5)$ years

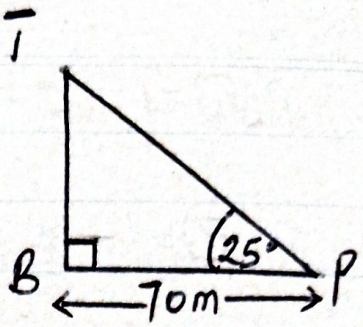
His age in the next ten years will be four times his age five years ago

$$x+10 = 4(x-5)$$
$$x+10 = 4x-20$$
$$10+20 = 4x-x$$
$$30 = 3x$$
$$\frac{30}{3} = \frac{3x}{3}$$
$$10 = x$$
$$x = 10$$

Hence, his present age is 10 years old

ANS C.

QUE 53



$$\tan 25 = \frac{|BT|}{|BP|}$$

$$\tan 25 = \frac{|BT|}{70}$$

$$\frac{\tan 25}{1} = \frac{|BT|}{70}$$

$$70 \tan 25 = |BT|$$
$$32.6415 = |BT|$$
$$|BT| = 32.6 \text{ (1 dp)}$$

ANS C

SECTION A

1 C	11 A	21 B	31 C	41 A	51 B
2 C	12 D	22 D	32 B	42 B	52 C
3 A	13 C	23 B	33 B	43 D	53 C
4 D	14 C	24 B	34 B	44 A	
5 C	15 C	25 C	35 D	45 B	
6 B	16 B	26 D	36 A	46 C	
7 A	17 D	27 B	37 C	47 B	
8 D	18 B	28 A	38 A	48 C	
9 C	19 C	29 A	39 C	49 D	
10 B	20 B	30 B	40 B	50 A	

Compiled by SIR KING
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