

## 2021 WASSCE MATHEMATICS PAPER 2 -THEORY

1

(a) Mr Sarfo borrowed \$25,000 from Afiak financial services at 21% simple interest per annum for 3 years if he was able to pay back the loan in two years at equal yearly installments how much did he pay each year?

(b) Two consecutive numbers are such that the sum of thrice the smaller and twice the larger is 17.

find correct through three significant figures the smaller number as a percentage of the sum of the two numbers

2

A man left town am at 10:00 AM and traveled by car to town N at an average speed of 72 km/h.

He spent 2hours for a meeting and returned through town M by bus at an average speed of 40KM/H.

If the distance covered by the bus was 2km longer than that of the car and he arrived at town M at 1 :55PM.

calculate distance from M to N.

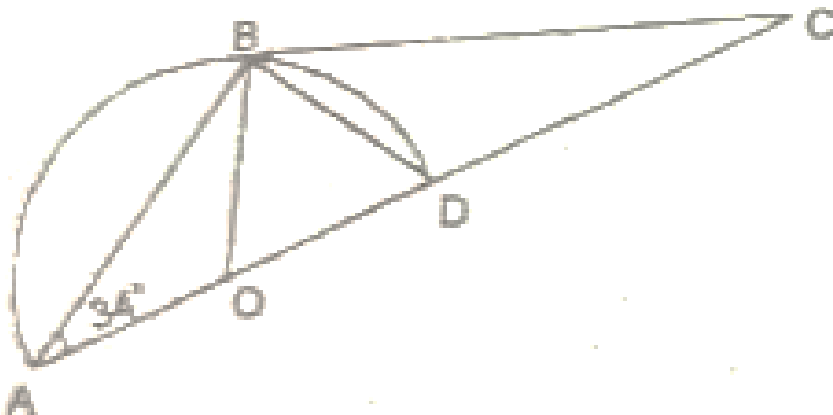
3

The points X, Y and Z are located such that Y is 15 km south of X, Z is 20 km from X on a bearing of  $270^\circ$ .

Calculate, correct: (a) two significant figures,  $|YZ|$

(b) The nearest degree, the bearing of Y from Z

4



In the diagram,  $\overline{AD}$  is a diameter of a circle with Centre O. If ABD is a triangle in a semi-circle  $\angle OAB = 34^\circ$ ,

find: (a)  $\angle OAB$  (b)  $\angle OCB$

5

(a) A man shared his property among his children as follows:

Child's name	Ann	Afia	Kojo	Nuno	Akom
Percentage share	5	15	10	45	25

Represent the information on a pie chart

(b) A box contains 5 red, 3 green and 4 blue identical beads. Calculate the probability th a girl takes away two red beads, one after the other, from the box.

6

(a) In a class of 80 students,34 study Biology and 35 study Physics.

If each student studies at least one of the subjects:

(i) draw a Venn diagram to represent this information

(ii) how many students study both subjects

(iii) find the fraction of the class that study Biology but not Physics.

(b) Johnson and Jocatol Ltd. owned a business office with floor measuring 15m by 8 m which was to be carpeted.

The cost of carpeting was Gh¢ 890.00 per square metre. If a total of GH 216,120.00 was spent on painting and carpeting, how much was the cost of painting?

7

(a) Copy and complete the table of values for the relation  $y=2x^2 - x - 2$  for  $4 \leq x \leq 4$ .

x	-4	-3	-2	-2	0	1	2	3	4
y		19			-2				26

(b) Using a scale of 2 cm to 1 unit on the x-axis and 2 cm to 5 units on the y-axis, draw the graph of  $y = 2x^2 - x - 2$  for  $4 \leq x \leq 4$ .

(c) On the same axes, draw the graph of  $y = 2x + 3$ .

(d) Use the graph to find the: (i) roots of the equation  $2x-3r-5 0$ ;

(i) range of values of x for which  $2x^2 -x - 2<0$ .

8

.(a) In APQR,  $\angle PQR= 90^\circ$ . If its area is  $216\text{cm}^2$  and  $|PQ|:|QR|$  is 3:4, find  $|PR|$ .

(b) The present ages of a man and his son are 47 years and 17 years respectively. In how many years would the man's age be twice that of his son?

9

10

(a) A cottage is on a bearing of  $200^\circ$  and  $110^\circ$  from Dogbe's and Manu's farms respectively. If Dogbe walked 5 km and Manu 3 km from the cottage to their farms, find, correct to:

- (i) two significant figures, the distance between the two farms,
- (ii) the nearest degree, the bearing of Manu's farm from Dogbe's.

(b) A ladder 10 m long leaned against a vertical wall xm high. The distance between the wall and the foot of the ladder is 2 m longer than the height of the wall.

Calculate the value of x

11

The table shows the distribution of the number of hours per day spent in studying by 50 students.

Number of hours per day	4	5	6	7	8	9	10	11
Number of students	5	7	5	9	12	4	3	5

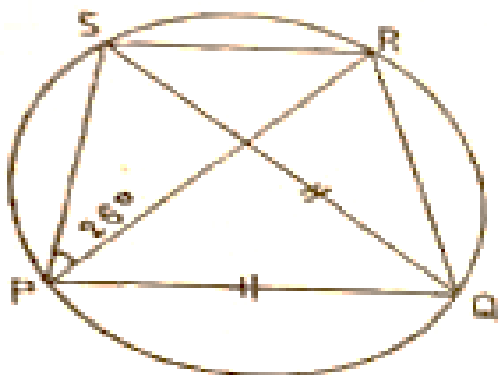
Calculate, correct to two decimal places,

the:

(a) mean;

(b) standard deviation.

12



In the diagram, PQRS is a circle.  $|PQ| = |RS|$ .  $\angle SPR = 26^\circ$  and the interior angles of PQS are in the ratio 2:3:3.

Calculate:

(i)  $\angle PQR$ ;

(ii)  $\angle RPQ$ ;

(iii)  $\angle PRQ$

(b) The coordinates of two points P and Q in a plane are (7, 3) and (5, x) respectively, where X is a real number.

If  $|PQ| = 29$  units, find the value of x.