2019 WASSCE CORE MATHEMATHICS 2 THEORY

1.

(a) Given that $110_x - 40_{five}$, find the value of x.

(b) Simplify $\frac{15}{\sqrt{75}} + \sqrt{108} + \sqrt{432}$

Leaving the answer in the form $a\sqrt{b}$, where a and b are positive integers.

2.

(a) find the equation of the line which passes through the points A(-2, 7) and B(2, -3)

(b) Given that $\frac{5b-a}{8b+3a} = \frac{1}{5}$ find correct to two decimal places, the value of $\frac{1}{5}$

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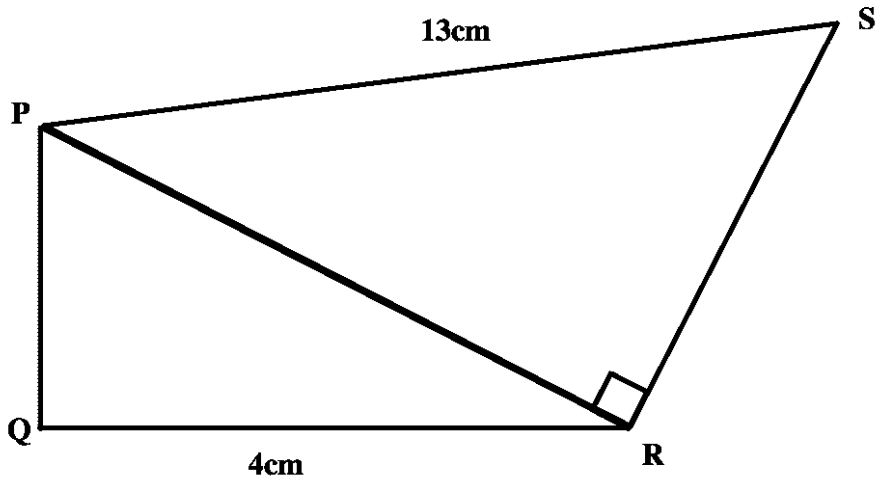
3.

(a) Ali, Musah and Yusuf shared GHC 420,000.00 in the ratio 3:5:8 respectively. Find the sum of Ali and Yusuf's shares.

(b) Solve: $2\left(\frac{1}{8}\right)^z = 32^{z-1}$

4.

In the diagram, PQRS is a quadrilateral, <PQR = <PRS = 90^0, |PQ| = 3cm, |QR| = 4cm and |PS| = 13cm. Find the area of the quadrilateral.



5.

Three red balls, five, green balls and a number of blue balls are put together in a sack. One ball is picked at random from the sack. If the probability of picking a red ball is $\frac{1}{6}$, find:

a. the number of blue balls in the sack

b. the probability of picking a green ball

6.

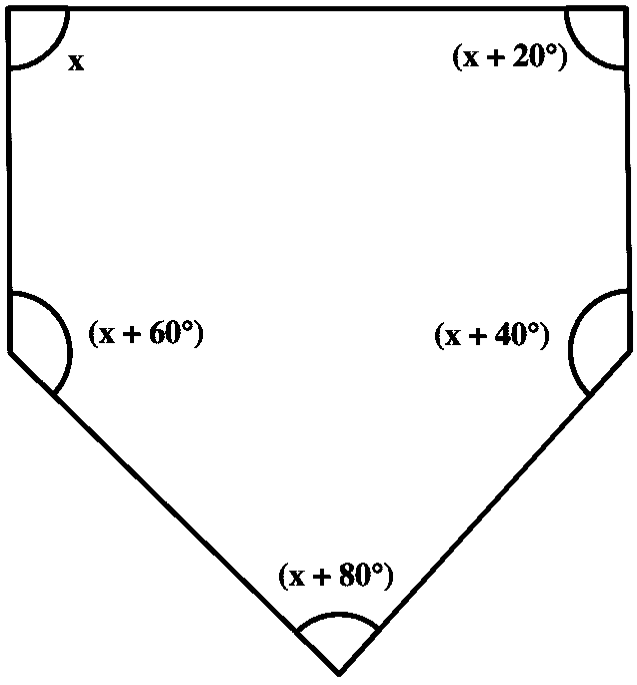
(a) The force of attraction, F, between two bodies varies directly as the product of their masses, m_1 and m_2 and inversely as the square of the distance, d, between them.

Given that F = 20N, when m_1 = 25kg, m_1 = 10kg and d = 5m, find:

(i) An expression F in terms of m_1, m_2 and d;

(ii) The distance, d when F = 30N, m_1 = 7.5kg and m_2 = 4kg

(b)



Find the value of x in the diagram.

7.

The data show the marks obtained by students in a Biology test.

52	56	25	56	68	73	66	64	56	48
20	39	9	50	46	54	54	40	50	96
36	44	18	97	65	21	60	44	54	32
92	49	37	94	72	88	89	35	59	34
15	88	53	16	84	52	72	46	60	42

(a) construct a frequency distribution table using the class interval 0 – 9, 10 – 19, 20 – 29, ...

(b) Draw a cumulative frequency curve for the distribution

(c) Use the graph to estimate the:

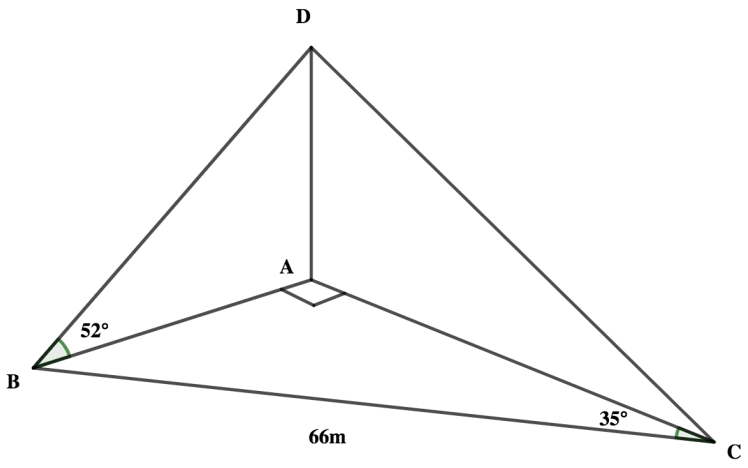
(i) Median

(ii) Percentage of students who scored at least 66 marks, correct to the **nearest** whole number.

8. 8. QUESTION

(a) Solve the inequality $\frac{1}{3}x - \frac{1}{4}(x+2) \geq 3x - 1\frac{1}{3}$

(b)



In the diagram, ABC is a right-angled triangle on horizontal ground. |AD| is a vertical tower <BAC = 90^0, <ACB = 35^0, <ABD = 52^0 and |BC| = 66m.

Find, correct to two decimal places.

(i) The height of the tower

(ii) The angle of elevation of the top of the tower from C

9.

(a) Copy and complete the table values of y = 2cosx + 3sinx for $0^o \leq x \leq 360^o$

x	0^0	60^0	120^0	180^0	240^0	300^0	360^0
y	2.0				-3.60		

(b) Using a scale of 2cm to 60^0 the x-axis and 2cm to 1unit on the y-axis, draw the graph of y = 2cosx + 3sinx for $0^o \leq x \leq 360^o$

(c) Using the graph:

(i) Solve 2cosx + 3sinx = -1

(ii) Find, correct to one decimal place, the value of y when $x = 342^0$

10.

A woman bought 130kg of tomatoes for GHC 52,000.00. She sold half of the tomatoes at a profit of 30%. The rest of the tomatoes began to go bad, she then reduced the selling price per kg by 12%. Calculate:

(a) The new selling price per kg

(b) The percentage profit on the entire sales if she threw away 5kg of bad tomatoes.

11.

(a) the third and sixth terms of a geometric progression (G.P) are $\frac{1}{4}$ and $\frac{1}{32}$ respectively.

Find: (i) the first term and the common ratio

(ii) the seventh term.

(b) Given that 2 and -3 are the roots of the equations $ax^2 + bx + c = 0$, find the values of a, b and c.

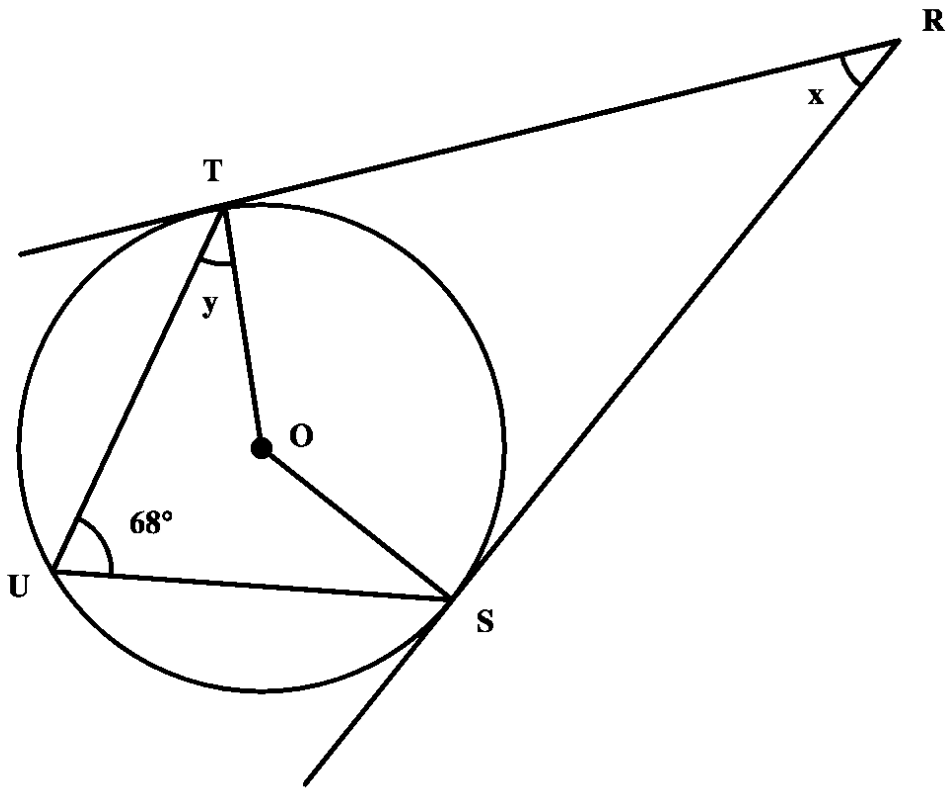
12.

(a) Given that $\sin y = \frac{8}{17}$, find the value of $\frac{tany}{1+ 2tany}$

(b) An amount of GHC 300,000.00 was shared among Otobo, Ada, and Adeola. Otobo received GHC60,000.00, Ada received $\frac{5}{12}$ of the remainder, while the rest went to Adeola. In what ratio was the money shared?

13.

(a)



In the diagram RS and RT are tangent to the circle with centre O. <TUS = 68^0, <SRT = x and <UTO = y. Find the value of x.

(b) Two tanks A and B are filled to capacity with diesel. Tank A holds 600 litres of diesel more than tank B. If 100 litres of diesel was pumped out of each tank, tank A would then contain 3 times as much diesel as tank B. Find the capacity of each tank.