1 Problems public WAEC math 2022 By cheetahwaec.com

Problem 1
Evaluate, correct to four significant figures, 573.06×184.25. Possible answers: A. 105600.00;B. 105622.00;C. 105500.00;D. 105632.00
Problem 2
Change 432_{five} to a number in base three. Possible answers: A. 10100_{three} ;B. 11100_{three} ;C. 11101_{three} ;D. 10110_{three}
Problem 3
Given that A and B are sets such that $n(A) = 8$, $n(B) = 12$ and $n(A \cap B) = 3$, find $n(A \cup B)$. Possible answers: A. 15;B. 17;C. 20;D. 23
Problem 4
If $\sqrt{24} + \sqrt{96} - \sqrt{600} = y\sqrt{6}$, find the value of y. Possible answers: A. 4;B. 2;C. -2;D. -4
Problem 5
Evaluate $23 \times 54 (\text{mod} 7)$. Possible answers: A. 2;B. 3;C. 5;D. 6
Problem 6
If $4^{3x} = 16^{x+1}$, find the value of x. Possible answers: A. 2;B. 3;C. 4;D. 5
Problem 7
A weaver bought a bundle of grass for \$50.00 from which he made 8 mats. If each mat was sold for \$15.00, find the percentage profit. Possible answers: A. 240%;B. 140%;C. 120%;D. 40%
Problem 8
Find the 17th term of the arithmetic progression, given that first three terms are $-6, -1, 4$. Possible answers: A. -91;B. -86;C. 74;D. 79
Problem 9
M varies directly as n and inversely as the square of p. If $M = 3$ when $n = 2$ and $p = 1$, find M in terms of n and p. Possible answers: A. $\frac{3n}{2p^2}$;B. $\frac{2n}{3p^2}$;C. $\frac{2n}{3p}$;D. $\frac{3n^2}{2p^2}$
Problem 10
If a $= 3$ and b $= -7$, find the value of $\frac{5b+(a+b)^2}{(a-b)^2}$. Possible answers: A. 0.51;B. 0.91;C. -0.19;D. -0.51
Problem 11
Three boys shared D 10,500.00 in the ratio 6 : 7 : 8. Find the largest share. Possible answers: A. 4000;B. 5000;C. 4500;D. 3500
Problem 12
The length of a piece of stick is 1.75 m. A boy measured it as 1.80 m. Find the percentage error. Possible answers: A. $4\frac{4}{7}$;B. $2\frac{6}{7}$;C. $2\frac{7}{9}$;D. $4\frac{7}{9}$
Problem 13
If $5x + 3y = 4$ and $5x - 3y = 2$, what is the value of $(25x^2 - 9y^2)$? Possible answers: A. 20;B. 16;C. 2;D. 8
Problem 14
Mary has \$3.00 more than Ben but \$5.00 less than Jane. If Mary has \$$x$, how much does Jane and Ben have altogether? Possible answers: A. \$$(2x - 8)$;B. \$$(2x + 8)$;C. \$$(2x - 2)$;D. \$$(2x + 2)$
Problem 15
Consider the statements: p: Stephen is intelligent q : Stephen is good at Mathematics If $p \Rightarrow q$, which of the following is a valid conclusion? Possible answers: A. If Stephen is good at Mathematics, then he is intelligent;B. If Stephen is not good at Mathematics, then he is not intelligent;C. If Stephen is not intelligent, then he is not good at Mathematics;D. If Stephen is not good at Mathematics, then he is intelligent
Problem 16

What value of p will make $\left(x^2 - 4x + p\right)$ a perfect square? Possible answers: A. -2;B. 16;C. 4;D. -8

Problem 17

Find the value of x such that $\frac{1}{x} + \frac{4}{3x} - \frac{5}{6x} + 1 = 0$. Possible answers: A. $\frac{1}{6}$;B. $\frac{1}{4}$;C. -$\frac{3}{2}$;D. -$\frac{7}{6}$

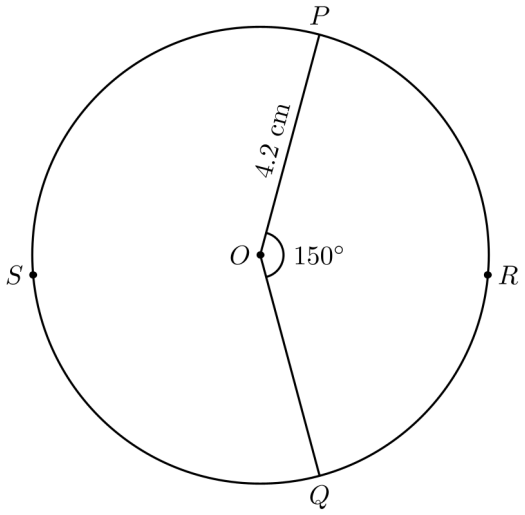
Problem 18

Make t the subject of $k = m\sqrt{\frac{t-p}{r}}$. Possible answers: A. $\frac{k^2r+p}{m^2}$;B. $\frac{k^2r+pm^2}{m^2}$;C. $\frac{k^2r-p}{m^2}$;D. $\frac{k^2r+p^2}{m^2}$

Problem 19

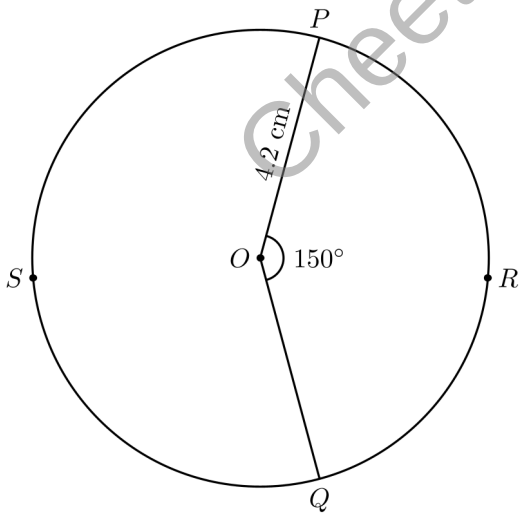
An exterior angle of a regular polygon is 22.5°. Find the number of sides. Possible answers: A. 13;B. 14;C. 15;D. 16

Problem 20



In the diagram, $\angle POQ = 150°$ and the radius of the circle $PSQR$ is 4.2 cm. What is the length of the minor arc? [Take $\pi = \frac{22}{7}$] Possible answers: A. 11 cm;B. 15.4 cm;C. 17.64 cm;D. 23.10 cm

Problem 21



Find the area of the sector OPSQ. Possible answers: A. 15.40 cm^2;B. 17.64 cm^2;C. 23.10 cm^2;D.

32.34 cm^2

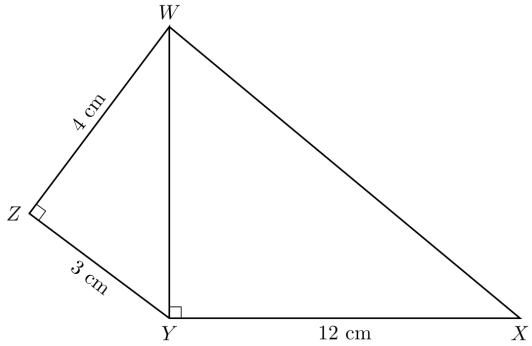
Problem 22

A ladder 6 m long leans against a vertical wall at an angle 53° to the horizontal. How high up the wall does the ladder reach? Possible answers: A. 3.611 m;B. 4.521 m;C. 4.792 m;D. 3.962 m

Problem 23

A cylinder, opened at one end, has a radius of 3.5 cm and height 8 cm. Calculate the total surface area. Possible answers: A. 126.5 cm^2;B. 165.0 cm^2;C. 212.0 cm^2;D. 214.5 cm^2

Problem 24



In the diagram below $\angle WZY$ and $\angle WYX$ are right angles. Find the perimeter of $WXYZ$. Possible answers: A. 30 cm;B. 32 cm;C. 35 cm;D. 37 cm

Problem 25

The length of a rectangle is 10 cm. If its perimeter is 28 cm, find the area. Possible answers: A. 30 cm^2;B. 40 cm^2;C. 60 cm^2;D. 80 cm^2

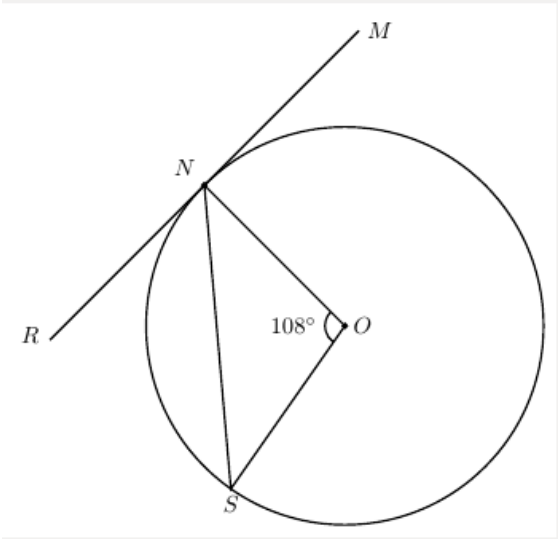
Problem 26

A boy 1.4 m tall, stood 10 m away from a tree of height 12 m. Calculate, correct to the nearest degree, the angle of elevation of the top of the tree from the boy's eyes. Possible answers: A. 70°;B. 47°;C. 19°;D. 8°

Problem 27

Given that $\sin(5x - 28)^\circ = \cos(3x - 50)'', 0^\circ \leq x \leq 90^\circ$, find the value of x. Possible answers: A. 39;B. 32;C. 21;D. 14

Problem 28



In the diagram, MNR is a tangent to the circle at N and $\angle NOS = 108°$. Find $\angle OSN$. Possible answers: A. 72°;B. 32°;C. 36°;D. 18°

Problem 30

Mrs Gabriel is pregnant. The probability that she will give birth to a girl is $\frac{1}{2}$ and with blue eyes is $\frac{1}{4}$. What is the probability that she will give birth to a girl with blue eyes? Possible answers: A. 1;B. $\frac{3}{4}$;C. $\frac{1}{8}$;D. $\frac{1}{4}$

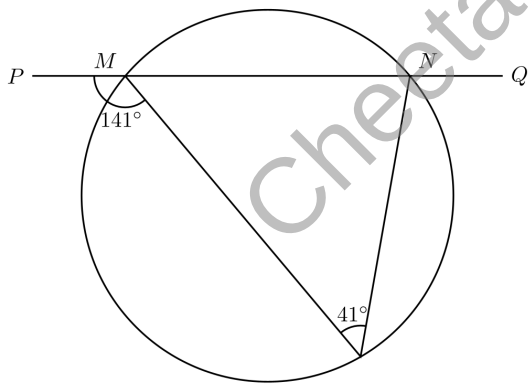
Problem 31

The mean of a set of 10 numbers is 56. If the mean of the first nine numbers is 55, find the 10th number. Possible answers: A. 75;B. 65;C. 55;D. 45

Problem 32

Simplify $\frac{2-18m^2}{1+3m}$. Possible answers: A. $2[1+3m]$;B. $2[1-3\text{ m}]$;C. $2\left[1-3\text{ m}^2\right]$;D. $2\left[1+3\text{ m}^2\right]$

Problem 33



In the diagram, triangle MNR is inscribed in the circle, and line PQ is a straight line; $\angle MRN = 41°$ and $\angle RMP = 141°$, find $\angle QNR$. Possible answers: A. 39°;B. 80°;C. 110°;D. 141°

Problem 34

Solve $\frac{y+2}{4} - \frac{y-1}{3} > 1$. Possible answers: A. $y < -10$;B. $y < -2$;C. $y < 2$;D. $y < 10$

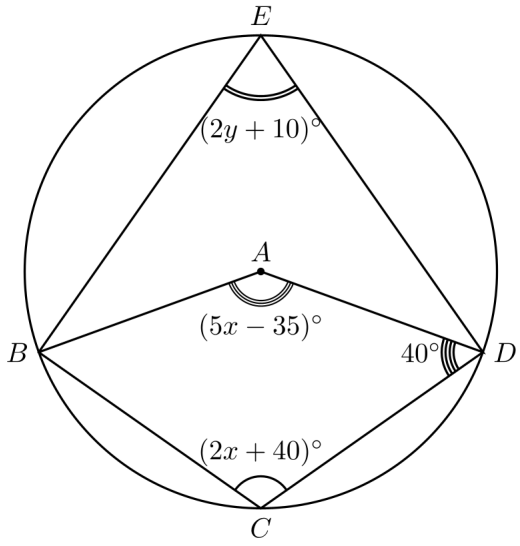
Problem 35

The age in years of some members in a singing group are: $12, 47, 49, 15, 43, 41, 13, 39, 43, 41$ and 36. Find the lower quartile. Possible answers: A. 12;B. 13;C. 15;D. 20

Problem 36
The age in years of some members in a singing group are: $12, 47, 49, 15, 43, 41, 13, 39, 43, 41$ and 36. Find the mean. Possible answers: A. 33.35;B. 35.54;C. 34.45;D. 36.44
Problem 37
Find, correct to two decimal places, the volume of a sphere whose radius is 3 cm. [Take $\pi = \frac{22}{7}$] Possible answers: A. 72.57 cm^3;B. 88.12 cm^3;C. 10529 cm^3;D. 113.14 cm^3
Problem 38
The lengths of the parallel sides of a trapezium are 9 cm and 12 cm. If the area of the trapezium is 105 cm^2, find the perpendicular distance between the parallel sides. Possible answers: A. 5 cm;B. 7 cm;C. 10 cm;D. 15 cm
Problem 39
Find the volume of a cone of radius 3.5 cm and vertical height 12 cm. [Take $pi = \frac{22}{7}$] Possible answers: A. 15.5 cm^3;B. 21.0 cm^3;C. 142 cm^3;D. 154 cm^3
Problem 40
A local community has two newspapers: the morning tomes and the evening dispatch. The morning times is read by 45% of the households. The Evening Dispatch is read by 60% of the households. Twenty percent of the households read both papers. What is the probability that a particular household reads at least one paper? Possible answers: A. 0.45;B. 0.65;C. 0.85;D. 0.95
Problem 41
A rectangle with width $\frac{3}{4}$ cm and area $3\frac{3}{8}$ cm^2. Find the length of the rectangle. Possible answers: A. 6 cm;B. $4\frac{1}{2}$ cm;C. $2\frac{5}{8}$ cm;D. 12 cm
Problem 42
The mean of two numbers x and y is 4. Find the mean of four numbers x, $2x$, y and $2y$. Possible answers: A. 2;B. 4;C. 6;D. 8
Problem 43
The straight line $y = mx - 4$ passes through the point $(-4, 16)$. Calculate the gradient of the line. Possible answers: A. -5;B. -3;C. 3;D. 5
Problem 44
If the equations $x^2 - 5x + 6 = 0$ and $x^2 + px + 6 = 0$ have the same roots, find the value of p. Possible answers: A. 5;B. 6;C. -5;D. -6
Problem 45
A trader made a loss of 15% when an article was sold. Find the ratio (selling price):(cost price). Possible answers: A. 3 : 20;B. 3 : 17;C. 17 : 20;D. 20 : 23
Problem 46
Given that $\log_3 27 = 2x + 1$, find the value of x. Possible answers: A. 0;B. 1;C. 2;D. 3
Problem 47
Solve $6x^2 = 5x - 1$. Possible answers: A. $x = 2, 3$;B. $x = 0, 3$;C. $x = \frac{1}{2}, \frac{1}{3}$;D. $x = \frac{1}{2}, \frac{-1}{3}$
Problem 48
(a) Given that $(7 - 2x), 9, (5x + 17)$ are consecutive terms of a geometric progression with common ratio, $r > 0$, find the values of x. Represent the answers as $\frac{a}{b}$ and write the answers as a, b, where a, b are integers. (b) Two positive numbers are in the ratio 3 : 4. The sum of thrice the first number and twice the second is 68. Find the smaller number.
Problem 49
Given that $y = \left(\frac{pr}{m} - p^2 r\right)^{\frac{-3}{2}}$: (a) make r the subject; represent the answer as $r = \frac{am}{y^{\frac{2}{3}}[p + bmp^c]}$, write the answer as a, b, c, where a, b, c are integers. (b) find the value of r when $y = -8, m = 1$ and $p = 3$. Represent the answer as $\frac{a}{b}$ and write the answer as a, b, where a is a negative integer, b is a positive integer.
Problem 50

A chord subtends an angle of $72°$ at the centre of a circle of radius $24.5\ m$. Calculate, correct to one decimal place, the perimeter of the minor segment. [Take $\pi = \frac{22}{7}$]

Problem 51

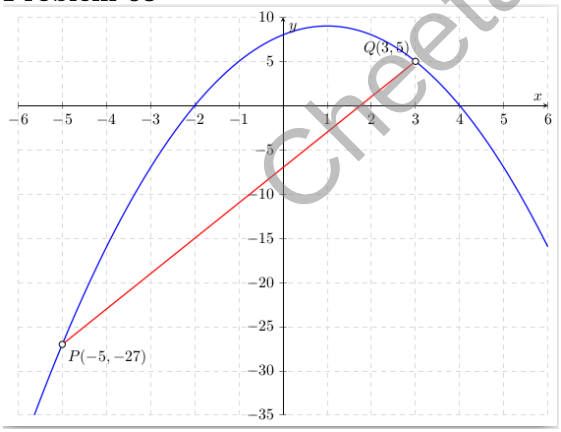


In the diagram, $BCDE$ is a circle with centre A; $\angle BCD = (2x + 40)°, \angle BAD = (5x - 35)°, \angle BED = (2y + 10)°$ and $\angle ADC = 40°$. Find the values of x and y.

Problem 52

(a) Given that m $= \tan 30°$ and n $= \tan 45°$, simplify, without using calculator, $\frac{m-n}{mn}$, leaving the answer in the form p $- \sqrt{q}$. Write the answer as p, q, where p, q are integers. (b) There are 20 women in a bus; 15 of them wear glasses and 10 wear wristwatches. If a woman is chosen at random from the bus, find the probability that she wears both glasses and wristwatches. Write down the answer as a decimal number.

Problem 53



The graph shows the relation of the form $y = mx^2 + nx + r$, where m, n and r are constants. Using the graph: A. State the scale used on both axes. Represent the answers as (1 cm):(x unit), (1 cm):(y unit). Write the answer as x, y. B. Find the values of m, n and r. C. Find the gradient of the line through P and Q. D. State the range of values of x for which $y > 0$. Represent the answer as an interval (a, b), where a, b are integers, write the answer as a, b

Problem 54

(a) A man purchased 180 copies of a book at N250.00 each. He sold y copies at N300.00 each and the rest at a discount of 5 kobo in the Naira of the cost price. If he made a profit of N7, 125.00, find the value of y. (b) A trader bought x bags of rice at a cost C = 24x + 103 and sold them at a price, S = $33x - \frac{x^2}{20}$. (i) Find the expression for the profit; represent the answer as $ax^2 + bx + c$, where a, b, c are decimal numbers, writhe down the answer as a, b, c (ii) If 20 bags of rice were sold, calculate the percentage profit.

Problem 55

Item	food & drinks	fuel	rent	building project	education	savings
Percentage%	35	7.5	10	15	17.5	x

The table shows the monthly expenditure (in percentages) of Mr. Okafor's salary. A. Calculate the percentage of Mr. Okafor's salary that was put into savings. B. Illustrate the information on a pie chart. C. If Mr. Okafor's annual gross salary is \$28, 800.00 and he pays tax of 12%, calculate; (i) his monthly tax; (ii) the amount saved each month.

Problem 56

A. Copy and complete the table of values for y = 3 Sin x + 7 Cos x, write the answer as a sequence of missing values for y coresponding to the values of x from 20 to 180.

x°	0	20	40	60	80	100	120	140	160	180
y	7.0				4.2		-0.9			

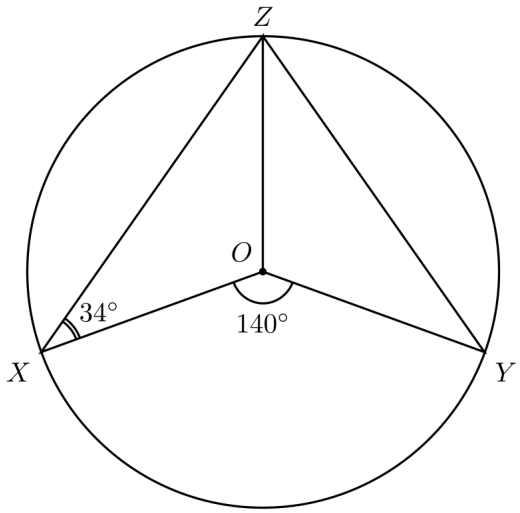
B. Using a scale of 2 cm to 20° on the x-axis and 2 cm to 2 units on the y-axis, draw the graph of $y = 3\,\mathrm{Sin}\,x + 7\,\mathrm{Cos}\,x$ for all the values of x from the table. C. Using the graph, find the: (i) value of y when x = 150°, represent the answer as $a \pm 0.2$, where a as a decimal number and write down the answer as a; (ii) range of values of x for which y > 0, represent the answer as $a^\circ \leq x \leq b^\circ$ and where a, b are integers, and write down the answer as a, b.

Problem 57

Age	3	4	5	6	7	8	9	10
No. of children	2	6	5	x	6	9	8	5

The table below shows the distribution of ages of a number of children in a school. If the mean of the distribution is 7, find: A. value of x. B. standard deviation of their ages.

Problem 58



(a) In the diagram, O is the centre of the circle, $\angle ZXO = 34°$ and $\angle XOY = 146°$. Find $\angle OYZ$.
(b) The exterior angles of a polygon are $42°, 38°, 57°, x°, (x+y)°, (2x-15)°, (3x-y)°$. If x is 7 less than y, find the values of x and y.

Problem 59

(a) The probability that an athlete will not win any of three races is $\frac{1}{4}$. If the athlete runs in all the races, what is the probability that the athlete will win: (i) only the second race, correct the answer to three decimal places; (ii) all the three races, correct the answer to three decimal places; (ii) only two of the races, correct the answer to two decimal places? (b) A cone with perpendicular height 24 cm has a volume of 1200 cm^3. Find the volume of a cone with same base radius and height 84 cm. [Take $\pi = \frac{22}{7}$]

Problem 60

(a) The diameter of a cylinder closed at both ends is 7 cm. If the total surface area is 209 cm^2, calculate the height. [Take $\pi = \frac{22}{7}$] (b) The points X and Y, 19 m apart are on the same side of a tree. The angles of elevation of the top, T, of the tree from X and Y on the horizontal ground with the foot of the tree are 43° and 38° respectively. (i) Illustrate the information in a diagram. (ii) Find, correct to one decimal place, the height of the tree.