1 Problems public WAEC math 2024
By cheetahwaec.com

Problem 1
Multiply 3.4×10^{-5} by 7.1×10^{8} and leave the answer in the standard form.

Possible Answers:
A. 2.414×10^{2}
B. 2.414×10^{3}
C. 2.414×10^{4}
D. 2.414×10^{5}

Problem 2
Given that $P = \{p : 1 < p < 20\}$, where p is an integer and $R = \{r : 0 \leq r \leq 25$, where r is a multiple of $4\}$. Find $P \cap R$.

Possible Answers:
A. $\{4, 8, 10, 16\}$
B. $\{4, 8, 12, 16\}$
C. $\{4, 8, 12, 16, 20\}$
D. $\{4, 8, 12, 16, 20, 24\}$

Problem 3
The first term of an arithmetic progression is 2 and the last term is 29. If the common difference is 3 , how many terms are in the arithmetic progression?

Possible Answers:
A. 8
B. 9
C. 10
D. 11

Problem 4
Express in index form: $\log_a^x + \log_a^y = 3$.

Possible Answers:
A. $x + y = 3$
B. $xy = 3$
C. $xy = a^3$
D. $x + y = a^3$

Problem 5
Simplify: $(2p - q)^2 - (p + q)^2$.

Possible Answers:
A. $3p(p - 2q)$
B. $2p(p - 3q)$
C. $3p(2p - q)$
D. $2p(3p - q)$

Problem 6
If $(3-4\sqrt{2})(1+3\sqrt{2}) = a + b\sqrt{2}$, find the value of b.

Possible Answers:
A. -5
B. 5
C. -21
D. 21

Problem 7
Find the sum for which $\$1,250.00$ will amount to $\$2,031.25$ at 12.5% per annum simple interest.

Possible Answers:
A. 2 years
B. 3 years
C. 4 years
D. 5 years

Problem 8
If $\log_3^{2x-1} = 5$, find the value of x.

Possible Answers:
A. 8
B. 16
C. 64
D. 122

Problem 9
The population of a town increases by 3% every year. In the year 2000, the population was 3000. Find the population in the year 2003.

Possible Answers:
A. 3278
B. 3127
C. 3556
D. 3618

Problem 10
A trader gave a change of N 540.00 instead of N 570.00 to a customer. Caculate the percentage error.

Possible Answers:
A. $5\frac{5}{19}\%$
B. $5\frac{5}{9}\%$
C. $5\frac{7}{19}\%$
D. $5\frac{7}{9}\%$

Problem 11

The interior angle of a regular polygon is 168°. Find the number of sides of the polygon.

Possible Answers:
A. 24
B. 30
C. 15
D. 12

Problem 12
If $3x - 2y = -5$ and $x + 2y = 9$, find the value of $\frac{x-y}{x+y}$.

Possible Answers:
A. $\frac{5}{3}$
B. $\frac{3}{5}$
C. $\frac{-3}{5}$
D. $\frac{-5}{3}$

Problem 13
A variable W varies partly as M and partly inversely as P. Which of the following correctly represents the relation with k_1 and k_2 constants?

Possible Answers:
A. $\mathrm{W} = \frac{k_1 M}{k_2 P}$
B. $\mathrm{W} = (k_1 + k_2)\,\frac{\mathrm{M}}{\mathrm{P}}$
C. $W = \mathrm{k_1 M} + \frac{k_2}{P}$
D. $\mathrm{W} = (\mathrm{k_1} + k_2)\,\mathrm{M} + \mathrm{P}$

Problem 14
A cylindrical metallic barrel of height 2.5 m and radius 0.245 m is closed at one end. Find, correct to one decimal place, the total surface area of the barrel. [Take $\pi = \frac{22}{7}$]

Possible Answers:
A. 2.1 m^2
B. 3.5 m^2
C. 4.0 m^2
D. 9.4 m^2

Problem 15
Make R the subject of the relation $V = \pi l\left(R^2 - r^2\right)$.

Possible Answers:
A. $\mathrm{R} = \sqrt{\frac{V}{\pi l} + r^2}$
B. $\mathrm{R} = \sqrt{\frac{V}{\pi l} - r^2}$
C. $\mathrm{R} = \sqrt{V - \pi l r^2}$
D. $\mathrm{R} = \sqrt{V + \pi l r^2}$

Problem 16
Consider the following statements: m = Edna is respectful, n = Edna is brilliant.

If $m \Rightarrow n$, which of the following is valid?

Possible Answers:
A. $\neg$n $\Rightarrow \neg$m.
B. $\neg$m $\Rightarrow \neg$n.
C. n $\Rightarrow \neg$m.
D. m $\Rightarrow$ n.

Problem 17
A number is added to both the numerator and the denominator of the fraction $\frac{1}{8}$ if the result is $\frac{1}{2}$, find the number.

Possible Answers:
A. 3
B. 4
C. 5
D. 6

Problem 18
Gifty, Justina, and Frank shared 60 oranges in the ratio 5: 3: 7 respectively. How many oranges did Justina receive?

Possible Answers:
A. 16
B. 12
C. 20
D. 28

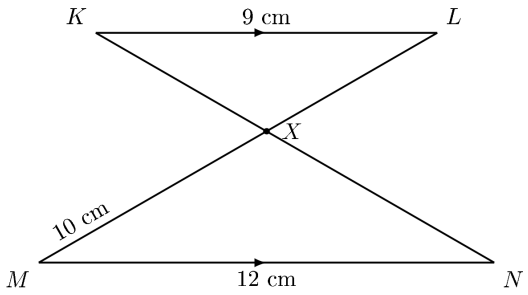
Problem 19
Find the quadratic equation whose roots are $\frac{2}{3}$ and - 1.

Possible Answers:
A. $3x^2 - x - 2 = 0$
B. $3x^2 + x + 2 = 0$
C. $3x^2 + x - 2 = 0$
D. $3x^2 + x - 1 = 0$

Problem 20
A piece of rod of length 44 m is cut to form a rectangular shape such that the ratio of the length to the breadth is 7 : 4. Find the breath.

Possible Answers:
A. 8 m
B. 14 m
C. 16 m
D. 24 m

Problem 21



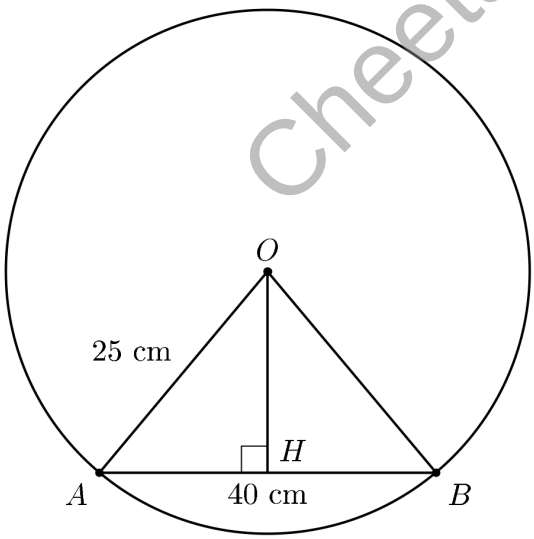
In the diagram, $\overline{MN}| \mid \overline{KL}, \overline{ML}$ and $\overline{KN}$ intersect at X.$|\overline{MN}| = 12$ cm, $|\overline{MX}| = 10$ cm and $|\overline{MN}| = 9$ cm. If the area of $\triangle MXN$ is 16 cm^2, calculate the area of $\triangle$ LXK.

Possible Answers:
A. 9 cm^2
B. 8 cm^2
C. 10 cm^2
D. 12 cm^2

Problem 22
A ladder 15 m long leans against a vertical pole, making an angle of 72° with the horizontal. Calculate, correct to one decimal place, the distance between the foot of the ladder and the pole.

Possible Answers:
A. 15.8 m
B. 14.3 m
C. 4.9 m
D. 4.6 m

Problem 23



In the diagram, O is the centre of the circle. If $|OA| = 25$ cm and $|AB| = 40$ cm, find $|OH|$.

Possible Answers:
A. 15 cm
B. 20 cm
C. 25 cm
D. 30 cm

Problem 24
A car valued at $\$600,000.00$ depreciates by 10% each year. What will be the value of the car at the end of two years?

Possible Answers:
A. $\$120,000.00$
B. $\$480,000.00$
C. $\$486,000.00$
D. $\$540,000.00$

Problem 25
Given that P is 25 m on a bearing of 330° from Q, how far south of P is Q?

Possible Answers:
A. 25.2 m
B. 21.7 m
C. 19.8 m
D. 18.5 m

Problem 26
The length and breadth of a cuboid are 15 cm and 8 cm respectively. If the volume of the cuboid is 1560 cm^3, calculate the total surface area.

Possible Answers:
A. 976 cm^2
B. 838 cm^2
C. 792 cm^2
D. 746 cm^2

Problem 27
The number 1621 was subtracted from 6244 in base x. If the result was 4323, find x.

Possible Answers:
A. 7
B. 8
C. 9
D. 10

Problem 28
Factorize completely: $27x^2 - 48y^2$.

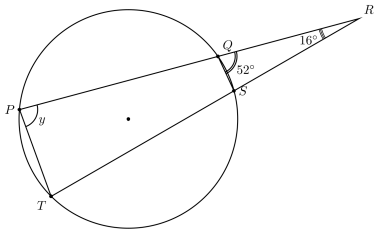
Possible Answers:

A. $3(3x+4y)(3x-4y)$
B. $3(3x+4y)(3x+4y)$
C. $3(9x-16y)(9x+16y)$
D. $3(9x-16y)(9x-16y)$

Problem 29
For what values of x is $\frac{x-3}{4}+\frac{x+1}{8} \geq 2$?

Possible Answers:
A. $x \geq 5$
B. $x \geq 6$
C. $x \geq 7$
D. $x \geq 8$

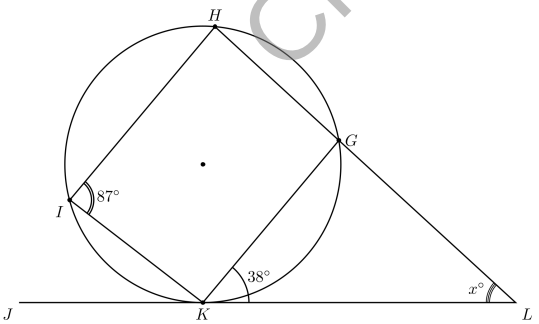
Problem 30



In the diagram, $\angle SQR = 52°$ and $\angle PRT = 16°$. Find the value of the angle y.

Possible Answers:
A. 64°
B. 68°
C. 112°
D. 128°

Problem 31



In the diagram above, JKL is a tangent to the circle at K, $\angle LKG = 38°, \angle KIB = 87°$. Find $\angle KLG$.

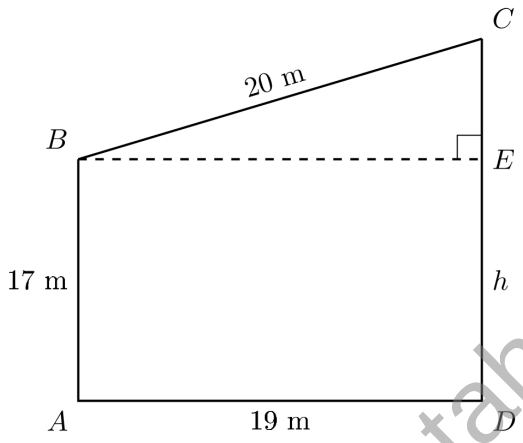
Possible Answers:

A. 93°
B. 55°
C. 42°
D. 23°

Problem 32
A cone and a cylinder are of equal volume. The base radius of the cone is twice the radius of the cylinder. What is the ratio of the height of the cylinder to that of the cone?

Possible Answers:
A. 5:4
B. 4:3
C. 3:2
D. 3:4

Problem 33



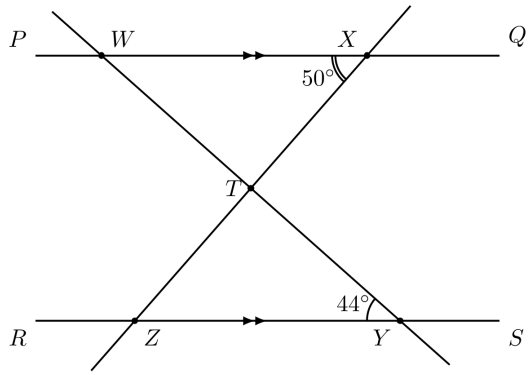
Find, correct to the nearest whole number, the value of h in the diagram above.

Possible Answers:
A. 15 m
B. 22 m
C. 23 m
D. 18 m

Problem 34
The gradient of the line joining the points $P(2, -8)$ and $Q(1, y)$ is -4. Find the value of y.

Possible Answers:
A. 2
B. 4
C. -4
D. -3

Problem 35



In the diagram above, $\overline{PQ} \| \overline{RS}$, $\angle$WYZ $= 44°$ and $\angle$WXY $= 50°$. Find $\angle$WTX.

Possible Answers:
A. 65°
B. 68°
C. 86°
D. 90°

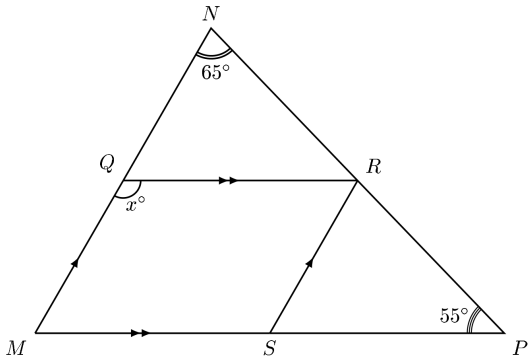
Problem 36
The perimeter of a rectangular garden is 90 m. If the width is 7 m less than the length, find the length of the garden.

Possible Answers:
A. 19 m
B. 23 m
C. 24 m
D. 26 m

Problem 37
Four of the angles of a hexagon sum up to 420°. If the remaining angles are equal, find the value of each of the angles.

Possible Answers:
A. 60°
B. 100°
C. 120°
D. 150°

Problem 38



Find the value of x in the diagram above.

Possible Answers:
A. 120°
B. 100°
C. 60°
D. 150°

Problem 39
The following are the masses, in kg, of members in a club: 59, 44, 53, 49, 57, 40, 48, and 50. Calculate the mean mass.

Possible Answers:
A. 44 kg
B. 50 kg
C. 40 kg
D. 53 kg

Problem 40
The following are the masses, in kg, of members in a club: 59, 44, 53, 49, 57, 40, 48, and 50. Calculate the variance of the distribution.

Possible Answers:
A. 35
B. 36
C. 40
D. 50

Problem 41
Two opposite sides of a rectangle are $(5x+3)$ m and $(2x+9)$ m. If an adjacent side is $(6x-7)$ m, find, in m^2, the area of the rectangle.

Possible Answers:
A. 45
B. 65
C. 125
D. 165

Problem 42
A die is tossed once. Find the probability of getting a prime number.

Possible Answers:
A. $\frac{1}{2}$
B. $\frac{1}{6}$
C. $\frac{1}{3}$
D. $\frac{2}{3}$

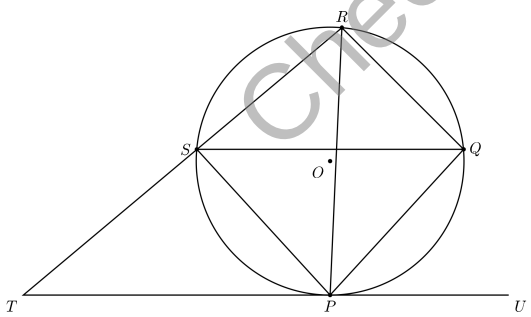
Problem 43
The area of a sector of a circle with radius 7 cm is 51.3 cm^2. Calculate, correct to the nearest whole number, the angle of the sector. [Take $\pi = \frac{22}{7}$]

Possible Answers:
A. 60°
B. 120°
C. 150°
D. 150°

Problem 44
A cliff on the bank of a river 87 m high. A boat on the river is 22 m away from the cliff. Calculate, correct to the nearest degree, the angle of depression of the boat from the top of the cliff.

Possible Answers:
A. 76°
B. 64°
C. 36°
D. 24°

Problem 45



In the diagram, TU is a tangent to the circle at P. If $\angle$PTS = 44°, $\angle$SQP = 35°, find $\angle$PST.

Possible Answers:
A. 101°
B. 125°
C. 130°

D. 135°

Problem 46
The probability that Amaka will pass an examination is $\frac{3}{7}$ and that Bala will pass is $\frac{4}{9}$. Find the probability that both will pass the examination.

Possible Answers:
A. $\frac{2}{21}$
B. $\frac{4}{21}$
C. $\frac{5}{21}$
D. $\frac{9}{21}$

Problem 47
Which of the following points lies on the line $3x - 8y = 11$?

Possible Answers:
A. $(1, 1)$
B. $(1, -1)$
C. $(-1, 1)$
D. $(-1, -1)$

Problem 48
Find the range of the following set of numbers: 28, 29, 39, 38, 33, 37, 26, 20, 15, and 25.

Possible Answers:
A. 22
B. 24
C. 25
D. 27

Problem 49
The fourth and eighth terms of an arithmetic progression are 16 and 40 respectively. Find the common difference.

Possible Answers:
A. -6
B. 6
C. -2
D. 2

Problem 50
For what values of y is $\frac{y+2}{8y^2-10y+3}$ not defined?

Possible Answers:
A. $\frac{-3}{4}, \frac{1}{2}$
B. $\frac{-3}{4}, \frac{-1}{2}$
C. $\frac{3}{4}, \frac{1}{2}$
D. $\frac{3}{4}, \frac{-1}{2}$

Problem 51
The time (t) taken to buy fuel at a filling station varies directly as the number of vehicles (V) in a queue and varies inversely as the number of pumps (P), available at the station. In a station with 5 pumps, it took 10 minutes to fuel 20 vehicles. Find the:

a) relationship between t, P, and V, represent solution as $\frac{aV}{2P}$, where a is an integer, write the answer as a;

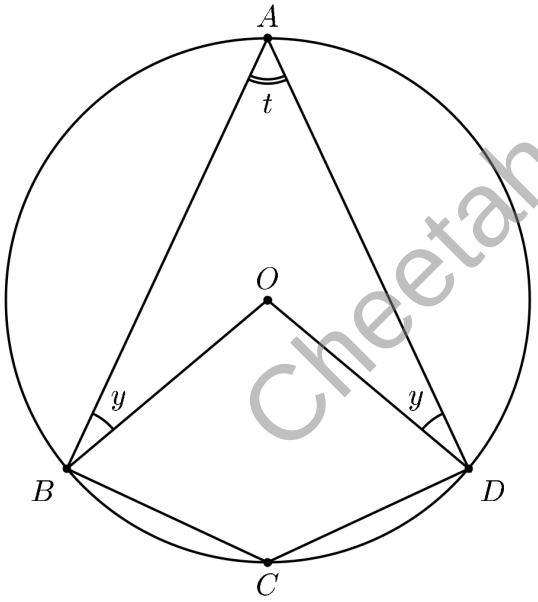
b) time it takes to fuel 50 vehicles at a station with 2 pumps;

c) number of pumps required to fuel 40 vehicles in 20 minutes.

Problem 52
A car travelled at a distance of $(2x+13)$ km at 67.5 km/h and $(5x-20)$ km at 72 km/h. If the total time for the entire journey was 90 minutes, find the value of x.

Problem 53
A circular floor of a building is to be tiled with ceramic tiles each of side 40 cm. If the perimeter of the floor is 66 m, calculate, correct to the nearest whole number, the number of tiles required to completely tile the floor. [Take $\pi = \frac{22}{7}$]

Problem 54



In the diagram,there is a circle with center O. The quadratic OBCD is a rhombus such that $\angle$ADO = $\angle$OBA = y and $\angle$BAD = t. Find:

a) the value of t;

b) the value of y;

c) ∠ADC.

Problem 55
A basket contains 3 gold-plated marbles, 4 diamond marbles, and some silver marbles, all of the same size and shape. Two marbles were drawn from the basket at random one after the other without replacement. If the probability that the two marbles were all silver is $\frac{1}{15}$, find the number of silver marbles.

Problem 56
Given that $(x+2), (4x+3)$, and $(7x+24)$ are consecutive terms of a geometric progression (G.P.), find the:

a) values of x, represent the answer as $\frac{a}{b}, \frac{c}{d}$, where a is a negative integer and b, c, d are positive integers, write the answer as a, b, c, d;

b) common ratio.

Problem 57

AGE	5	6	7	8	9	10
FREQUENCY	2	2x − 1	y + 2	4	2	y − 1

The table shows the ages of 20 children in a household.

Given that $x : y = 1 : 2$.

a) values of x and y.

b) mean ages of the children, give the answer as a decimal number.

Problem 58
Two observers Abu and Badu, 46 m apart, observe a bird on a vertical pole from the same side of the bird. The angles of elevation of the bird from Abu's and Badu's eye are 40^o and 48^o respectively. If at the foot of the pole Abu and Badu are on same horizontal;

a) illustrate the information in a diagram;

b) calculate, correct to one decimal place, the height of the pole.

Problem 59
The diameter of a circle centre O is 26 cm . If a chord PQ is drawn such that it is 5 cm from O to the centre of the chord, calculate, correct to the nearest whole number:

a) ∠POQ;

b) the area of the minor segment formed by the chord PQ. [Take $\pi = \frac{22}{7}$]

Problem 60

(a) In a man's will, he gave $\frac{2}{5}$ of the total acres of the farm to the wife and $\frac{1}{3}$ of what is left to the family. The rest of the farm was to be shared amongst his three children in the ratio 3 : 5 : 2. Given that, the child who had the least share received 8 acres, calculate the:

(i) total acres the man left.

(ii) number of acres the wife received.

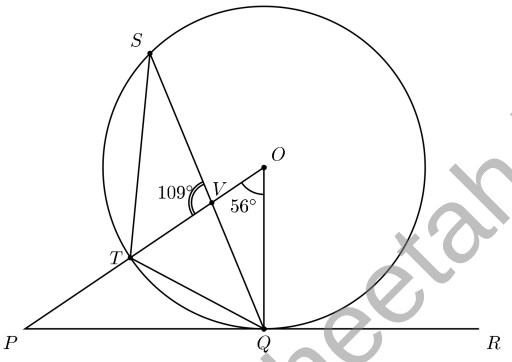
(b) The price of a Television set is $\$1,600.00$. It can be purchased by a deposit of \$400.00 and the rest of the amount paid by 12 monthly installments at 25% per annum simple interest. If the Television set is purchased by installment, find the total cost.

Problem 61

a) Find the equation of the line that passes through the origin and the point of intersection of the lines $x+2y=7$ and $x-y=4$. Represent solution as $x+ay=0$, where a is an integer, write the answer as a.

b) The ratio of an interior angle to an exterior angle of a regular polygon is 4 : 1 . Find the: (i) value of the exterior angle; (ii) number of sides; and (iii) sum of the interior angles of the polygon.

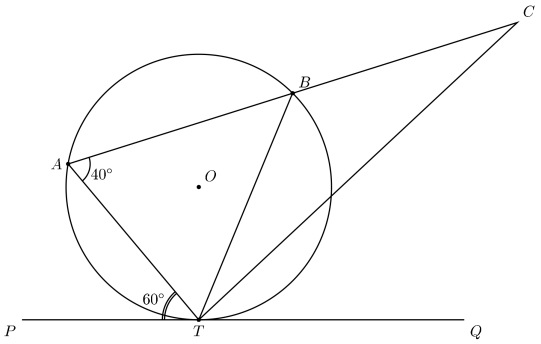
Problem 62



a) In the diagram, PR is a tangent to the circle O at Q, $\angle$POQ $= 56°$ and PO intersects SO at V such that $\angle$SVP $= 109°$. Calculate: (i) $\angle$TQP (ii) $\angle$QTS.

b) Simplify $\frac{2n^2-3n-2}{2n^2+3n+1} \times \frac{n^2-1}{n^2-4}$. Represent the answer as $\frac{n+a}{n+b}$, where a, b are integers, write the answer as a, b.

Problem 63



a) In the diagram, there is a circle with centre O, PQ is a tangent to the circle at T and ABC is a straight line, TC bisects $\angle$BTQ, $\angle$BAT $= 44°$ and $\angle$PTA $= 60°$. Find $\angle$ACT.

b) The circumference of the base of a cylindrical tank is 11 m . The height of the tank is 3 m more than 6 times the base radius. Calculate the:

(i) radius, write the answer as a decimal number; (ii) height, write the answer as a decimal number; (iii) volume of the tank.