1. Simplify: $\dfrac{\frac{1}{4} \times 2\frac{1}{2}}{12 \div 1\frac{1}{2}}$

   A. $\frac{5}{8}$ B. $\frac{5}{12}$ C. $\frac{5}{64}$ D. $\frac{5}{72}$

2. Given that $3 \times 9^{1+x} = 27^{-x}$, find the value of x.

   A. $-\frac{3}{5}$ B. $-1\frac{2}{3}$ C. -2 D. -3

3. In a class of 39 students, 25 offer Fante and 19 offer Twi. Five students do not offer any of the two languages. How many students offer only Twi?

   A. 6 B. 7 C. 8 D. 9

4. Evaluate $\dfrac{4-\sqrt{2}}{\sqrt{2}}$

   A. $\sqrt{2}-1$ B. $2\sqrt{2}-1$ C. $\sqrt{2}+1$ D. $2\sqrt{2}+1$

5. Mary and Charity entered into a business partnership and agreed to share their profit in the ratio 4: 5 respectively. If Mary received GHC 5,000.00 less than Charity, how much profit did they make?

   A. GHC 30,000.00 B. GHC 35,000.00 C. GHC 40,000.00 D. GHC 45,000.00

6. Incomplete Question

   A. B. C. D.

7. y varies inversely as the square of x. When $x = 3, y = 100$. Find the value of x when $y = 25$.

   A. $x = 30$ B. $x = 12$ C. $x = 6$ D. $x = 5$

8. Solve the equation: $t - \frac{9}{5} = -1\frac{1}{15}$.

   A. $t = \frac{3}{5}$ B. $t = \frac{11}{15}$ C. $t = \frac{4}{5}$ D. $t = \frac{13}{15}$

9. Find the truth set of the equation: $(x-2)^2 + 3 = (x+1)^2 - 6$.

   A. $\{-2\}$ B. $\{-1\}$ C. 1 D. $\{2\}$

10. Two friends, Dede and Kofi decided to buy the same type of car. They found out that the car cost ₦3,000,000.00. The amount of money (f) which Dede had was not enough to buy the car but Kofi had enough money (k) to buy the car. Which of the following inequalities is true?

    A. $f \leq$ ₦$3,000,000.00 \leq k$ B. $f >$ ₦$3,000,000.00 > k$

    C. $f <$ ₦$3,000,000.00 \leq k$ D. $f \geq$ ₦$3,000,000.00 > k$

11. Simplify: $\dfrac{z}{z+2} - \dfrac{z-2}{z-3}$.

    A. $\dfrac{4-3z}{(z+2)(z-3)}$ B. $\dfrac{3-4}{(z-3)(z+2)}$ C. $\dfrac{4+3z}{(z+3)(z-2)}$ D. $\dfrac{4+3z}{(z+2)(z-3)}$

12. Simplify: $\frac{x^{-1}+y^{-1}}{x+y}$.

A. $\frac{y}{x}$ B. $\frac{x}{y}$ C. $\frac{1}{xy}$ D. xy

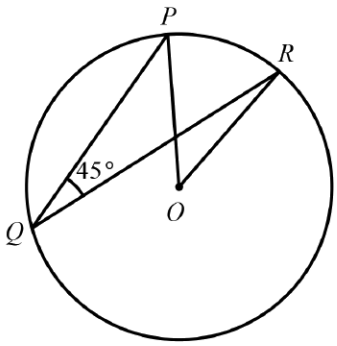
13. A chord of a circle with radius 5cm subtends an angle of 70° at the centre. Find, correct to one decimal place, the length of the chord.

A. 8.2cm B. 5.7cm C. 4.1cm D. 2.9cm

14. A pyramid with a square base has a volume of $1,400\text{cm}^3$. If a side of the base is 10cm long, find the height of the pyramid.

A. 70cm B. 42cm C. 21cm D. 7cm

15.



In the diagram, O is the centre of the circle. If the radius of the circle is 12cm and $\angle PQR = 45^\circ$, calculate, correct to the nearest cm, the length of arc PR. [Take $\pi = \frac{22}{7}$]

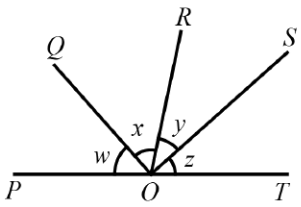
A. 113cm B. 57cm C. 19cm D. 15cm

16. Which of the following about parallelograms is true?

A. Opposite angles are supplementary B. Opposite angles are complementary

C. Opposite angles are equal D. Opposite angles are reflex angles

17.



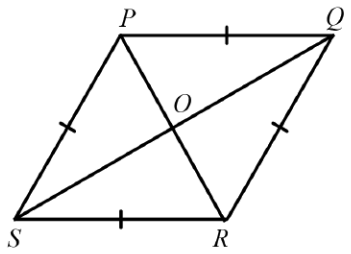
In the diagram, POT is a straight line. If $(w+x+y) = 140^\circ$ and $(x+y+z) = 130^\circ$, find the value of $(x+y)$.

A. 40° B. 50° C. 90° D. 110°

18. The interior angles of a pentagon are $x^\circ, (x+5)^\circ, (x+10)^\circ, (x+15)^\circ$ and $(x+20)^\circ$. Find the value of x.

A. Incomplete B. C. D.

19.



The diagram shows a rhombus $PQRS$ with diagonals intersecting at O. If the ratio of $\angle PQR$ to $\angle QPS$ is 3: 7, calculate the value of $\angle QSR$.

A. 27° B. 45° C. 54° D. 63°

20. Calculate the gradient of the line which passes through the points $(1, 4)$ and $(-2, 6)$.

A. $-\frac{3}{2}$ B. $-\frac{2}{3}$ C. $\frac{2}{3}$ D. $\frac{3}{2}$

21. Calculate the distance between points $(3, -2)$ and $(8, 10)$.

A. 12 units B. 13 units C. 14 units D. 15 units

22. Evaluate $\frac{\cos 65^\circ}{\sin 25^\circ} + \frac{\sin 35^\circ}{\cos 55^\circ}$.

A. 3 B. 2 C. 1 D. 0

23. From a height of 2m above the ground and at a horizontal distance of $12\sqrt{3}$m from a tree. The angle of elevation of the top of the tree is 30°. How tall is the tree?

A. 8m B. $8\sqrt{3}$m C. 14m D. 18m

24. Express the bearing of 312° in compass direction form. N48°W.

A. S48°W B. N48°E C. S48°E D. N48°E

25. A fair die is thrown once. What is the probability of obtaining 3?

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

The table shows the distribution of the ages of members of a school choir.

Age(years)	15	16	17	18
No. of students	5	6	3	1

Use the table to answer questions ***26*** *and* ***27****.*

26. Calculate the mean age.

A. 15 years B. 16 years C. 17 years D. 18 years

27. Find the median age.

A. $15\frac{1}{2}$ years B. 16 years C. $16\frac{1}{2}$ years D. 17 years

28. If $x = \frac{mn}{3}$ and $m = \frac{v}{y}$, express x in terms of v, y and n.

A. $x = \frac{3vy}{n}$ B. $x = \frac{vy}{3n}$ C. $x = \frac{vyn}{3}$ D. $x = \frac{wn}{3y}$

29. If $M_{\text{six}} = 123_{\text{five}}$, find the value of M.

A. 53 B. 55 C. 62 D. 102

30. In triangle XYZ, $|XY| = 8$cm and Z is equidistant from X and Y. If Z is 5cm from X, find the area of the triangle.

A. 24cm^2 B. 18cm^2 C. 12cm^2 D. 10cm^2

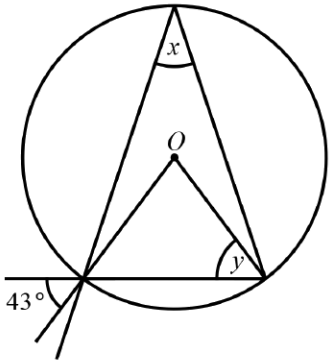
31. Calculate the total surface area of a cuboid whose dimensions are 12cm $\times$ 8cm $\times$ 3cm

A. 96cm^2 B. 156cm^2 C. 288cm^2 D. 312cm^2

32. Calculate, correct to the nearest whole number, the volume of a sphere with diameter 6cm. [Take $\pi =$

A. 15cm^3 B. 36cm^3 C. 113cm^3 D. 124cm^3

The diagram shows a circle centre O. *Use it to answer questions **33** and **34**.*



33. Find the value of y.

A. 43° B. 47° C. 54° D. 89°

34. Find the value x.

A. 43° B. 47° C. 54° D. 89°

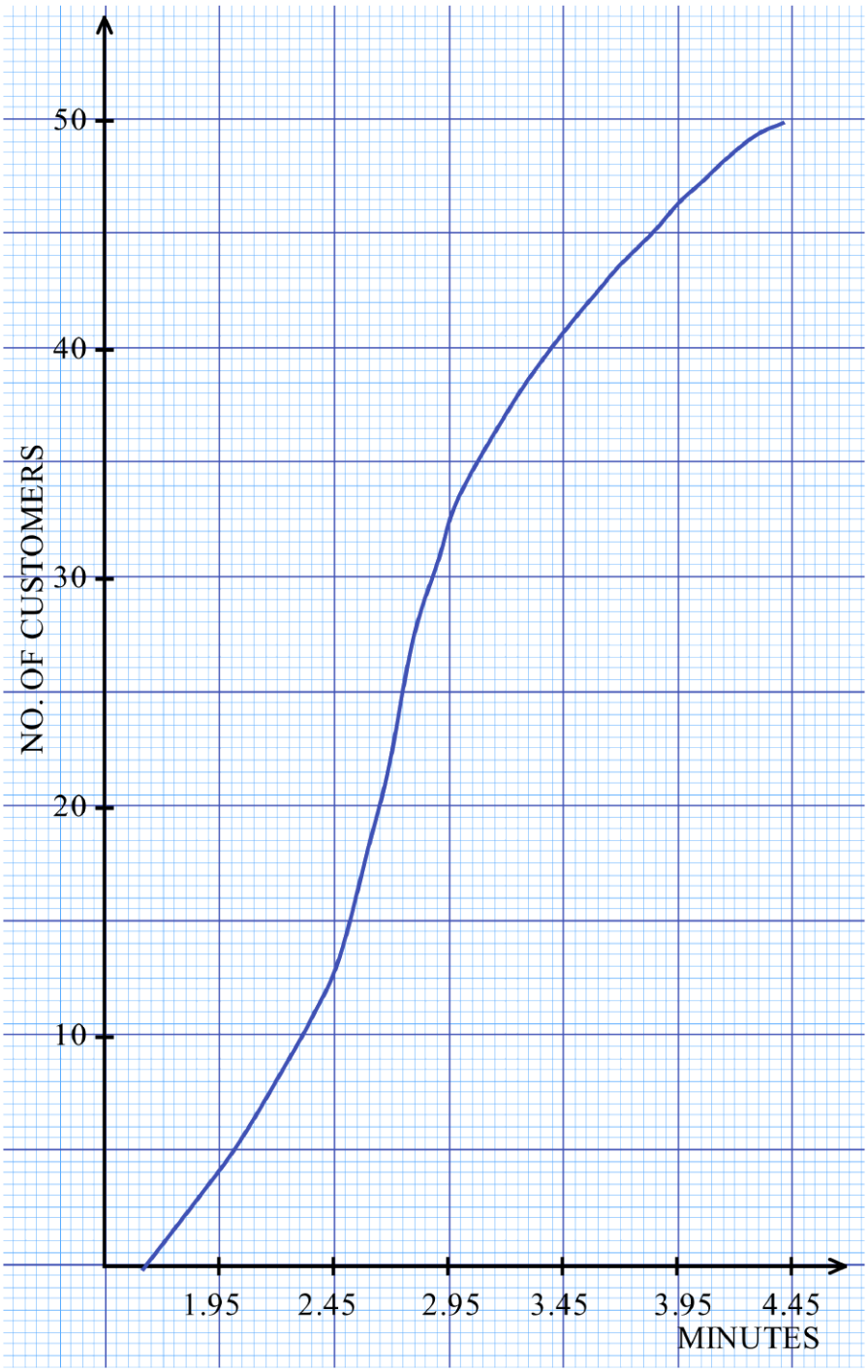
35. Find the nth term of the Geometric Progression (G.P.): $\frac{1}{2}, \frac{1}{4}, \frac{1}{8}$.

A. 2^{n-1} B. 2^n C. $\frac{1}{2^n}$ D. $\frac{1}{2^{n-1}}$

36. An old man goes for a walk every 6 days. If he went for a walk on Wednesday, when will he go for the next walk?

A. Monday B. Tuesday C. Wednesday D. Thursday

The cumulative frequency curve (Ogive) shows the distribution of waiting time of some customers at a filling station.



*Use the curve to answer questions **37** and **38**.*

37. Estimate the inter-quartile range.

A. 0.70 B. 0.75 C. 0.80 D. 0.85

38. How many customers waited for at least 3 minutes?

A. 16 B. 7 C. 18 D. 19

39. What is the coefficient of x in the expansion of $\left(4x^2 + 3x - 1\right)(3x + 1)$?

A. -1 B. 4 C. 1 D. 2

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

A. $x^2 + 4x - 3 = 0$ B. $4x^2 + x - 3 = 0$ C. $x^2 - 4x - 3 = 0$ D. $4x^2 + 4x - 3 = 0$

41. Two times a number added to one-third of the number gives $5\frac{1}{6}$. Find the number.

A. $2\frac{2}{7}$ B. $2\frac{3}{14}$ C. $2\frac{1}{7}$ D. $2\frac{1}{14}$

42. Find the mean deviation of 5,8,3,7,2.

A. 0 B. 2 C. 5 D. 10

43. In a certain community, 1 out of every 8 persons is a graduate. If Yomi and Etteh are members of the community, what is the probability that they are both graduates?

A. $\frac{1}{64}$ B. $\frac{1}{16}$ C. $\frac{1}{8}$ D. $\frac{1}{4}$

44. Which of the following statements is false?

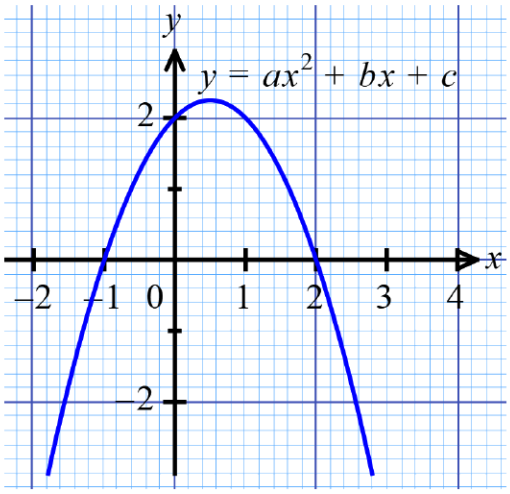
A. In a circle, equal chords subtend equal angles at the centre.

B. The length of an arc is proportional to the angle subtended by the arc at the centre of the circle.

C. The circumference of a circle is directly proportional to its diameter

D. The angle between the tangent to a circle and its radius is complementary.

45.



Find the equation of the graph in the diagram.

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

46. If $\log x = 0.3030$, $\log y = 0.4771$ and $\log Z = 0.8451$, evaluate $\frac{\log x - \log Z^{\frac{1}{3}}}{\log y^3}$.

A. 1.4313 B. 0.8466 C. 0.5466 D. 0.0149

47. Consider these two statements:

P : n is an odd number

Q : n is a prime number greater than 2

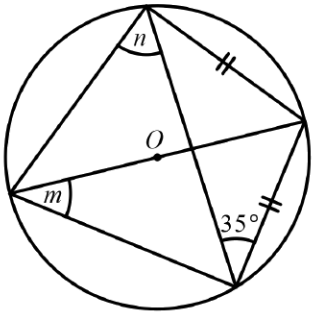
Express "*If n is not an odd number, then is a prime number greater than 2*" in symbolic form.

A. $\sim P \wedge \sim Q$ B. $\sim P \Rightarrow Q$ C. $P \Rightarrow \sim Q$ D. $\sim P \wedge \sim Q$

48. Which of the following is not a rational number?

A. -5 B. $\sqrt{6}$ C. $3\frac{3}{4}$ D. $\sqrt{90}$

*Use the diagram to answer questions **49** and **50***



.

49. Find the value of m.

A. $35°$ B. $45°$ C. $65°$ D. $75°$

50. Find the value of n.

A. $70°$ B. $65°$ C. $55°$ D. $35°$