1. Which of the following is a factor of $tr - ps - pt + rs$?

   A. $(t - s)$ B. $(p + s)$ C. $(r - p)$ D. $(r + p)$

2. If $(a^{-n})^2 = a^4$, find n

   A. -6 B. -2 C. 2 D. 6

3. If $m = 4$ and $n = \frac{5}{2}$, find the value of $4m^3n - 16mn^2$

   A. 240 B. 120 C. 60 D. 40

4. Simplify: $1\frac{1}{8} \times 1\frac{1}{3} - 5 \div 2\frac{1}{2}$

   A. $\frac{1}{2}$ B. $\frac{11}{25}$ C. $\frac{39}{140}$ D. $-\frac{1}{2}$

5. If one of the roots of the equation $x^2 - 5x + 6 = 0$ is 3, find the other root.

   A. 1 B. 2 C. 3 D. 4

6. Given that p varies directly as q and $p = 8$ when $q = 2$, find p when $q = 3$.

   A. 6 B. 9 C. 12 D. 16

7. Ade bought eggs at ₦a per dozen. What is the cost of b dozens of eggs?

   A. ₦ab B. ₦$(a + b)$ C. ₦$\left(\frac{b}{a}\right)$ D. ₦$\left(\frac{a}{b}\right)$

8. If $3\log(2 + x) = \log 27$, find x.

   A. -1 B. 1 C. 5 D. 6

9. Solve the equation: $\frac{x - 4}{3} + \frac{5 - 2x}{4} = 1$.

   A. $6\frac{1}{2}$ B. $4\frac{1}{2}$ C. $-4\frac{1}{2}$ D. $-6\frac{1}{2}$

10. From a point on the ground, the angle of elevation of the top of a flagpole is 35°. If the flagpole is 200m away from the point, find, correct to two decimal places, the height of the pole.

    A. 11.47m B. 140.04m C. 24.42m D. 28.56m

11. A regular polygon of n sides has each exterior angle equal to 45°. Find the value of n

    A. 6 B. 8 C. 12 D. 15

12. If $\sqrt{75} + \sqrt{27} + k\sqrt{3} = 0$, find the value of k.

    A. -16 B. -8 C. 8 D. 16

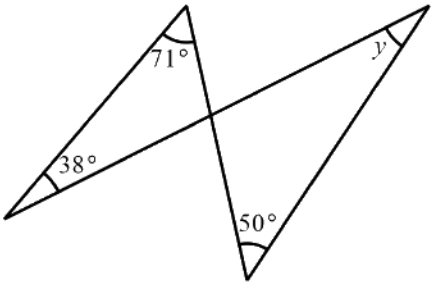
13. Which of the following quadratic equations has $-\frac{1}{3}$ and $\frac{1}{2}$ as its roots?

    A. $6x^2 - x - 1 = 0$ B. $2x^2 - x - 3 = 0$ C. $3x^2 - x - 2 = 0$ D. $x^2 - x - 6 = 0$

14. The inequality for a distance d which is more than 18m but not more than 23m is:

    A. $18 \leq d \leq 23$ B. $18 < d \leq 23$ C. $18 \leq d < 23$ D. $18 < d < 23$

15.



Find the value of y in the diagram.

A. 33° B. 58° C. 59° D. 88°

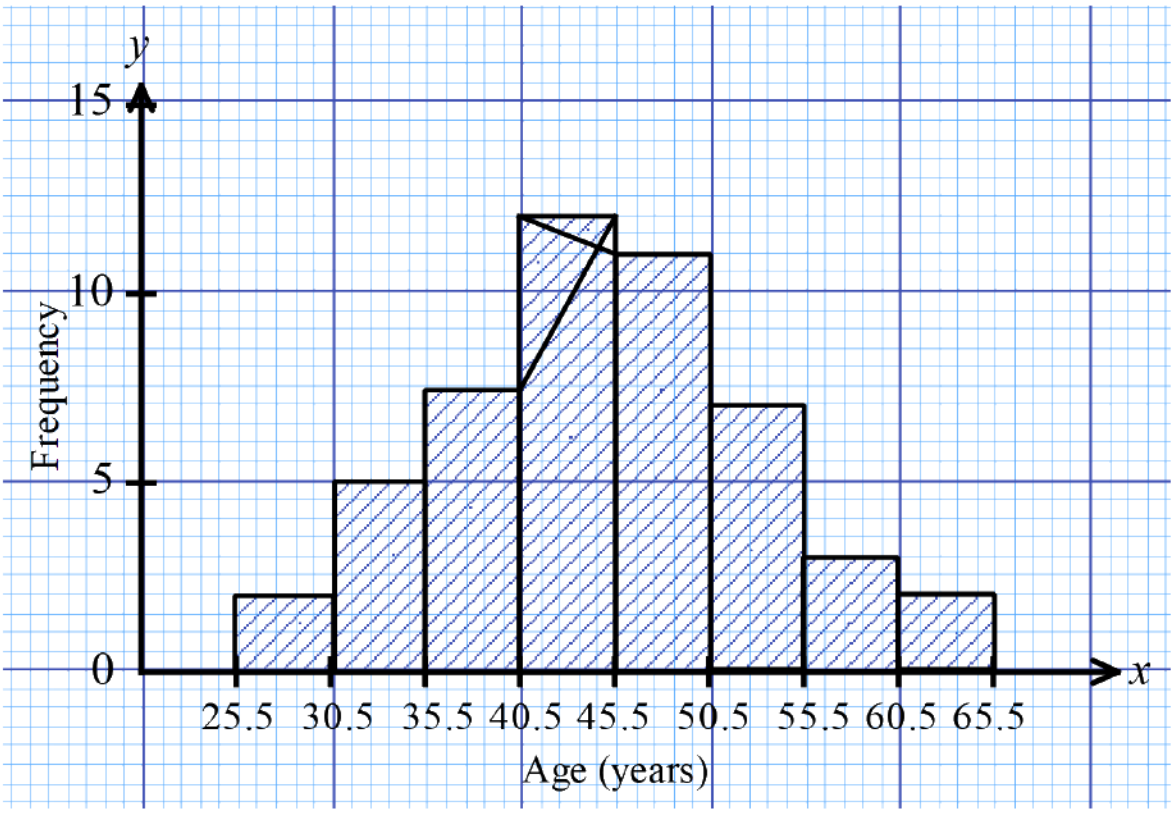
16. The diameter of a wheel is 70cm. Find the distance covered by the wheel after 10 complete revolutions. [Take $\pi = \frac{22}{7}$].

A. 0.22m B. 2.2m C. 22m D. 220m

17. The volume of a cone of height 9cm is 1848cm^3. Find the diameter of its base. [Take $\pi = \frac{22}{7}$]

A. 28cm B. 20cm C. 48cm D. 56cm

The histogram shows the age distribution of members of a club. *Use the information to answer Questions **18** and **19**.*



18. How many members are in the club?

A. 52 B. 50 C. 48 D. 40

19. What is their modal age?

A. 44.5 B. 43.5 C. 42.5 D. 41.5

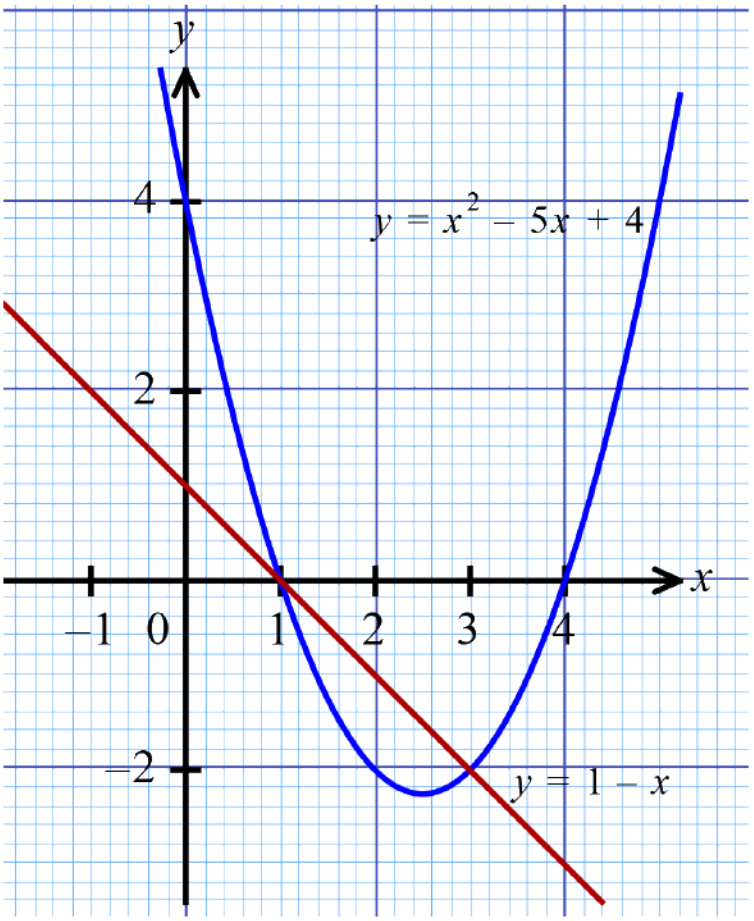
20. The complement of a given set is the set of all elements in the:

A. set but not in the universal set.
B. set and also in the universal set.
C. universal set but not in the given set.
D. empty set but not in the given set.

21. The sum of the squares of two positive consecutive odd numbers is 130. Find the larger number.

A. 3 B. 5 C. 9 D. 13

The graph represents the relations $y = x^2 - 5x + 4$ and $y = 1 - x$. *Use it to answer Questions* ***22*** *and* ***23***.



22. Find the equation of the line of symmetry of the quadratic curve.

A. $x = -2.5$ B. $x = -2.2$ C. $x = 2.5$ D. $x = 3.2$

23. What is the truth set of the equation $x^2 - 5x + 4 = 1 - x$?

A. $\{1,3\}$ B. $\{1,0\}$ C. $\{-1,3\}$ D. $\{-1,-2\}$

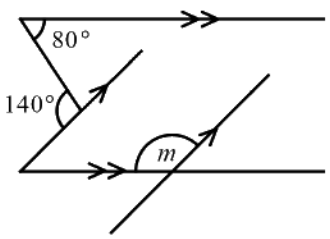
24. Which of the following angles can be constructed using ruler and a pair of compasses only?

A. 115° B. 125° C. 135° D. 145°

25. If $2\tan x = 1.5$, find $\cos x + 2\sin x$.

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

26.



From the diagram, find the value of m.

A. 50° B. 80° C. 120° D. 240°

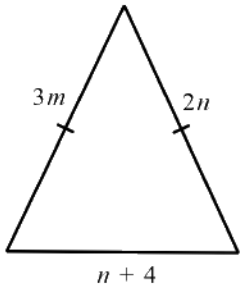
27. Find the values of x for which $\frac{1+x}{4-x^2}$ is not defined.

A. $2, -1$ B. $2, -2$ C. $0, -1$ D. $0, -2$

28. Subtract ract $(5y^2z + 8y^2 - 7)$ from $(4y^2z - y^2 - 3)$.

A. $-y^2z - 9y^2 + 4$ B. $-y^2z - 7y^2 + 4$ C. $-y^2z + 7y^2 + 4$ D. $-y^2z + 9y^2 + 4$

29.



In the diagram, the perimeter of the triangle is 19cm. Find the values of m and n.

A. $m = 2, n = 3$ B. $m = 2, n = 5$ C. $m = 3, n = 2$ D. $m = 5, n = 3$

30. $VPQRS$ is a right pyramid on a square base $PQRS$ with V as vertex. If the height of the pyramid is 42cm and $|PQ| = 25$cm, find its volume.

A. 7550cm^3 B. 8750cm^3 C. 13125cm^3 D. 26250cm^3

31. Express 0.037696 correct to three significant figures.

A. 0.04 B. 0.037 C. 0.038 D. 0.0377

32. If locus of point equidistant from two intersecting lines is:

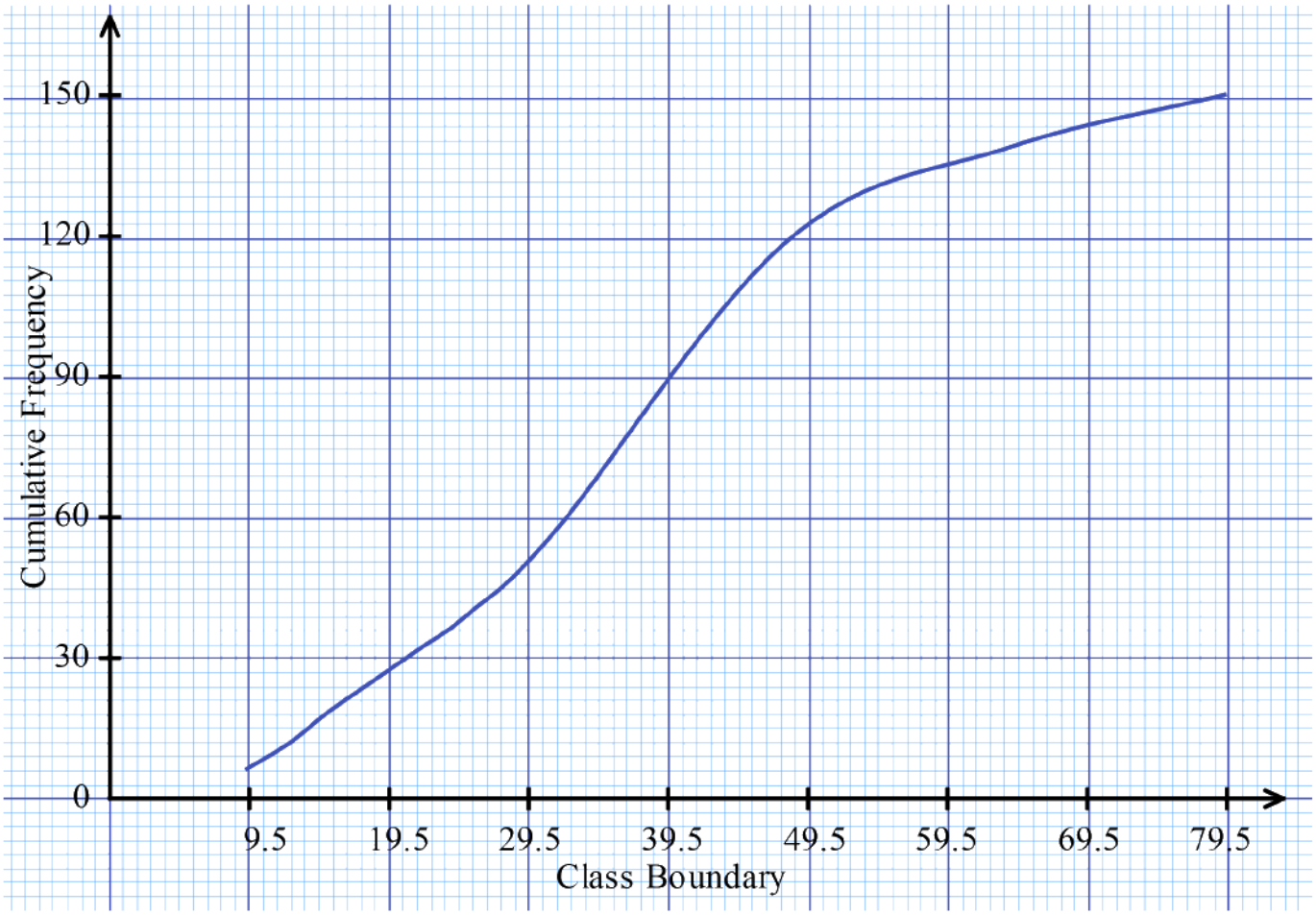
A. a circle touching the two lines.

B. a bisector of the angle between the two lines.

C. a perpendicular bisector of one of the lines.

D. a line parallel to the two lines.

Use the cumulative frequency curve to answer Questions ***33*** *and* ***34****.*



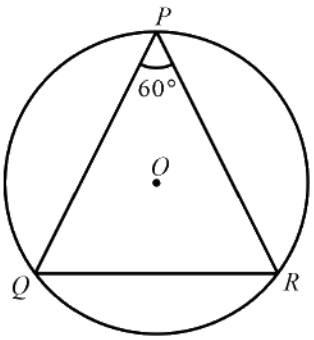
33. Estimate the median of the data represented on the graph.

A. 35.5 B. 36.5 C. 37.5 D. 38.5

34. What is the 80th percentile?

A. 45.5 B. 46.5 C. 47.5 D. 48.5

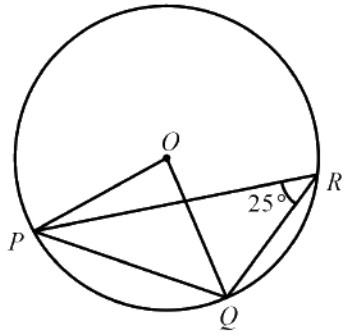
35.



In the diagram, O is the centre of the circle of radius 7cm If $\angle QPR = 60°$, find $|QR|$.

A. 13.6cm B. 12.1cm C. 10.0cm D. 6.6cm

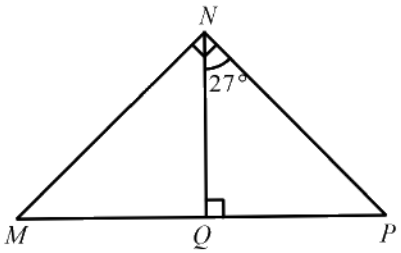
36.



In the diagram, O is the centre of the circle and $\angle PRQ = 25°$. Calculate $\angle PQO$.

A. 15° B. 25° C. 50° D. 65°

37.



In the diagram, NQ is perpendicular to MP, $\angle PNM = 90°$ and $\angle QNP = 27°$. Find $\angle NMQ$.

A. 27° B. 30° C. 54° D. 63°

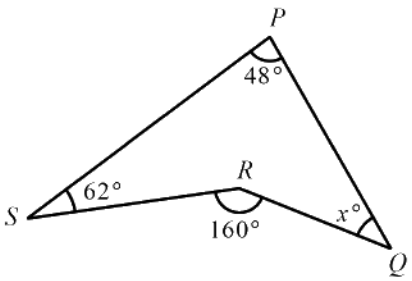
38. A cylinder of base radius 8cm is open at one end. If the ratio of the area of its base to that of its curved surface is 1: 4 calculate the height of the cylinder.

A. 10cm B. 12cm C. 14cm D. 16cm

39. A flower bed is in the shape of an equilateral triangle of side 5m Calculate, correct to one decimal place, its area.

A. 10.8m B. 12.5m C. 18.8m D. 25.0m

40.



In the diagram, $\angle PSR = 62°, \angle SPQ = 48°$, $\angle SRQ = 160°$ and $\angle RQP = x°$. Calculate the value of x.

A. 70 B. 62 C. 58 D. 50

41. During a clearance sale, a shop reduced the prices of all its goods by 15%. Mr. Davis bought a pair of shoes for D255.00 during the sale. Calculate the price of the shoe before the sale.

A. D240.00 B. D270.00 C. D293.00 D. D300.00

42. A sector of angle 130° is cut out from a circular paper of diameter 504cm. Find the perimeter of the sector. $\left[\text{Take } \pi = \frac{22}{7}\right]$

A. 834cm B. 1054cm C. 1076cm D. 1120cm

43. The universal set $U = \{1, 2, 3, \ldots, 13\}$. If $T = \{$ even numbers $\}$ and $R = \{$ multiples of 3$\}$ are subsets of U find $(R \cup T)'$.

A. $\{1, 5, 7, 11, 13\}$ B. $\{5, 7, 11, 13\}$ C. $\{1, 7, 11, 13\}$ D. $\{1, 2, 5, 11, 13\}$

44. The bearing of E from F is 020° and that of G from E is 140°. If G is directly east of F, find $\angle FGE$.

A. 80° B. 70° C. 60° D. 50°

45. A fair die is tossed twice. What is the probability that the sum of the digits is a perfect square?

A. $\frac{1}{12}$ B. $\frac{1}{6}$ C. $\frac{7}{36}$ D. $\frac{2}{9}$

46. A man took a loan of GHC 7,200.00 at a simple interest rate from a Cooperative Society, He pays back GHC 8,00.00 after 10 months. At what rate was the interest charged?

A. $13\frac{1}{3}\%$ B. 10% C. $9\frac{1}{3}$ D. 6%

47. Factorize: $2xy - 6pq - 3py + 4qx$.

A. $(y + 2q)(2x - 3p)$ B. $(y + q)(2x - 3p)$

C. $(y - 2q)(2x - 3p)$ D. $(y - p)(2x - 3p)$

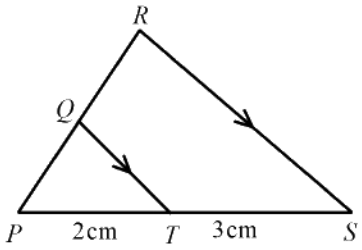
48. A wooden box 1 cm thick is 15cm long, 10cm wide and 4cm high. If the box is open at the top, calculate the volume of the wood used.

A. 214cm^3 B. 288cm^3 C. 300cm^3 D. 334cm^3

49. Find the product of 1011_{two} and 101_{two}.

A. 111001_{two} B. 110111_{two} C. 110101_{two} D. 101111_{two}

50.



In the diagram, $QT \parallel RS$. $|PT| = 2$cm and $|TS| = 3$cm. Find the ratio of the area of ΔPRS : area of ΔPQT.

A. 25: 4 B. 9: 4 C. 5: 2 D. 3: 2