1. If $23_x + 101_x = 130_x$, find the value of x.

   A. 7 B. 6 C. 5 D. 4

2. Simplify: $\left(\frac{3}{4} - \frac{2}{3}\right) \times 1\frac{1}{5}$

   A. $\frac{1}{60}$ B. $\frac{5}{72}$ C. $\frac{1}{10}$ D. $1\frac{7}{10}$

3. Simplify: $\left(\frac{10\sqrt{3}}{\sqrt{5}} - \sqrt{15}\right)^2$

   A. 75.00 B. 15.00 C. 8.66 D. 3.87

4. The distance, d, through which a stone falls from rest varies directly as the square of the time, t, taken. If the stone falls 45cm in 3 seconds, how far will it fall in 6 seconds?

   A. 90cm B. 135cm C. 180cm D. 225cm

5. Which of the following is a valid conclusion from the premise: "Nigerian footballers are good footballers"?

   A. Joseph plays football in Nigeria therefore he is a good footballer.

   B. Joseph is a good footballer therefore he is a Nigerian footballer.

   C. Joseph is a Nigerian footballer therefore he is a good footballer.

   D. Joseph plays good football therefore he is a Nigerian footballer.

6. On a map, 1cm represents 5km. Find the area on the map that represents 100km^2

   A. 2cm^2 B. 4cm^2 C. 8cm^2 D. 16cm^2

7. Simplify: $\frac{3^{n-1} \times 27^{n+1}}{81^n}$

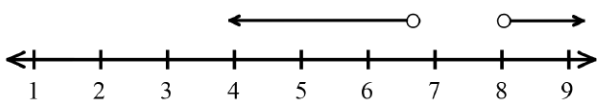
   A. 3^{2n} B. 9 C. 3^n D. 3^{n+1}

8. What sum of money will amount to D10,400.00 in 5 years at 6% simple interest?

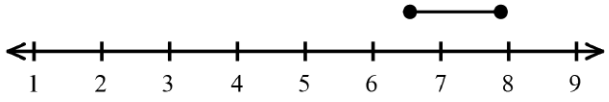
   A. D 8,000.00 B. D 10,000.00 C. D 12,000.00 D. D 16,000.00

9. Which of the following number lines illustrates the solution of the inequality $4 \leq \frac{1}{3}(2x - 1) < 5$?

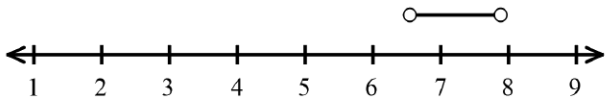
   A.



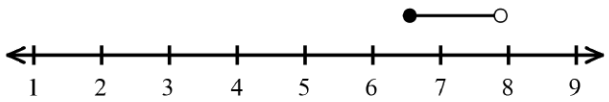
   B.



   C.



   D.



10. The roots of a quadratic equation are $\frac{4}{3}$ and $-\frac{3}{7}$. Find the equation.

A. $21x^2 - 19x - 12 = 0$ B. $21x^2 + 37x - 12 = 0$

C. $21x^2 - x + 12 = 0$ D. $21x^2 + 7x - 4 = 0$

11. Find the values of y for which the expression $\frac{y^2 - 9y + 18}{y^2 + 4y - 21}$ is undefined.

A. $6, -7$ B. $3, -6$ C. $.3, -7$ D. $-3, -7$

12. Given that $2x + y = 7$ and $3x - 2y = 3$, by how much is $7x$ greater than 10?

A. 1 B. 3 C. 7 D. 17

13. Simplify: $\frac{2}{1-x} - \frac{1}{x}$

A. $\frac{x+1}{x(1-x)}$ B. $\frac{3x-1}{x(1-x)}$ C. $\frac{3x+1}{x(1-x)}$ D. $\frac{x-1}{x(1-x)}$

14. Make s the subject of the relation: $p = s + \frac{sm^2}{nr}$

A. $s = \frac{mrp}{nr + m^2}$ B. $s = \frac{nr + m^2}{mrp}$ C. $s = \frac{nrp}{mr + m^2}$ D. $s = \frac{nrp}{nr + m^2}$

15. Factorize: $(2x + 3y)^2 - (x - 4y)^2$

A. $(3x - y)(x + 7y)$ B. $(3x + y)(2x - 7y)$

C. $(3x + y)(x - 7y)$ D. $(3x - y)(2x + 7y)$

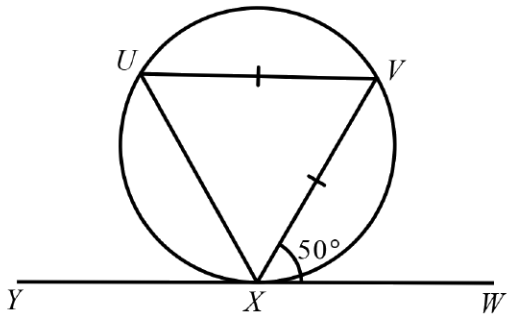
16. 16. The curved surface area of a cylinder, 5cm high, is 110cm^2. Find the radius of its base. [Take $\pi = \frac{22}{7}$]

A. 2.6cm B. 3.5cm C. 3.6cm D. 7.0cm

17. The volume of a pyramid with height 15cm is 90cm^3. If its base is a rectangle with dimensions $x$cm by 6cm, find the value of x

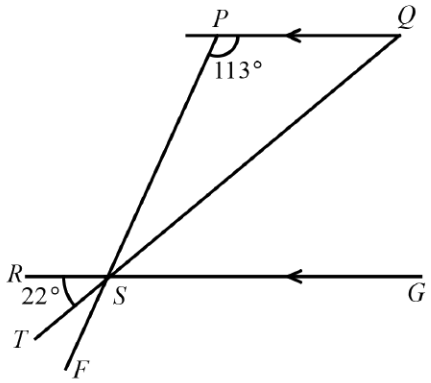
A. 3 B. 5 C. 6 D. 8

18. In the diagram YW is a tangent to the circle at X, $|UV| = |VX|$ and $\angle VXW = 50^\circ$ Find the value $\angle UXY$



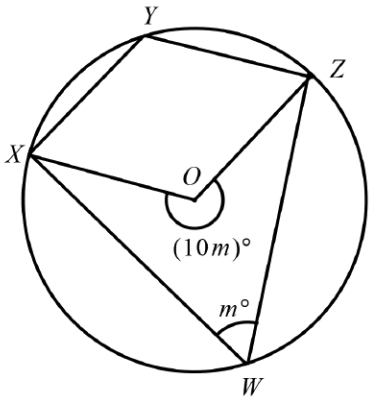
A. 70° B. 80° C. 105° D. 110°

19. In the diagram, $\overline{PF}, \overline{QT}, \overline{RG}$ intersect at S and $PQ//RG$. If $\angle SPQ = 113°$ and $\angle RST = 22°$, find $\angle PSQ$ s



A. 22° B. 45° C. 67° D. 89°

20. In the diagram, O is the centre of the circle, $\angle XOZ = (10m)°$ and $\angle XWZ = m°$ Calculate the value of m

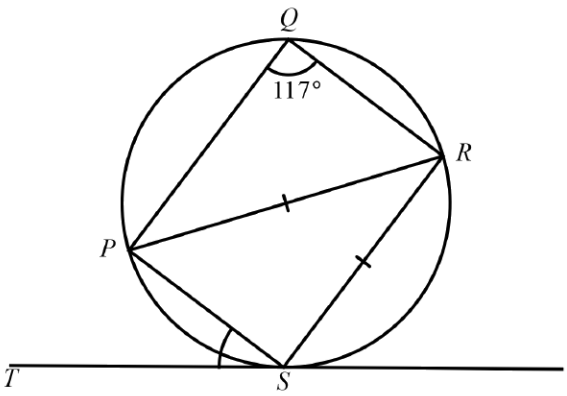


A. 30 B. 36 C. 40 D. 72

21. Kweku walked 8 m up a slope and was 3m above the ground, If he walks 12m further up the slope, how far above the ground will he be?

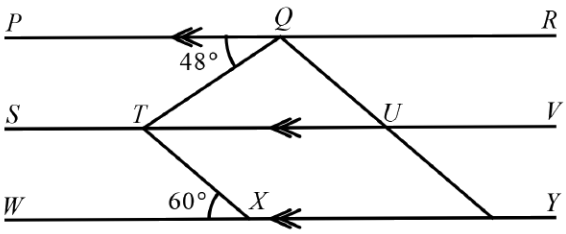
A. 4.5m B. 6.0m C. 7.5m D. 9.0m

22. In the diagram, TS is a tangent to the circle at S. $|PR| = |RS|$ and $\angle PQR = 117°$ Calculate $\angle PST$



A. 54° B. 44° C. 34° D. 27°

23.



In the diagram $PR//SV//WY, TXI/QY$ $\angle PQT = 48°$ and $\angle TXW = 60°$ Find $\angle TQU$

A. $120°$ B. $108°$ C. $72°$ D. $60°$

A straight line passes through the points $P(1,2)$ and $Q(5,8)$. *Use this information to answer questions* ***24*** *and* ***25***

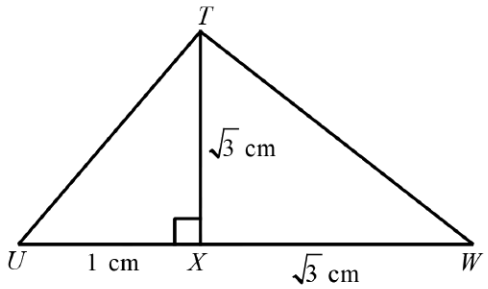
24. Calculate the gradient of the line PQ.

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

25. Calculate the length PQ.

A. $4\sqrt{11}$ B. $4\sqrt{10}$ C. $2\sqrt{17}$ D. $2\sqrt{13}$

26.



In the diagram, TX is perpendicular to UW $|UX| = 1$cm and $|TX| = |WX| = \sqrt{3}$cm Find $\angle UTW$.

A. $135°$ B. $105°$ C. $75°$ D. $60°$

27. If $\cos\theta = x$ and $\sin 60° = x + 0.5$, $0° \leq \theta \leq 90°$, find, correct to the nearest degree, the value of θ.

A. $66°$ B. $67°$ C. $68°$ D. $69°$

The table shows the ages of students in a club. *Use it to answer questions* ***28*** *and* ***29***

Age (Years)	13	14	15	16	17
Frequency	10	24	8	5	3

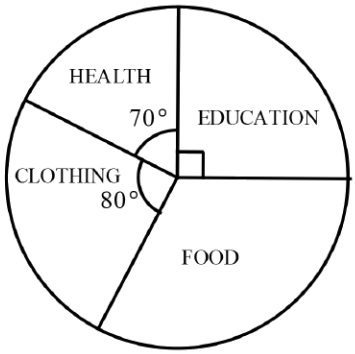
28. How many students are in the club?

A. 50 B. 55 C. 60 D. 65

29. Find the median age.

A. 13 B. 14 C. 15 D. 16

30.



The figure is a pie chart which represents the expenditure of a family in a year, If the total income of the family was Le10, 800, 000.00, how much was spent on food?

A. Le 2,250,000.00 B. Le 2,700,000.00 C. Le 3,600,000,00 D. Le 4,500,000.00

31. A fair die is thrown two times. What is the probability that the sum of the scores is at least 10?

A. $\frac{5}{36}$ B. $\frac{1}{6}$ C. $\frac{5}{18}$ D. $\frac{2}{3}$

32. The marks of eight students in a test are: 10,4,5,3,14,13,16 and 7. Find the range.

A. 16 B. 14 C. 13 D. 11

33. If $\log_2(3x-1) = 5$, find x.

A. 2.00 B. 3.67 C. 8.67 D. 11.00

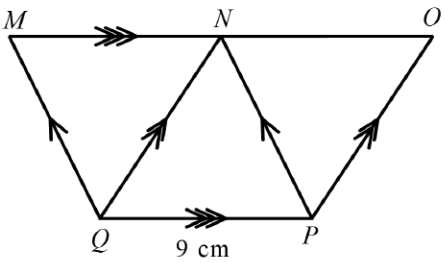
34. A sphere of radius r cm has the same volume as a cylinder of radius 3cm and height 4cm. Find the value of r.

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

35. Express 1975 correct to 2 significant figures.

A. 20 B. 1900 C. 1980 D. 2000

36.



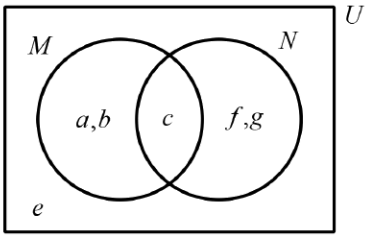
In the diagram $MOPQ$ is a trapezium with $QP \parallel MO, MQ \parallel NP, NQ \parallel OP, |QP| = 9$cm and the height of triangle $QNP = 6$cm Calculate the area of the trapezium.

A. 96cm^2 B. 90cm^2 C. 81cm^2 D. 27cm^2

37. The perimeter of a sector of a circle of radius 21cm is 64cm. Find the angle of the sector. [Take $\pi = \frac{22}{7}$]

A. 70° B. 60° C. 55° D. 42°

38.



Determine $M \cap N$ from the Venn diagram.

A. $\{f,g\}$ B. $\{e\}$ C. $\{c,f,g\}$ D. $\{e,f,g\}$

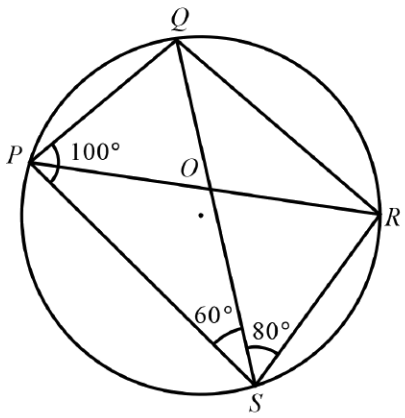
39. If $20(\text{mod}9)$ is equivalent to $y(\text{mod}6)$, find y.

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

40. Simplify: $\dfrac{(p-r)^2-r^2}{2p^2-4pr}$.

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

41.



In diagram, O is the centre of the circle, $\angle QPS = 100°, \angle PSQ = 60°$ and $\angle QSR = 80°$, Calculate $\angle SQR$.

A. 20° B. 40° C. 60° D. 80°

42. A bag contains 5 red and 4 blue identical balls. If 2 balls are selected at random from the bag, one after the other, with replacement, find the probability that the first is red and the second blue.

A. $\dfrac{2}{9}$ B. $\dfrac{5}{18}$ C. $\dfrac{20}{81}$ D. $\dfrac{5}{9}$

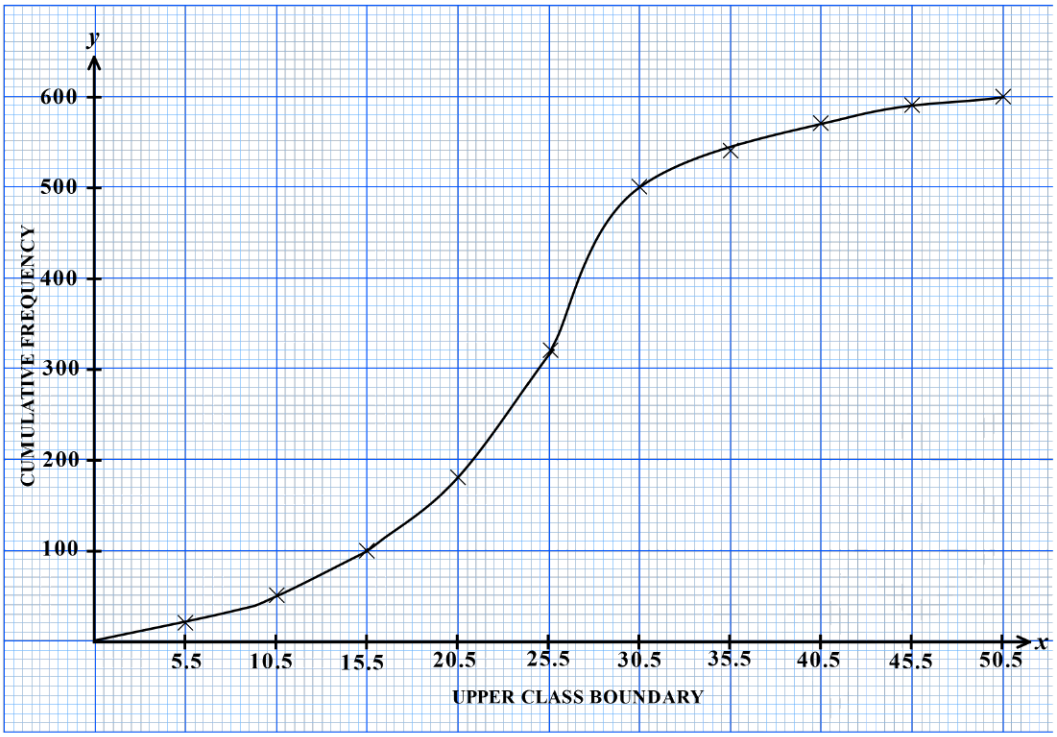
43. The relation $y = x^2 + 2x + k$ passes through the point $(2,0)$. Find the value of k.

A. -8 B. -4 C. 4 D. 8

44. Find the next three terms of the sequence: $0,1,1,2,3,5,8,\ldots$

A. 13,19,23 B. 9,11,13 C. $11,15,19$ D. 13,21,34

45. Find the lower quartile of the distribution illustrated by the cumulative frequency curve.



A. 17.5 B. 19.0 C. 27.5 D. 28.0

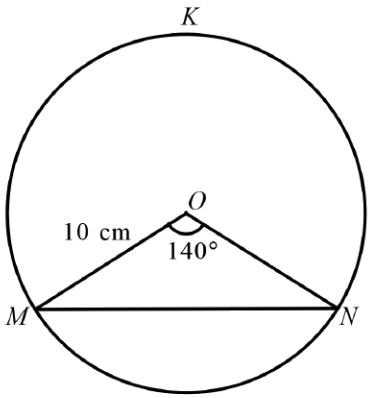
46. The ratio of the exterior angle to the interior angel of a regular polygon is 1:11. How many sides has the polygon?

A. 30 B. 24 C. 18 D. 12

47. Halima is n years old. Her brother's age is 5 years more than half of her age. How old is her brother?

A. $\frac{n}{2}+\frac{5}{2}$ B. $\frac{n}{2}-5$ C. $5-\frac{n}{2}$ D. $\frac{n}{2}+5$

48.



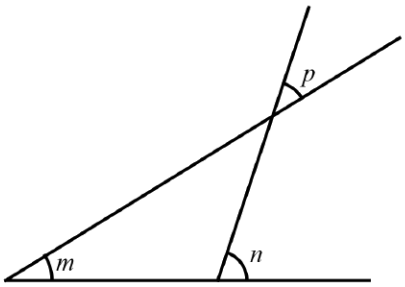
In the diagram $\overline{MN}$ is a chord of a circle KMN centre O and radius 10cm If $\angle MON = 140°$, find, correct to the nearest cm, the length of the chord MN

A. 19cm B. 18cm C. 17cm D. 12cm

49. An object is 6m away from the base of a mast. If the angle of depression of the object from the top of the mast is 50°, find, correct to 2 decimal places, the height of the mast.

A. 8.60m B. 7.83m C. 7.51m D. 7.15m

50.



From the diagram, which of the following is true?

A. $m + n + p = 180^\circ$ B. $m + n = 180^\circ$ C. $m = p + n$ D. $n = m + p$