1. Correct 0.005854 to 2 significant figures.

   A. 0.0058 B. 0.0059 C. 0.0060 D. 0.0100

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

   A. 0 B. $\frac{1}{2}$ C. 1 D. 2

3. Find the sum of $303_5$ and $104_5$.

   A. $412_5$ B. $402_5$ C. $244_5$ D. $144_5$

4. If $2\sqrt{5} + \sqrt{125} - \sqrt{45} + 4 \equiv a + b\sqrt{c}$, evaluate $(2a - b)$.

   A. 8 B. 4 C. 2 D. 0

5. A petrol tank will take a factory 30 weeks when it uses 150 litres per day. How many weeks will it take the factory if it decides to use 500 litres per day?

   A. 30 weeks B. 25 weeks C. 15 weeks D. 9 weeks

6. The $n$th term of the sequence $5, 8, 11, \ldots$ is 383. Find $n$.

   A. 125 B. 126 C. 127 D. 194

7. A quantity z varies directly as the square root of $x$ and inversely as the cube of $s$. If $z = 8$ when $x = 4$ and $s = \frac{1}{2}$, express $z$ in terms of $x$ and $s$.

   A. $z = \frac{2\sqrt{x}}{s^3}$ B. $z = \frac{\sqrt{x}}{s^3}$ C. $z = \frac{2s^3}{\sqrt{x}}$ D. $z = \frac{\sqrt{x}}{2s^3}$

8. If $3x - y = 5$ and $2x + y = 15$, evaluate $x^2 + 2y$.

   A. 29 B. 30 C. 35 D. 42

9. What is the gradient of the line joining points (2,5) and (5,14)?

   A. 5 B. 4 C. 3 D. 2

10. A car covers 180m in $(t - 1)$ seconds and 324m in $(t + 3)$ seconds. If it is travelling at a constant speed, calculate the value of $t$.

    A. 8 B. 6 C. 5 D. 4

*Use the graph (Figure 1) to answer questions **11** and **12***

11. Which of the following equations is represented by the graph?

    A. $y = x^2 + x - 6$ B. $y = x^2 - x - 6$ C. $y = x^2 - x + 6$ D. $y = x^2 + x + 6$

12. Find the minimum value of $y$

    A. $-6.8$ B. $-6.6$ C. $-6.4$ D. $-6.3$

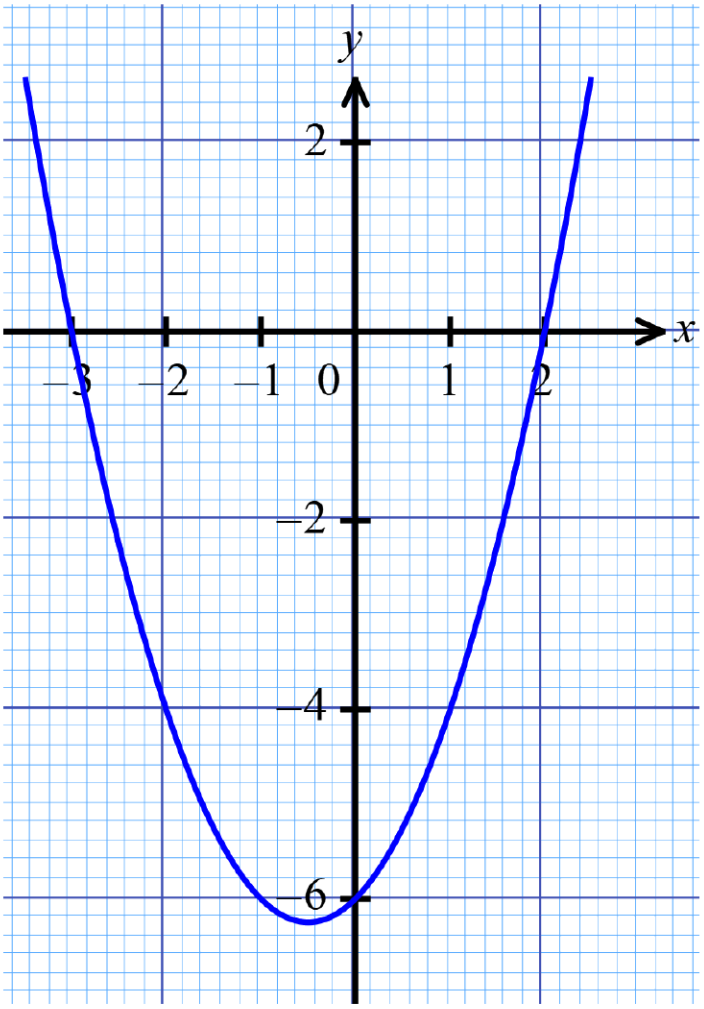
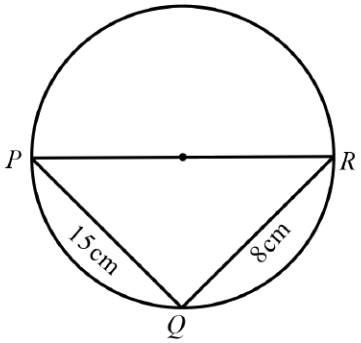



Figure 1: Graph of the relation between $x$ and $y$

13. Solve the equation: $x^2 - \frac{13}{2}x + \frac{15}{2} = 0$

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

In the diagram, $PR$ is a diameter, $|PQ| = 15$cm and $|QR| = 8$cm.




*Use the information to answer questions **14** and **15***

14. Calculate the area of triangle $PQR$.

A. 23cm$^2$ B. 60cm$^2$ C. 68cm$^2$ D. 120cm$^2$

15. Calculate, correct to 1 decimal place, the perimeter of the semi-circle $PQR$ [ Take $\pi = \frac{22}{7}$]

A. 106.9cm B. 47.1cm C. 43.7cm D. 35.4cm

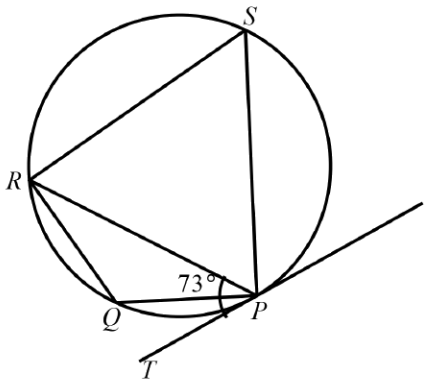
16. A bicycle wheel covers 100cm in one revolution. Find, in terms of $\pi$, the radius of the wheel.

A. $\frac{50}{\pi}$cm B. $\frac{100}{\pi}$cm C. $50\pi$cm D. $100\pi$cm

17. A rectangular tank measuring 11m by 2m by 7m is equal in volume to a cylindrical tank of height 4m. Calculate the radius of the cylindrical tank. [Take $\pi = \frac{22}{7}$]

A. 14.00m B. 7.00m C. 3.50m D. 1.75m

18. In the diagram, $\overline{TP}$ is a tangent to the circle $PQRS$ and $\angle RPT = 73°$. Find $\angle PQR$.

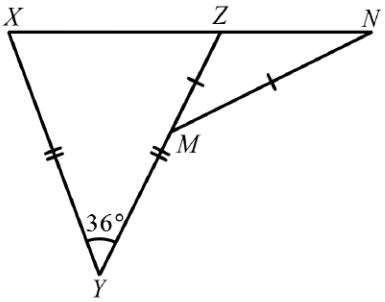



A. 146° B. 134° C. 113° D. 107°

19. Triangles $PQR$ and $XYZ$ are similar. If the sides of triangle $PQR$ are 6cm, 7cm and 8cm and the shortest side of triangle $XYZ$ is 2cm, find the length of the longest side of triangle $XYZ$.

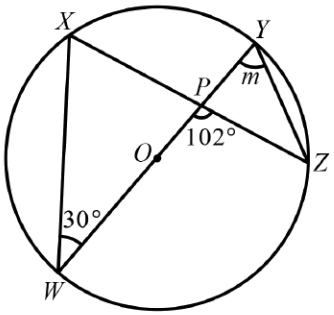
A. 4cm B. $3\frac{1}{2}$cm C. $2\frac{2}{3}$cm D. $2\frac{2}{7}$cm

20. In the diagram $|XY| = |YZ|, |MZ| = |NZ|$ and $\angle XYZ = 36°$. Find the size of angle $ZMN$.




A. 72° B. 54° C. 36° D. 35°

21.



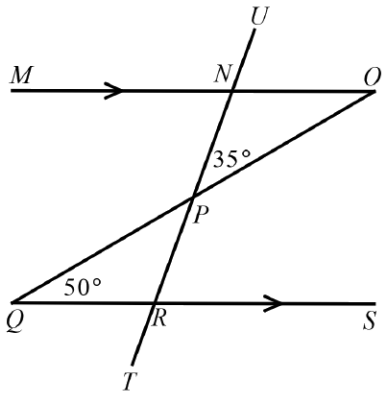

In the diagram, $O$ is the centre of the circle, $WY$ and $XZ$ are straight lines, angle $WPZ = 102°$, angle $XWY = 30°$ and angle $PYZ = m$. Find the value of $m$.

A. $78^\circ$ B. $72^\circ$ C. $51^\circ$ D. $36^\circ$

22. If $\sin x = \frac{1}{3}, 0^\circ < x < 90^\circ$, calculate the value of $\cos x$.

A. $\frac{1}{8}$ B. $\frac{2}{5}$ C. $\frac{\sqrt{2}}{3}$ D. $\frac{2\sqrt{2}}{3}$

In the diagram, $TU$ and $OQ$ are straight lines, $MO \parallel QS$, angle $OPN = 35^\circ$ and angle $RQP = 50^\circ$. *Use the diagram to answer questions* ***23*** *and* ***24***.




23. Calculate the value of angle $ONU$.

A. $35^\circ$ B. $50^\circ$ C. $85^\circ$ D. $95^\circ$

24. Find the size of angle $SRT$.

A. $85^\circ$ B. $95^\circ$ C. $130^\circ$ D. $145^\circ$

25. A ship sails 5km due west and then 7km due south. Find correct to the nearest degree, its bearing from the original position.

A. $055^\circ$ B. $056^\circ$ C. $215^\circ$ D. $216^\circ$

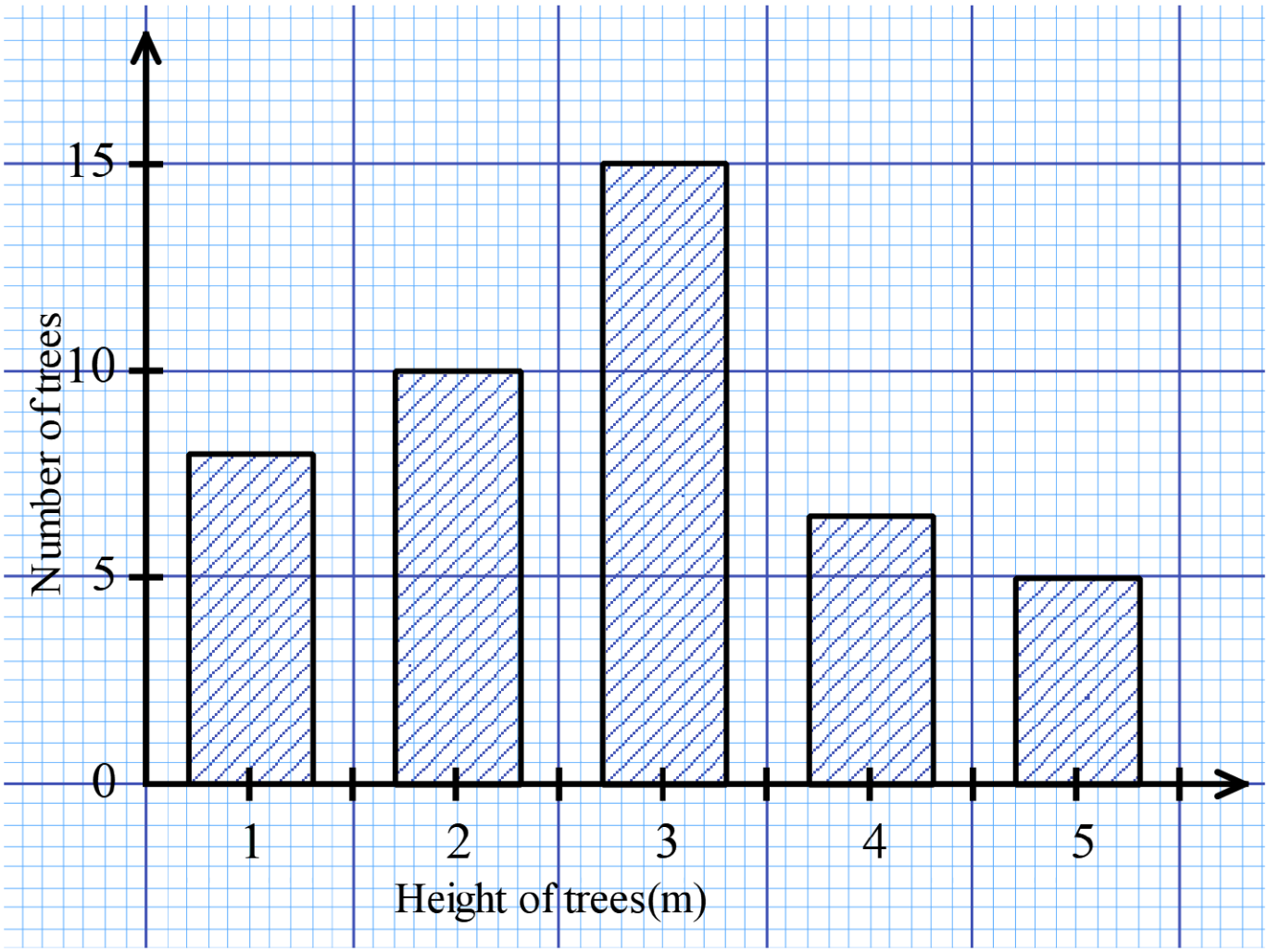
26. The angle of elevation of a bird in the air from a hunter standing on the ground is $35^\circ$. If the hunter is 1.4m tall and the bird is 81.7m away along the hunter's line of sight, how high, correct to 1 decimal place, is the bird from the ground?

A. 48.3m B. 58.8m C. 68.3m D. 71.1m

27. There are 20 men in a public bus. Of these, 15 wear glasses and 10 wear wrist watches. If one man is chosen at random from the bus, what is the probability that he wears both glasses and wrist watch?

A. $\frac{1}{5}$ B. $\frac{1}{4}$ C. $\frac{3}{5}$ D. $\frac{3}{4}$

The bar chart shows the distribution of height of trees in a forest reserve. *Use it to answer questions* ***28*** *and* ***29***.




28. How many trees were in the reserve?

A. 45 B. 44 C. 42 D. 40

29. If a tree is selected at random, find the probability that it is either 2m or 5m high.

A. $\frac{3}{8}$ B. $\frac{5}{11}$ C. $\frac{1}{3}$ D. $\frac{5}{21}$

30. The semi-interquartile range of a distribution is 20. If the upper quartile is 96, find the lower quartile.

A. 56 B. 50 C. 46 D. 40

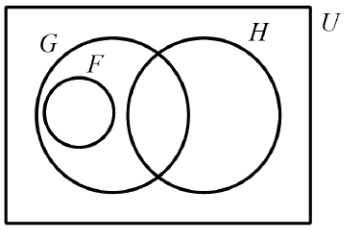
31. After allowing a discount of 15% on an article, a seller collected GHC 36,000.00 cash. How much was the discount?

A. GHC 6,952.94 B. GHC 6,502.94 C. GHC 6,352.94 D. GHC 6,203.94

32. Solve the inequality: $3(2-3x) < 1 - \frac{2x}{3}$.

A. $x > \frac{3}{5}$ B. $x < \frac{3}{5}$ C. $x < -\frac{3}{5}$ D. $x > -\frac{3}{5}$

33.




In the Venn diagram,

**U** = {Students in a school }

**G** = {Students in class 3 G}

**F** = { Students in the school's football team } and

**H** = { Students in the school's hockey team

Which of the following statements is false?

A. No member of the hockey team is in the football team.

B. Only members of class 3*G* are in the football team.

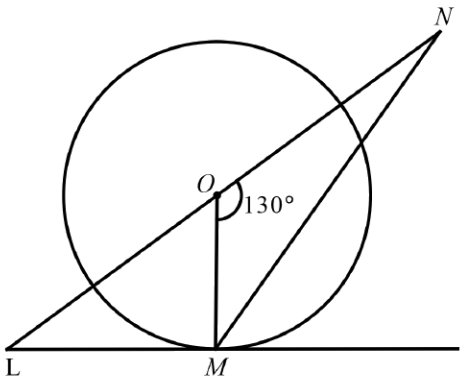
C. All of class 3*G* are members of the football team.

D. Some members of the hockey team are in class 3G

34. The sum of the interior angles of an $n$ -sided polygon is $1620^\circ$. Find $n$.

A. 9 B. 10 C. 11 D. 12

35.




In the diagram, $O$ is the centre of the circle, $LM$ is a tangent and angle $MON$ is $130^\circ$. Find the size of angle $OLM$.

A. $65^\circ$ B. $50^\circ$ C. $45^\circ$ D. $40^\circ$

36. If $\frac{1}{2}p + q = 1$ and $p - \frac{1}{2}q = 7$, find $(p + q)$.

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

37. Simplify: $\frac{1}{x+5} - \frac{2(x+2)}{x^2-25}$.

A. $\frac{x+9}{x^2-25}$ B. $\frac{x-9}{x^2-25}$ C. $\frac{-x+9}{x^2-25}$ D. $\frac{-x-9}{x^2-25}$

38. The ratio of the area of the base of cylinder to the curved surface area of the cylinder is 1 : 4. If the radius of the cylinder is 4cm, find the height of the cylinder.

A. 2cm B. 1cm C. 8cm D. 4cm

39. Find the common factor of $(9r^2 - 16s^2)$ and $(12r + 16s)$.

A. $4(3r - 4s)$ B. $4(3r + 4s)$ C. $(3r - 4s)$ D. $(3r + 4s)$

40. The height of a triangular prism is 6cm If the cross section of the prism is an equilateral triangle of side 8cm, find its volume.

A. $64\sqrt{3}\text{cm}^3$ B. $96\sqrt{3}\text{cm}^3$ C. $32\sqrt{3}\text{cm}^3$ D. $16\sqrt{3}\text{cm}^3$

41. The interior angles on the same side of a transversal on two parallel lines are

A. equal. B. obtuse. C. complementary. D. supplementary.

42. Given that $\frac{1}{m} = t - \frac{1}{n}$, make $n$ the subject of the formula.

A. $n = \frac{t-1}{m}$ B. $n = \frac{m}{t-1}$ C. $n = \frac{mt-1}{m}$ D. $n = \frac{m}{mt-1}$

43. The average of 5 numbers is $40_{\text{six}}$. Find the sum of the numbers in base six.

A. $200_{\text{six}}$ B. $260_{\text{six}}$ C. $300_{\text{six}}$ D. $320_{\text{six}}$

44. If $5^x = n$, express $25^{x+1}$ in terms of $n$.

A. $25n^2$ B. $5 + n^2$ C. $25 + n^2$ D. $5n^2$

45. Simplify: $\frac{m^2 - n^2}{n - m}$

A. $m + n$ B. $-m - n$ C. $-m + n$ D. $m - n$

46. Find the dimensions of a rectangle whose perimeter and area are 46cm and $112\text{cm}^2$ respectively.

A. 16cm by 7cm B. 17cm by 6cm C. 14cm by 9cm D. 12cm by 11cm

47. If $\log x = \overline{7}.2365$, evaluate $\log \sqrt[5]{x}$.

A. 1.0473 B. 1.4473 C. $\overline{2}.4471$ D. $\overline{2}.6473$

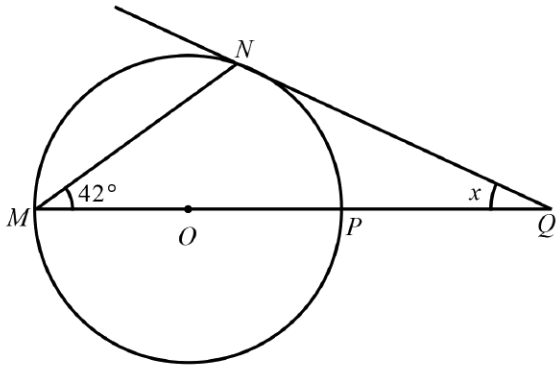
48. Given that $\mathbf{P} = \{2, 4, 6, 7\}$ and $\mathbf{Q} = \{1, 2, 4, 8\}$. If a number is selected at random from $\mathbf{P} \cup \mathbf{Q}$, find the probability that it is only in set $P$.

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

49. If $x = \frac{3y - 3}{\frac{1}{2}y(y+1)}$, for what values of $y$ is $x$ not defined?

A. $\frac{1}{2}$ and $-1$ B. $\frac{1}{2}$ and 1 C. 0 and $-1$ D. 0 and 1

50.




In the diagram, $\overline{MP}$ is a diameter of the circle, $MQ$ is a straight line, $\angle NMP = 42^\circ$ $\angle NQP = x$ and $\overline{NQ}$ is a tangent to the circle at $N$. Calculate the value of $x$.

A. $84^\circ$ B. $48^\circ$ C. $42^\circ$ D. $6^\circ$