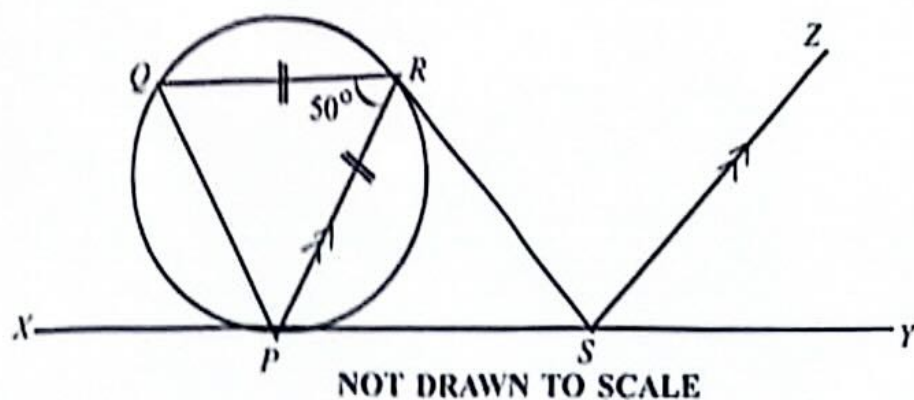


Answer all the questions in this section. All questions carry equal marks.

1. The sum of the fifth and eighth terms of an Arithmetic Progression (A.P) is $28\frac{1}{3}$. If the third term is subtracted from twice the seventh term, the result is $25\frac{4}{5}$. Find the:
- common difference;
 - first term;
 - sum of the first eight terms, of the A. P.
2. If the number 5 is added to both the numerator and denominator of a certain fraction, the result is $\frac{2}{3}$. When the number 3 is subtracted from both numerator and denominator of the fraction, the result is $\frac{3}{5}$. Find the fraction.
3. The radius and height of a cylinder are 7 cm and 14 cm respectively. Calculate the:
- curved surface area of the cylinder;
 - total surface area of the cylinder, if it is closed at both ends.
 - volume of the cylinder.
[Take $\pi = \frac{22}{7}$]
4. A point M is 3.2 km from another point Q on a bearing of 060° and R is 2.4 km on a bearing of 150° from Q .
- Illustrate the information in a diagram.
 - Find the:
 - distance \overline{MR} ;
 - bearing of M from R .

5.



In the diagram, \overline{XY} is a tangent to the circle PQR at P . $|\overline{QR}| = |\overline{PR}|$, $\overline{PR} \perp \overline{SZ}$, $\angle PRQ = 50^\circ$ and \overline{SZ} bisects $\angle RSY$. Find:

- $\angle RPS$;
- $\angle PSR$;
- $\angle PRS$.



Answer five questions only from this section. All questions carry equal marks.


6. (a) A businesswoman bought a printing machine for \$8,000.00 and later sold it at a loss of 15 %. She spent \$3,500.00 of the amount received from the sale and invested the rest at 7 % per annum compound interest. Calculate the interest earned after 4 years.
- (b) The minute hand of a clock is 7.2 cm. Calculate, correct to five significant figures, the area swept by the minute hand from 17:35 hrs to 18:20 hrs.
[Take $\pi = \frac{22}{7}$]

7.

Scores	1	2	3	4	5	6
No of Pupils	$x + 1$	$2x + 1$	$3x + 2$	$4x + 3$	$5x + 4$	$6x + 5$

The table shows the distribution of test scores of pupils in a class. If the mean score is $4\frac{21}{58}$, find the:

- (a) value of x ;
- (b) total number of pupils in the class,
- (c) median score,
- (d) probability that a pupil chosen at random scored **more than 3**.
8. (a) Two consecutive **even** numbers are such that **one-third** of the smaller exceeds **one-fourth** of the larger by 7. Find the numbers.
- (b) A solid cylinder and a sphere have same radius r cm. The total surface area of the cylinder is **thrice** as large as the surface area of the sphere. Find the ratio of the volume of the cylinder to the volume of the sphere.

9. (a) Find the equation of the line that passes through the point $P(-5, -4)$ and perpendicular to $2x - 3y = 5$.
- (b) An observer on top of a building 300 m high observes that angles of depression of two birds on the horizontal ground are 55° and 78° respectively.
- Illustrate the information in a diagram.
 - Calculate, correct to two decimal places, the distance between the two birds.
10. (a) The mean score of 40 pupils in a class test is 32.5. If there are 22 boys in the class and their mean score in the test is 33.4, find the mean score of the girls.
- (b) Given that $m = 1\frac{6}{7}$ and $n = 2\frac{11}{28}$, find the number x , which is exactly half way between m and n .
11. (a) A motorist travels from town M to town P at an average speed of 72 km/hr. On the return journey, the average speed was 90 km/hr. If the motorist used 12 hours for the total journey (stop over **not** included), how far is M from P ?
- (b) Given that $\log_8 \left(\frac{18 - x^2}{2x + 3} \right) = \frac{1}{3}$ find the values of x .
12. (a) In a triangle ABC , $|AB| = 15$ cm, $|BC| = 18$ cm and $|AC| = 5$ cm. D and E are points on AB and AC respectively such that $|AD| = 9$ cm and $|DE| \parallel |BC|$.
- Illustrate the information in a diagram.
 - Find:
 - $|DE|$;
 - $|EC|$.
- 
- (b) The sum of two numbers is 27 and their product is 182. Find the numbers.
13. (a) The roots of the equation $ax^2 + bx + c = 0$ are $-\frac{1}{2}$ and $-\frac{3}{2}$. Find the values of a , b and c .
- (b) The interior angles of a polygon are: $(2t + 1)^\circ$, $(3t - 2)^\circ$, $(4t)^\circ$, $(5t - 2)^\circ$, $(2t - 1)^\circ$ and $(3t + 2)^\circ$. Find the:
- value of t ;
 - difference between the largest and smallest angle.

END OF PAPER