

ICSE Class IX Mathematics - DPP

Topics: Logarithm • Factorisation • Linear Equations • Mensuration • Trigonometry

Name: _____ Class/Sec: _____ Date: _____ Marks: ____ / 46

Instructions: Attempt **all** questions in your notebook. Show all working clearly. Marks are given in brackets. Mathematical tables are provided.**SECTION 1 - LOGARITHM****Q.1** Solve for a and b: [3]

$$\frac{\log(a-b)}{\log 5} = \frac{\log 4}{\log \frac{1}{2}} = \frac{\log(a+b)}{\log 2}$$

SECTION 2 - FACTORISATION**Q.2** Factorise: [3]

$$20 - 45(m+n)^2$$

Q.3 Factorise: [3]

$$(e-y)^3 + (y-g)^3 + (g-e)^3$$

Q.4 Factorise: $x^3 + y^3 + z^3 - 3xyz$ [3]**SECTION 3 - LINEAR EQUATIONS****Q.5** Solve: [3]

$$3x - 7 = \frac{1}{y}, \quad x + \frac{1}{y} = 1$$

Q.6 If the numerator of a fraction is increased by 2 and the denominator by 1, it becomes $\frac{5}{8}$ and if the numerator and denominator of the same fraction are each increased by 1, the fraction becomes $\frac{1}{2}$. Find the fraction. [4]**Q.7** Using a scale of 1 cm = 1 unit on both axes, draw the graphs of the following equation: [4]

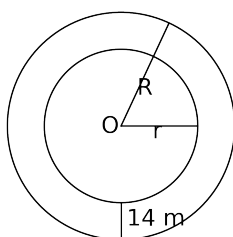
$$4x - y = 13, \quad 5x + y = 14$$

From the graph find,

- The co-ordinates of the point where two lines intersect
- The area of the triangle between the lines and the x-axis.

SECTION 4 - MENSURATION

- Q.8** How many bricks having dimensions $20 \text{ cm} \times 5 \text{ cm} \times 5 \text{ cm}$ are required to make a wall 2.5 m long, 0.5 m broad and 5 m in height? **[3]**
- Q.9** The perimeter of a square is $4(p + 3q)$. Find its area. **[3]**
- Q.10** A road, 14 m wide surrounds a circular ground whose circumference is 704 m . Find the surface area of the road. Also, find the cost of paving the road at Rs. 100 per m^2 . **[4]**

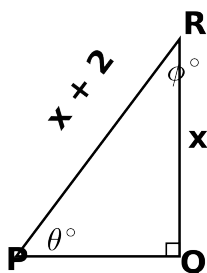


- Q.11** A rope is wound round the outside of a circular drum whose diameter is 70 cm and a bucket is tied to the other end of the rope. Find the number of revolutions made by the drum, if the bucket is raised by 11 m . **[3]**

SECTION 5 - TRIGONOMETRY

- Q.12** Without using tables evaluate: **[3]**

$$\frac{5\sin 62^\circ}{\cos 28^\circ} - \frac{2\sec 34^\circ}{\operatorname{cosec} 56^\circ}$$
- Q.13** If $\sin \theta = \frac{5}{13}$ where $\theta < 90^\circ$, find the value of $\tan \theta + \frac{1}{\cos \theta}$ **[4]**
- Q.14** In the figure of ΔPQR , $\angle P = \theta^\circ$ and $\angle R = \phi^\circ$ **[3]**



- Find (i) $(\sqrt{x+1})\cot \phi$
 (ii) $(\sqrt{x^3+x^2})\tan \theta$
 (iii) $\cos \theta$