Reliable

SAMPLE QUESTION PAPER

(with Marking Scheme)

Mathematics

(Standard)

As per Latest CBSE Sample Paper for 2021-22 with Marking Scheme released on 14.01.2022 (CBSE Circular No. Acad-07/2022)

2 Papers

10

Units/No. of Questions	2 Marks	3 Marks	4 Marks	4 Marks (Case-Study)	Total Marks
I. Algebra (Chapter – 4 & 5)	03+02 OR			01	10
II. Geometry (Chapter – 10 & 11)	01	01	01+01 OR		09
III. Trigonometry (Chapter – 9)		01+01 OR		01	07
IV. Mensuration (Chapter–13)	01		01		06
V. Statistics & Probability (Chapter – 14)	01	02			08
Total	06	04	02	02	40

Reliable

SAMPLE QUESTION PAPER

(with Marking Scheme)

Mathematics

(Standard)

As per Latest CBSE Sample Paper for 2021-22 with Marking Scheme released on 14.01.2022 (CBSE Circular No. Acad-07/2022)

2 Papers

10

Units/No. of Questions	2 Marks	3 Marks	4 Marks	4 Marks (Case-Study)	Total Marks
I. Algebra (Chapter – 4 & 5)	03+02 OR			01	10
II. Geometry (Chapter – 10 & 11)	01	01	01+01 OR		09
III. Trigonometry (Chapter – 9)		01+01 OR		01	07
IV. Mensuration (Chapter–13)	01		01		06
V. Statistics & Probability (Chapter – 14)	01	02			08
Total	06	04	02	02	40

CONTENTS

These two papers are **FREE** with *Reliable* Question Bank, Term-II.

These papers can be downloaded from www.reliablebooks.in
or
from Reliable Class-X Learning APP.

CBSE SAMPLE QUESTION PAPER 1

(*with Marking Scheme*)

MATHEMATICS (Standard) (TERM-II)

Time allowed : 2 Hours **CLASS–X** *Maximum Marks* : 40

General Instructions :

1. The question paper consists of 14 questions divided into 3 sections A, B, C.
2. All questions are compulsory.
3. Section – A comprises of 6 questions of 2 marks each. Internal choice has been provided in two questions.
4. Section – B comprises of 4 questions of 3 marks each. Internal choice has been provided in one question.
5. Section – C comprises of 4 questions of 4 marks each. An internal choice has been provided in one question. It contains two case study based questions.

SECTION – A

1. Find the value of a_{25} - a_{15} for the AP: 6, 9, 12, 15, ... (2)

Sol. $a = 6, d = 3$; $a_{25} = 6 + 24(3) = 78$ 1

$a_{15} = 6 + 14(3) = 48$; $a_{25} - a_{15} = 78 - 48 = 30$ 1

OR

If 7 times the seventh term of the AP is equal to 5 times the fifth term, then find the value of its 12th term.

Sol. $7(a + 6d) = 5(a + 4d)$ 1

$\Rightarrow \quad 2a + 22d = 0 \quad \Rightarrow \quad a + 11d = 0 \quad \Rightarrow \quad t_{12} = 0$ 1

2. Find the value of m so that the quadratic equation $mx(5x - 6) = 0$ has two equal roots. (2)

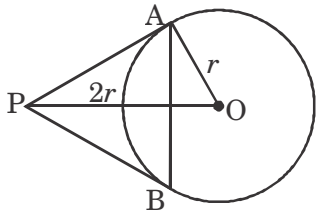
Sol. $5mx^2 - 6mx + 9 = 0$

$b^2 - 4ac = 0 \quad \Rightarrow \quad (-6m)^2 - 4(5m)(9) = 0$ 1

$\Rightarrow \quad 36m(m - 5) = 0$

$\Rightarrow \quad m = 0, 5$; rejecting $m = 0$, we get $m = 5$ 1

3. From a point P, two tangents PA and PB are drawn to a circle C(0, r). If OP = 2r, then find $\angle$APB. What type of triangle is APB ? (2)



Sol. let $\angle APB = \theta$

$$\text{Sin}\theta = \frac{OA}{OP} = \frac{1}{2} \quad \Rightarrow \quad \theta = 30° \qquad 1/2$$

$\Rightarrow \quad \angle APB = 2\theta = 60°$ 1/2

Also $\angle PAB = \angle PBA = 60°$ ($\because$ PA = PB) 1/2

$\Rightarrow \Delta APB$ is equilateral 1/2

4. The curved surface area of a right circular cone is 12320 cm^2. If the radius of its base is 56 cm, then find its height. (2)

Sol. CSA (cone) = $\pi rl = 12320$ 1/2

$$\frac{22}{7} \times 56 \times l = 12320 \quad \Rightarrow \quad l = 70 \text{ cm} \qquad 1$$

$$h = \sqrt{70^2 - 56^2} = 42 \text{ cm} \qquad 1/2$$

5. Mrs. Garg recorded the marks obtained by her students in the following table. She calculated the modal marks of the students of the class as 45. While printing the data, a blank was left. Find the missing frequency in the table given below : (2)

Marks Obtained	**0 – 20**	**20 – 40**	**40 – 60**	**60 – 80**	**80 – 100**
Number of Students	**5**	**10**	**—**	**6**	**3**

Sol. Modal class is 40 – 60, $l = 40$, $h = 20$, $f_1 = ?$, $f_0 = 10$, $f_2 = 6$ 1/2

$$45 = 40 + 20 \times \left[\frac{f_1 - 10}{2f_1 - 10 - 6}\right]$$ 1/2

$$\Rightarrow \quad \frac{1}{4} = \frac{f_1 - 10}{2f_1 - 16}$$

$$\Rightarrow \quad 2f_1 - 16 = 4f_1 - 40 \quad \Rightarrow \quad f_1 = 12$$ 1

6. If Ritu were younger by 5 years than what she really is, then the square of her age would have been 11 more than five times her present age. What is her present age? (2)

Sol. Let the present age of Ritu be x years

$$(x - 5)^2 = 5x + 11$$ 1

$$x^2 - 15x + 14 = 0$$½

$$(x - 14)(x - 1) = 0 \quad \Rightarrow \quad x = 1 \quad \text{or} \quad 15$$ 1/2

$x = 14$ years (rejecting $x = 1$ as in that case Ritu's age 5 years ago will be –ve) 1/2

OR

Solve for x : $9x^2 - 6px + (p^2 - q^2) = 0$

Sol. $9x^2 - 6px + (p^2 - q^2) = 0$

$a = 9$, $b = -6p$, $c = p^2 - q^2$ 1/2

$D = b^2 - 4ac = (-6p)^2 - 4(9)(p^2 - q^2) = 36q^2$ 1/2

$$x = \frac{-b \pm \sqrt{D}}{2a} = \frac{6p \pm 6q}{18} = \frac{p+q}{3} \quad \text{or} \quad \frac{p-q}{3}$$ 1

SECTION – B

7. Following is the distribution of the long jump competition in which 250 students participated. Find the median distance jumped by the students. Interpret the median (3)

Distance (in m)	**0 – 1**	**1 – 2**	**2 – 3**	**3 – 4**	**4 – 5**
Number of Students	**40**	**80**	**62**	**38**	**30**

Sol.

Distance (in m)	0 – 1	1 – 2	2 – 3	3 – 4	4 – 5
Number of Students	40	80	62	38	30
cf	40	120	182	220	250

1

$$\frac{n}{2} = \frac{250}{2} = 125 \quad \Rightarrow \quad \text{median class is } 2 - 3,\ l = 2,\ h = 1,\ cf = 120,\ f = 62$$

$$\text{median} = l + \frac{\frac{n}{2} - cf}{f} \times i$$ 1/2

$$= 2 + \frac{5}{62}$$

$$= \frac{129}{62} + 2\frac{5}{62}\text{ m} \quad \text{or} \quad 2.08\text{m}$$ 1

50% of students jumped below $2\frac{5}{62}$ m and 50% above it. 1/2

8. Construct a pair of tangents to a circle of radius 4 cm, which are inclined to each other at an angle of 60°. (3)

Sol. Draw a circle of radius 4 cm 1

Draw OA and construct ∠AOB = 120° 1

Draw ∠OAP = ∠OBP = 90°

PA and PB are required tangents 1

9. The distribution given below shows the runs scored by batsmen in one-day cricket matches. Find the mean number of runs. (3)

Runs scored	**0 – 40**	**40 – 80**	**80 – 120**	**120 – 160**	**160 – 200**
Number of batsmen	**12**	**20**	**35**	**30**	**23**

Sol.

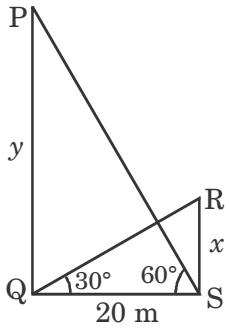
Runs scored	0 – 40	40 – 80	80 – 120	120 – 160	160 – 200	Total
Number of batsmen (f_i)	12	20	35	30	23	120
x_i	20	60	100	140	180	
$f_i x_i$	240	1200	3500	4200	4140	13280

1½

Mean $(\bar{x}) = \frac{\sum f_i x_i}{\sum f_i} = \frac{13280}{120}$ = 110.67 runs 1½

10. Two vertical poles of different heights are standing 20 m away from each other on the level ground. The angle of elevation of the top of the first pole from the foot of the second pole is 60° and angle of elevation of the top of the second pole from the foot of the first pole is 30°. Find the difference between the heights of two poles. (Take $\sqrt{3}$ = 1.73) (3)

Sol.



1

In ΔPQS, $\tan 60° = \frac{y}{20} \Rightarrow y = 20\sqrt{3}$ m 1/2

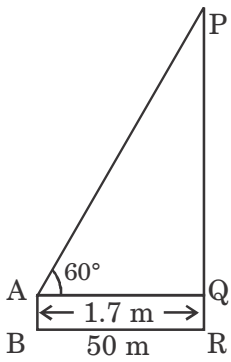
In ΔRSQ, $\tan 30° = \frac{x}{20} \Rightarrow x = \frac{20}{\sqrt{3}}$ m 1/2

$y - x = 20\sqrt{3} - \frac{20}{\sqrt{3}} = \frac{40}{\sqrt{3}} = \frac{40\sqrt{3}}{3}$ = 23.06 m 1

OR

A boy 1.7 m tall is standing on a horizontal ground, 50 m away from a building. The angle of elevation of the top of the building from his eye is 60°. Calculate the height of the building. (Take $\sqrt{3}$ = 1.73)

Sol.



1

Let PR be the building and AB be the boy

In ΔPQR, $\tan 60° = \frac{PQ}{50} \Rightarrow PQ = 50\sqrt{3}$ m 1

Height of the building = PR = $(50\sqrt{3} + 1.7)$ m = 88.2 m 1

SECTION – C

11. The internal and external radii of a spherical shell are 3 cm and 5 cm respectively. It is melted and recast into a solid cylinder of diameter 14 cm, find the height of the cylinder. Also find the total surface area of the cylinder. (Take $\pi = \frac{22}{7}$) **(4)**

Sol. Volume of shell = Volume of cylinder

$$\Rightarrow \quad \frac{4\pi}{3}[5^3 - 3^3] = \pi(7)^2 h \qquad 1\frac{1}{2}$$

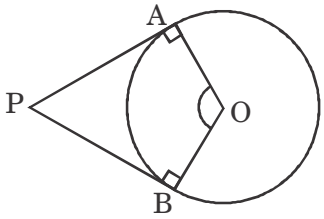
$$\Rightarrow \quad h = \frac{8}{3} = 2\frac{2}{3} \text{ cm} \qquad 1$$

TSA of cylinder is

$$2\pi r(r + h) = 2 \times \frac{22}{7} \times 7 \times \left(7 + \frac{8}{3}\right) = 44 \times \frac{29}{3} = \frac{1276}{3} \text{ cm}^2 \quad \text{or} \quad 425.33 \text{ cm}^2 \qquad 1\frac{1}{2}$$

12. Prove that the angle between the two tangents drawn from an external point to a circle is supplementary to the angle subtended by the line segment joining the points of contact to the centre. **(4)**

Sol.



1

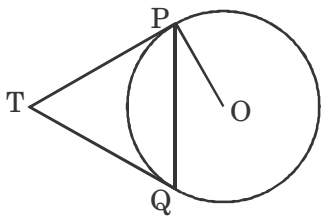
$\angle OAP + \angle OBP + \angle APB + \angle AOB = 360°$ 1½

$\Rightarrow \quad 90° + 90° + \angle APB + \angle AOB = 360°$ ($\because$ Tangent $\perp$ radius)

$\Rightarrow \quad \angle APB + \angle AOB = 180°$ 1½

OR

Two tangents TP and TQ are drawn to a circle with centre O from an external point T. Prove that $\angle PTQ = 2\angle OPQ$.



Sol. Let $\angle PTQ = \theta$

TPQ is an isosceles triangle.

$$\angle TPQ = \angle TQP = \frac{1}{2}(180° - \theta) = 90° - \frac{\theta}{2} \qquad 1\frac{1}{2}$$

$$\angle OPT = 90°$$

$$\angle OPQ = \angle OPT - \angle TPQ = 90° - \left(90° - \frac{\theta}{2}\right) = \frac{\theta}{2} \qquad 1\frac{1}{2}$$

$$\angle OPQ = \frac{1}{2}\angle PTQ$$

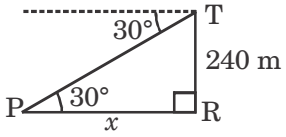
$$2\angle OPQ = \angle PTQ \qquad 1$$

13. Case Study-1 : Trigonometry in the form of triangulation forms the basis of navigation, whether it is by land, sea or air. GPS a radio navigation system helps to locate our position on earth with the help of satellites. A guard, stationed at the top of a 240 m tower, observed an unidentified boat coming towards it. A clinometer or inclinometer is an instrument used for measuring angles or slopes(tilt). The guard used the clinometer to measure the angle of depression of the boat coming towards the lighthouse and found it to be 30°.

(*Lighthouse of Mumbai Harbour.*
Picture credits : Times of India Travel)

(i) **Make a labelled figure on the basis of the given information and calculate the distance of the boat from the foot of the observation tower.** **(2)**

Sol.



1

In ΔPTR, $\tan 30° = \frac{240}{x} \Rightarrow x = 240\sqrt{3}$ m 1

(ii) **After 10 minutes, the guard observed that the boat was approaching the tower and its distance from tower is reduced by $240(\sqrt{3}-1)$ m. He immediately raised the alarm. What was the new angle of depression of the boat from the top of the observation tower ?** **(2)**

Sol. Distance of boat from tower = $240\sqrt{3} - 240(\sqrt{3}-1) = 240$ m 1

Let the angle of depression = θ

$\tan\theta = \frac{240}{240} = 1 \Rightarrow \theta = 45°$ 1

14. Case Study-2 : Push-ups are a fast and effective exercise for building strength. These are helpful in almost all sports including athletics. While the push-up primarily targets the muscles of the chest, arms, and shoulders, support required from other muscles helps in toning up the whole body.

Nitesh wants to participate in the push-up challenge. He can currently make 3000 push-ups in one hour. But he wants to achieve a target of 3900 push-ups in 1 hour for which he practices regularly. With each day of practice, he is able to make 5 more push-ups in one hour as compared to the previous day. If on first day of practice he makes 3000 push-ups and continues to practice regularly till his target is achieved. Keeping the above situation in mind answer the following questions :

(i) **Form an A.P representing the number of push-ups per day and hence find the minimum number of days he needs to practice before the day his goal is accomplished?** **(2)**

Sol. 3000, 3005, 3010, ..., 3900 1

$a_n = a + (n-1)d$

$3900 = 3000 + (n-1)5$

$\Rightarrow \quad 900 = 5n - 5 \Rightarrow 5n = 905 \Rightarrow n = 181$ 1

Minimum number of days of practice = $n - 1 = 180$ days

(ii) **Find the total number of push-ups performed by Nitesh up to the day his goal is achieved.** **(2)**

Sol. $S_n = \frac{n}{2}(a+1)$ 1

$= \frac{181}{2} \times (3000 + 3900) = 624450$ pushups 1

Reliable SAMPLE QUESTION PAPER 2

MATHEMATICS (Standard) (TERM-II)

Time allowed : 2 Hours **CLASS–X** *Maximum Marks* : 40

General Instructions :

1. The question paper consists of 14 questions divided into 3 sections A, B, C.
2. All questions are compulsory.
3. Section – A comprises of 6 questions of 2 marks each. Internal choice has been provided in two questions.
4. Section – B comprises of 4 questions of 3 marks each. Internal choice has been provided in one question.
5. Section – C comprises of 4 questions of 4 marks each. An internal choice has been provided in one question. It contains two case study based questions.

SECTION – A

1. Find the roots of the quadratic equation $3x^2 - 14x + 8 = 0$. **(2)**

Or

Find the roots of the equation $6x^2 - \sqrt{2}x - 2 = 0$. **(2)**

2. Find the 12th term of the A.P. $\sqrt{2}, 3\sqrt{2}, 5\sqrt{2}, ...$ **(2)**

3. Prove that the tangents drawn at the ends-points of a diamter of a circle are parallel. **(2)**

4. The total surface area of a right circular cone is $90\ \pi\ cm^2$. If the radius of base of the cone is 5 cm, find the height of the cone. **(2)**

5. Find the mean of the following frequency distribution : **(2)**

Class interval	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
Frequency	8	12	10	11	9

6. Determine the 2nd term of an A.P. whose 6th term is 12 and 8th term is 22. **(2)**

Or

8th term of an A.P. is 37 and its 12th term is 57. Find the A.P.

SECTION – B

7. The mean of the following frequency distribution is 50. Find the value of p. **(3)**

Class interval	0 – 20	20 – 40	40 – 60	60 – 80	80 – 100
Frequency	17	28	32	p	19

8. Find the mode of the following frequency distribution : **(3)**

Class interval	5 – 15	15 – 25	25 – 35	35 – 45	45 – 55	55 – 65	65 – 75
Frequency	2	3	5	7	4	2	2

9. Construct a pair of tangents to a circle of radius 4 cm inclined at an angle of 45°. **(3)**

10. A ladder 15 m long just reaches the top of a vertical wall. If the ladder makes an angle of 60° with the wall, find the height of the wall. **(3)**

Or

A tower stands vertically on the ground. From a point on the ground which is 60 m away from the foot of the tower, the angle of elevation of the top of the tower is found to be 60°. Find the height of the tower.

SECTION – C

11. A circus tent is in the form of a right circular cylinder and right circular cone above it. The diameter and height of the cylindrical part of the tent are 126 m and 5 m respectively. The total height of the tent is 21 m. Find the total cost of tent, if the canvas used costs ₹ 12 per m^2. **(4)**

12. Two tangents TP and TQ are drawn to a circle with centre O from an external point T. Prove that $\angle PTQ = 2\angle OPQ$. **(4)**

Or

Prove that the tangents to a circle from an external point are equal.

13. **Case Study-1**

A passenger, while boarding a plane, slipped from the stairs and got hurt. The pilot took the passenger to the emergency clinic at the airport for treatment. Due to this, the plane got delayed by half an hour. To reach the destination 1500 km away in time, so that the passengers could catch the connecting flight, the speed of the plane was increased by 250 km/h than its usual speed. **(4)**

(*a*) Taking *x* km/h as the usual speed of the plane, obtain a quadratic equation for this information.

(*b*) Find the modified speed of the plane.

14. **Case Study-2**

In a village, a complaint was made for an electric fault in the area. An electrician Sunita reached their to repair the fault, which was on a pole AB of height 5 m. She needs to reach a point on the pole 1.3 m below the top of the pole to undertake the repair work. She used a ladder CD inclined at an angle of θ from the horizon to reach the required point C such that $\cos\theta = 0.5$. **(4)**

(*a*) Make a labelled figure on the basis of the given information and find the length of the required ladder.

(*b*) What should be the distance between the foot of the pole and the foot of the ladder ?

Answers

1. $3x^2 - 14x + 8 = 0$ ½

$3x^2 - 12x - 2x + 8 = 0$

$3x(x - 4) - 2(x - 4) = 0$ ½

$(3x - 2)(x - 4) = 0$ ½

$x = \frac{2}{3}, x = 4$ ½

Or

$D = b^2 - 4ac$

$= (-\sqrt{2})^2 - 4 \times 6 \times (-2)$

$= 2 + 48 = 50$ **1**

$x = \frac{\sqrt{2} + 5\sqrt{2}}{12}, \quad \frac{\sqrt{2} - 5\sqrt{2}}{12}$

$= \frac{6\sqrt{2}}{12} = \frac{\sqrt{2}}{2}, \quad \frac{-4\sqrt{2}}{12} = -\frac{\sqrt{2}}{3}$ **1**

2. $a = \sqrt{2}$

$d = 3\sqrt{2} - \sqrt{2} = 2\sqrt{2}$

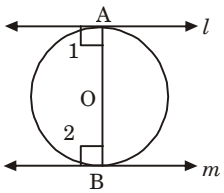
$a_{12} = a + 11d = (\sqrt{2} + 11)2\sqrt{2}$ ½

$= \sqrt{2} + 22\sqrt{2}$

$= 23\sqrt{2}$ **1**

$\therefore$ 12th term $= 23\sqrt{2}$ ½

3.



½

$\angle 1 + \angle 2 = 180°$ [A radius is $\perp$ to the tangent at point of contact] **1**

$\therefore$ $l \parallel m$ ½

4. $90\pi = \pi rl + \pi r^2 = \pi \times 5(l + 5)$ **1½**

$\Rightarrow$ $l + 5 = 18 \Rightarrow l = 13$ cm

$l^2 = r^2 + h^2 \Rightarrow 169 = 5^2 + h^2$ ½

$\Rightarrow$ $h = 12$ cm

5.

Class interval	x_i	f_i	$x_i f_i$
0 – 10	5	8	40
10 – 20	15	12	180
20 – 30	25	10	250
30 – 40	35	11	385
40 – 50	45	9	405
Total		50	1260

1

Mean $\bar{x} = \frac{\Sigma f_i x_i}{\Sigma f_i} = \frac{1260}{50} = 25.2$ **1**

6. $a + 5d = 12$

$a + 7d = 22 \Rightarrow a = -13$ d = 5 **1**

$a_2 = -13 + 5 = -8$ **1**

Or

$a + 7d = 37$ and $a + 11d = 57$ **½**

$\Rightarrow \quad 4d = 20 \Rightarrow d = 5$ **1**

$\therefore \quad a + 35 = 37 \Rightarrow a = 2$

$\therefore$ A.P. is 2, 7, 12, ... **½**

7.

Class interval	x_i	f_i	$x_i f_i$
0 – 20	10	17	170
20 – 40	30	28	840
40 – 60	50	32	1600
60 – 80	70	p	$70p$
80 – 100	90	19	1710
Total		$96 + p$	$4320 + 70p$

1

$$\bar{x} = \frac{\Sigma f_i x_i}{\Sigma f_i}$$

$$50 = \frac{4320 + 70p}{96 + p}$$ **1**

$4320 + 70p = 50p + 4800 \quad \Rightarrow \quad 20p = 480$

$p = 24$ **1**

8. Modal class : 35 – 45.

$f_m = 7, f_{m-1} = 5, f_{m+1} = 4, l = 35, h = 10$

$$\text{Mode} = l + \left(\frac{f_m - f_{m-1}}{2f_m - f_{m-1} - f_{m+1}}\right) \times h$$ **1**

$$= 35 + \left(\frac{7-5}{14-5-4}\right) \times 10$$ **1**

$$= 35 + \frac{2 \times 10}{5} = 35 + 4 = 39$$ **1**

Mode = 39

9. Angle between tangents = 45°

$\therefore$ Angle between radii at points of contact = 180° – 45° = 135° **½**

Correct construction **2½**

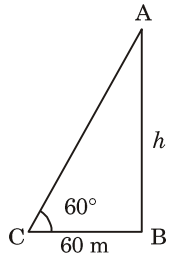
10. Let AB be the ladder

$$\frac{h}{15} = \sin 30°$$ **½**

or $h = \frac{15}{2} = 7.5$ m **1½**

Or

Let h be the height of the tower in ΔABC **½**



$$\frac{h}{60} = \tan 60$$ **½**

$h = 60.\sqrt{3}$ **½**

$\therefore$ The height of the tower is $60\sqrt{3}$ m. **½**

11. $r = 63$ m $h = 5$ m **1**

H = 16 m

Total C SA $\pi rl + 2\pi rh$

$$l = \sqrt{r^2 + H^2} = \sqrt{(63)^2 + (16)^2} = 65 \text{ m}$$

$$= \pi r (l + 2h)$$

$$= \frac{22}{\cancel{7}} \times \overset{9}{\cancel{63}} (65 + 10) \quad \textbf{2}$$

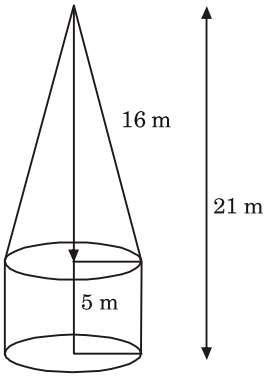
$$= 22 \times 9 \times 75 \text{ m}^2 \quad \textbf{1}$$

Cost of l m^2 = ₹ 12

$$= 22 \times 9 \times 75 \text{ m}^2$$

$$= ₹\ 12 \times 22 \times 9 \times 75$$

$$= ₹\ 178200$$



12. We know that

$$\angle PTQ = 180° - \angle POQ \quad \textbf{1}$$

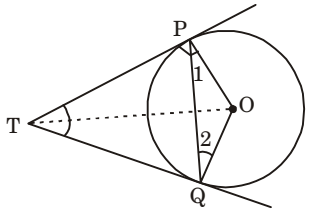
$$= \angle 1 + \angle 2 \quad \textbf{1}$$

$$= 2\angle 1 \ (\because \angle 1 = \angle 2 \text{ as OP = OQ}) \quad \textbf{1}$$

$$= 2\angle OPQ \quad \textbf{1}$$

Or

Figure, given to prove and construction **2**



Correct proof **2**

13. (a) Let the usual speed of the plane be x km/h.

As per given condition,

$$\frac{1500}{x} - \frac{1500}{x + 250} = \frac{1}{2} \quad \textbf{1}$$

$$\Rightarrow \quad \frac{1500\,(x + 250) - 1500x}{x\,(x + 250)} = \frac{1}{2}$$

$$\Rightarrow \quad x^2 + 250x - 75000 = 0 \quad \textbf{1}$$

(b) $x^2 + 250x - 75000 = 0$

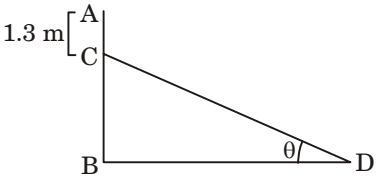
$$\Rightarrow \quad x^2 + 1000x - 750x - 75000 = 0 \quad \textbf{1}$$

$$\Rightarrow \quad (x - 750)\,(x + 1000) = 0 \ \Rightarrow \ x = 750, \text{ rejecting } x = -1000.$$

So, modified speed = 750 + 250 = 1000 km/h. **1**

14. (a) BC = 5 – 1.3 = 3.7 m

Let length of ladder CD be x m.



So, $\sin\theta = \frac{BC}{x}$ **1**

$$\Rightarrow \quad x = \frac{3.7}{\sin\theta} \quad ...(1)$$

Now, $\cos\theta = 0.5 \ \Rightarrow \ \theta = 60°$

So, $x = \frac{3.7 \times 2}{\sqrt{3}} = \frac{7.4\sqrt{3}}{3}$ m **1**

(b) $\frac{BD}{BC} = \cot\theta$ **1**

$$\Rightarrow \quad \frac{BD}{3.7} = \cot 60° \ \Rightarrow \ \frac{BD}{3.7} = \frac{1}{\sqrt{3}}$$

$$BD = \frac{3.7}{\sqrt{3}} = \frac{3.7\sqrt{3}}{3} \text{ m} \quad \textbf{1}$$

Reliable BOOKS

Presents

FREE LEARNING APP

Let's Learn in Digital India

More than 5000+ Activities

For IX, X & XII Classes

Conceptual Videos

Mind Maps

Practice Test with Analysis

Most Probable Exam. Questions

Latest CBSE Sample Papers

Latest CBSE Syllabi

Important CBSE Notifications

NCERT Textbooks

Other Support Materials

SCAN TO DOWNLOAD OUR APP

For Class IX

bit.ly/RELIABLE9

For Class X

bit.ly/RELIABLE10

For Class XII

NOTE: For more details like latest news, new launch, CBSE updates, Student's problems, want to get your query etc. copy paste following link in your web browser and like us
http://www.facebook.com/pages/Reliable-books/371807602877870

Reliable Enterprises

www.reliablebooks.in | 9911103103, 7827478274