



CBSE Class 10 Mathematics (Standard)

700 Practice Questions

700 questions · 14 chapters · Board Exam 2027 practice · Prepared by GuruGyan Consulting

- Marks for each question are shown in the right margin, e.g. **[3]**, as in the board paper.
- Take $\pi = 22/7$ unless stated otherwise, and $\sqrt{3} \approx 1.732$. Draw a neat figure wherever required.
- Write every step: CBSE awards step marks. Then check your work against the chapter answer sheet.
- Finished a chapter? Comment the chapter name and your score on our YouTube video to get the answer sheet.

#	Chapter	Questions	Marks
1	Real Numbers	1.1 – 1.50	132
2	Polynomials	2.1 – 2.50	130
3	Pair of Linear Equations in Two Variables	3.1 – 3.50	140
4	Quadratic Equations	4.1 – 4.50	166
5	Arithmetic Progressions	5.1 – 5.50	140
6	Triangles	6.1 – 6.50	125
7	Coordinate Geometry	7.1 – 7.50	124
8	Introduction to Trigonometry	8.1 – 8.50	123
9	Some Applications of Trigonometry	9.1 – 9.50	141
10	Circles	10.1 – 10.50	119
11	Areas Related to Circles	11.1 – 11.50	121
12	Surface Areas and Volumes	12.1 – 12.50	190
13	Statistics	13.1 – 13.50	160
14	Probability	14.1 – 14.50	100

These are original practice questions modelled on the question types in recent CBSE board papers and the 2026-27 sample paper. They are not an official CBSE paper and do not predict the exact questions in the board exam.

Chapter 1: Real Numbers

50 questions · 132 marks · arranged from 2-mark to 5-mark questions

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|--|------------|
| 1.1 Find the greatest number which divides 97 and 137 leaving remainders 19 and 7 respectively. | [2] |
| 1.2 Check whether 25^n can end with the digit 0 for any natural number n . Justify your answer. | [2] |
| 1.3 Find the greatest number which divides 201 and 189 leaving remainders 3 and 9 respectively. | [2] |
| 1.4 Check whether 35^n can end with the digit 0 for any natural number n . Justify your answer. | [2] |
| 1.5 Find the greatest number which divides 432 and 191 leaving remainders 26 and 17 respectively. | [2] |
| 1.6 Check whether 45^n can end with the digit 0 for any natural number n . Justify your answer. | [2] |
| 1.7 Find the greatest number which divides 306 and 540 leaving remainders 30 and 34 respectively. | [2] |
| 1.8 Check whether 14^n can end with the digit 0 for any natural number n . Justify your answer. | [2] |
| 1.9 Find the greatest number which divides 110 and 56 leaving remainders 2 and 8 respectively. | [2] |
| 1.10 Check whether 6^n can end with the digit 0 for any natural number n . Justify your answer. | [2] |
| 1.11 Find the greatest number which divides 502 and 333 leaving remainders 34 and 9 respectively. | [2] |
| 1.12 Find the greatest number which divides 306 and 366 leaving remainders 9 and 15 respectively. | [2] |
| 1.13 Find the greatest number which divides 140 and 179 leaving remainders 5 and 14 respectively. | [2] |
| 1.14 Check whether 4^n can end with the digit 0 for any natural number n . Justify your answer. | [2] |
| 1.15 Find the greatest number which divides 260 and 506 leaving remainders 4 and 26 respectively. | [2] |
| 1.16 Find the greatest number which divides 295 and 453 leaving remainders 30 and 29 respectively. | [2] |

- 1.17** Check whether 9^n can end with the digit 0 for any natural number n . Justify your answer. **[2]**
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- 1.18** Find the greatest number which divides 186 and 200 leaving remainders 10 and 8 respectively. **[2]**
-
- 1.19** Find the HCF and LCM of 36 and 20 using prime factorisation. Verify that $\text{HCF} \times \text{LCM} = \text{product of the two numbers}$. **[3]**
-
- 1.20** Three bells toll at intervals of 5, 11 and 15 minutes respectively. They toll together at 6:00 a.m. How many more times will they toll together in the next 8 hours? **[3]**
-
- 1.21** Given that $\sqrt{3}$ is irrational, prove that $-5 - 2\sqrt{3}$ is irrational. **[3]**
-
- 1.22** Find the HCF and LCM of 351 and 36 using prime factorisation. Verify that $\text{HCF} \times \text{LCM} = \text{product of the two numbers}$. **[3]**
-
- 1.23** Three bells toll at intervals of 3, 5 and 8 minutes respectively. They toll together at 6:00 a.m. How many more times will they toll together in the next 6 hours? **[3]**
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- 1.24** Given that $\sqrt{5}$ is irrational, prove that $-6 - 7\sqrt{5}$ is irrational. **[3]**
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- 1.25** Find the HCF and LCM of 27 and 75 using prime factorisation. Verify that $\text{HCF} \times \text{LCM} = \text{product of the two numbers}$. **[3]**
-
- 1.26** Three bells toll at intervals of 4, 6 and 8 minutes respectively. They toll together at 9:00 a.m. How many more times will they toll together in the next 9 hours? **[3]**
-
- 1.27** Given that $\sqrt{3}$ is irrational, prove that $-9 + 6\sqrt{3}$ is irrational. **[3]**
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- 1.28** Find the HCF and LCM of 375 and 250 using prime factorisation. Verify that $\text{HCF} \times \text{LCM} = \text{product of the two numbers}$. **[3]**
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- 1.29** Three bells toll at intervals of 3, 9 and 10 minutes respectively. They toll together at 8:00 a.m. How many more times will they toll together in the next 8 hours? **[3]**
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- 1.30** Given that $\sqrt{5}$ is irrational, prove that $-7 + 9\sqrt{5}$ is irrational. **[3]**
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- 1.31** Find the HCF and LCM of 500 and 75 using prime factorisation. Verify that $\text{HCF} \times \text{LCM} = \text{product of the two numbers}$. **[3]**
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- 1.32** Three bells toll at intervals of 4, 5 and 12 minutes respectively. They toll together at 10:00 a.m. How many more times will they toll together in the next 3 hours? **[3]**
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- 1.33** Given that $\sqrt{5}$ is irrational, prove that $-8 - 2\sqrt{5}$ is irrational. **[3]**
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- 1.34** Find the HCF and LCM of 500 and 392 using prime factorisation. Verify that $\text{HCF} \times \text{LCM} = \text{product of the two numbers}$. **[3]**
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- 1.35** Three bells toll at intervals of 4, 5 and 9 minutes respectively. They toll together at 10:00 a.m. How many more times will they toll together in the next 4 hours? **[3]**
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- 1.36** Given that $\sqrt{5}$ is irrational, prove that $-8 + 5\sqrt{5}$ is irrational. **[3]**
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- 1.37** Find the HCF and LCM of 40 and 1625 using prime factorisation. Verify that $\text{HCF} \times \text{LCM} = \text{product of the two numbers}$. **[3]**
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- 1.38** Three bells toll at intervals of 7, 9 and 14 minutes respectively. They toll together at 9:00 a.m. How many more times will they toll together in the next 10 hours? **[3]**
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- 1.39** Given that $\sqrt{2}$ is irrational, prove that $-4 - 7\sqrt{2}$ is irrational. **[3]**
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- 1.40** Find the HCF and LCM of 135 and 88 using prime factorisation. Verify that $\text{HCF} \times \text{LCM} = \text{product of the two numbers}$. **[3]**
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- 1.41** Three bells toll at intervals of 4, 8 and 10 minutes respectively. They toll together at 9:00 a.m. How many more times will they toll together in the next 3 hours? **[3]**
-
- 1.42** Given that $\sqrt{3}$ is irrational, prove that $-1 + 4\sqrt{3}$ is irrational. **[3]**
-
- 1.43** Find the HCF and LCM of 1375 and 243 using prime factorisation. Verify that $\text{HCF} \times \text{LCM} = \text{product of the two numbers}$. **[3]**
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- 1.44** Three bells toll at intervals of 6, 7 and 14 minutes respectively. They toll together at 10:00 a.m. How many more times will they toll together in the next 8 hours? **[3]**
-
- 1.45** Given that $\sqrt{5}$ is irrational, prove that $9 + 4\sqrt{5}$ is irrational. **[3]**
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- 1.46** Find the HCF and LCM of 325 and 55 using prime factorisation. Verify that $\text{HCF} \times \text{LCM} = \text{product of the two numbers}$. **[3]**
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- 1.47** Three bells toll at intervals of 8, 12 and 14 minutes respectively. They toll together at 9:00 a.m. How many more times will they toll together in the next 5 hours? **[3]**
-
- 1.48** Given that $\sqrt{5}$ is irrational, prove that $-9 - 8\sqrt{5}$ is irrational. **[3]**
-
- 1.49** Find the HCF and LCM of 968 and 675 using prime factorisation. Verify that $\text{HCF} \times \text{LCM} = \text{product of the two numbers}$. **[3]**
-
- 1.50** Three bells toll at intervals of 3, 11 and 15 minutes respectively. They toll together at 6:00 a.m. How many more times will they toll together in the next 8 hours? **[3]**
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Chapter 2: Polynomials

50 questions · 130 marks · arranged from 2-mark to 5-mark questions

- 2.1** Find a quadratic polynomial whose sum and product of zeroes are $\frac{3}{2}$ and 6 respectively. **[2]**
- 2.2** If the zeroes of the polynomial $(2k - 6)x^2 + 8x + 6$ are reciprocals of each other, find the value of k . **[2]**
- 2.3** Find a quadratic polynomial whose sum and product of zeroes are -5 and 2 respectively. **[2]**
- 2.4** If the zeroes of the polynomial $(4k - 36)x^2 - 2x + 12$ are reciprocals of each other, find the value of k . **[2]**
- 2.5** Find a quadratic polynomial whose sum and product of zeroes are $-\frac{5}{2}$ and -2 respectively. **[2]**
- 2.6** If the zeroes of the polynomial $(3k - 18)x^2 + 7x + 9$ are reciprocals of each other, find the value of k . **[2]**
- 2.7** Find a quadratic polynomial whose sum and product of zeroes are -3 and 9 respectively. **[2]**
- 2.8** If the zeroes of the polynomial $(4k - 18)x^2 + 6x + 6$ are reciprocals of each other, find the value of k . **[2]**
- 2.9** Find a quadratic polynomial whose sum and product of zeroes are -4 and -2 respectively. **[2]**
- 2.10** If the zeroes of the polynomial $(2k - 3)x^2 + 3x + 3$ are reciprocals of each other, find the value of k . **[2]**
- 2.11** Find a quadratic polynomial whose sum and product of zeroes are -3 and -2 respectively. **[2]**
- 2.12** If the zeroes of the polynomial $(3k - 22)x^2 + 9x + 11$ are reciprocals of each other, find the value of k . **[2]**
- 2.13** Find a quadratic polynomial whose sum and product of zeroes are 6 and -9 respectively. **[2]**
- 2.14** If the zeroes of the polynomial $(4k - 27)x^2 + 2x + 9$ are reciprocals of each other, find the value of k . **[2]**
- 2.15** Find a quadratic polynomial whose sum and product of zeroes are $-\frac{4}{3}$ and 9 respectively. **[2]**
- 2.16** If the zeroes of the polynomial $(4k - 9)x^2 - 2x + 3$ are reciprocals of each other, find the value of k . **[2]**

- 2.17** Find a quadratic polynomial whose sum and product of zeroes are 3 and 4 respectively. **[2]**
- 2.18** If the zeroes of the polynomial $(4k - 33)x^2 - 1x + 11$ are reciprocals of each other, find the value of k . **[2]**
- 2.19** Find a quadratic polynomial whose sum and product of zeroes are 3 and -4 respectively. **[2]**
- 2.20** If the zeroes of the polynomial $(2k - 12)x^2 + 4x + 12$ are reciprocals of each other, find the value of k . **[2]**
- 2.21** Find the zeroes of the polynomial $6x^2 + x - 40$ and verify the relationship between the zeroes and the coefficients. **[3]**
- 2.22** If α and β are the zeroes of the polynomial $3x^2 - 2x + 2$, find the value of $\alpha^2 + \beta^2$. **[3]**
- 2.23** If 5 is a zero of the polynomial $x^2 + kx - 10$, find the value of k and the other zero. **[3]**
- 2.24** Find the zeroes of the polynomial $2x^2 + 3x - 9$ and verify the relationship between the zeroes and the coefficients. **[3]**
- 2.25** If α and β are the zeroes of the polynomial $4x^2 + 8x - 7$, find the value of $(\alpha + 1/\beta)(\beta + 1/\alpha)$. **[3]**
- 2.26** If 1 is a zero of the polynomial $x^2 + kx - 5$, find the value of k and the other zero. **[3]**
- 2.27** Find the zeroes of the polynomial $x^2 + 12x + 27$ and verify the relationship between the zeroes and the coefficients. **[3]**
- 2.28** If α and β are the zeroes of the polynomial $3x^2 - x + 6$, find the value of $(\alpha + 1/\beta)(\beta + 1/\alpha)$. **[3]**
- 2.29** If -3 is a zero of the polynomial $x^2 + kx + 1$, find the value of k and the other zero. **[3]**
- 2.30** Find the zeroes of the polynomial $3x^2 - 5x - 12$ and verify the relationship between the zeroes and the coefficients. **[3]**
- 2.31** If α and β are the zeroes of the polynomial $x^2 + 12x + 2$, find the value of $1/\alpha + 1/\beta$. **[3]**
- 2.32** If 1 is a zero of the polynomial $x^2 + kx - 9$, find the value of k and the other zero. **[3]**
- 2.33** Find the zeroes of the polynomial $3x^2 - 16x - 12$ and verify the relationship between the zeroes and the coefficients. **[3]**
- 2.34** If α and β are the zeroes of the polynomial $5x^2 + 2x + 9$, find the value of $1/\alpha + 1/\beta$. **[3]**

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- 2.35** If -5 is a zero of the polynomial $x^2 + kx - 11$, find the value of k and the other zero. **[3]**
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- 2.36** Find the zeroes of the polynomial $2x^2 - x - 6$ and verify the relationship between the zeroes and the coefficients. **[3]**
-
- 2.37** If α and β are the zeroes of the polynomial $4x^2 - 7x - 9$, find the value of $1/\alpha + 1/\beta$. **[3]**
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- 2.38** If 1 is a zero of the polynomial $x^2 + kx + 9$, find the value of k and the other zero. **[3]**
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- 2.39** Find the zeroes of the polynomial $3x^2 - 11x - 20$ and verify the relationship between the zeroes and the coefficients. **[3]**
-
- 2.40** If α and β are the zeroes of the polynomial $5x^2 + 7x - 2$, find the value of $1/\alpha + 1/\beta$. **[3]**
-
- 2.41** If -5 is a zero of the polynomial $x^2 + kx + 5$, find the value of k and the other zero. **[3]**
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- 2.42** Find the zeroes of the polynomial $x^2 - 3x - 40$ and verify the relationship between the zeroes and the coefficients. **[3]**
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- 2.43** If α and β are the zeroes of the polynomial $2x^2 - 9x + 9$, find the value of $\alpha^2 + \beta^2$. **[3]**
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- 2.44** If 6 is a zero of the polynomial $x^2 + kx + 9$, find the value of k and the other zero. **[3]**
-
- 2.45** Find the zeroes of the polynomial $2x^2 - 11x + 12$ and verify the relationship between the zeroes and the coefficients. **[3]**
-
- 2.46** If α and β are the zeroes of the polynomial $2x^2 - 5x + 8$, find the value of $\alpha^2 + \beta^2$. **[3]**
-
- 2.47** If 1 is a zero of the polynomial $x^2 + kx + 7$, find the value of k and the other zero. **[3]**
-
- 2.48** Find the zeroes of the polynomial $3x^2 - 4x + 1$ and verify the relationship between the zeroes and the coefficients. **[3]**
-
- 2.49** If α and β are the zeroes of the polynomial $3x^2 + 6x + 2$, find the value of $(\alpha + 1/\beta)(\beta + 1/\alpha)$. **[3]**
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- 2.50** If -6 is a zero of the polynomial $x^2 + kx + 7$, find the value of k and the other zero. **[3]**
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Chapter 3: Pair of Linear Equations in Two Variables

50 questions · 140 marks · arranged from 2-mark to 5-mark questions

- 3.1** Without solving, state whether the pair $6x - 2y = 4$ and $18x - 6y = 12$ is consistent or inconsistent. How many solutions does it have? **[2]**
- 3.2** For what value of k will the pair $1x + 6y = 14$ and $2x + ky = 29$ have no solution? **[2]**
- 3.3** Without solving, state whether the pair $8x + 8y = -15$ and $-16x - 16y = 29$ is consistent or inconsistent. How many solutions does it have? **[2]**
- 3.4** For what value of k will the pair $4x + 6y = 13$ and $16x + ky = 52$ have infinitely many solutions? **[2]**
- 3.5** Without solving, state whether the pair $8x - 8y = 13$ and $-24x + 24y = -39$ is consistent or inconsistent. How many solutions does it have? **[2]**
- 3.6** For what value of k will the pair $1x + 2y = 3$ and $2x + ky = 6$ have infinitely many solutions? **[2]**
- 3.7** Without solving, state whether the pair $6x + 5y = 1$ and $18x + 15y = 6$ is consistent or inconsistent. How many solutions does it have? **[2]**
- 3.8** For what value of k will the pair $3x + 1y = 5$ and $6x + ky = 12$ have no solution? **[2]**
- 3.9** Without solving, state whether the pair $8x - 9y = 13$ and $2x + 7y = -15$ is consistent or inconsistent. How many solutions does it have? **[2]**
- 3.10** For what value of k will the pair $5x + 5y = 9$ and $15x + ky = 27$ have infinitely many solutions? **[2]**
- 3.11** Without solving, state whether the pair $7x - 6y = 6$ and $-14x + 12y = -17$ is consistent or inconsistent. How many solutions does it have? **[2]**
- 3.12** For what value of k will the pair $1x + 5y = 13$ and $3x + ky = 39$ have infinitely many solutions? **[2]**
- 3.13** Without solving, state whether the pair $9x + 9y = -4$ and $-18x - 18y = 8$ is consistent or inconsistent. How many solutions does it have? **[2]**
- 3.14** For what value of k will the pair $3x + 2y = 15$ and $6x + ky = 33$ have no solution? **[2]**
- 3.15** Without solving, state whether the pair $3x - 4y = -4$ and $4x + 9y = -3$ is consistent or inconsistent. How many solutions does it have? **[2]**
- 3.16** For what value of k will the pair $6x + 1y = 6$ and $18x + ky = 18$ have infinitely many solutions? **[2]**
- 3.17** Without solving, state whether the pair $9x + 7y = 10$ and $8x + 7y = -2$ is consistent or inconsistent. How many solutions does it have? **[2]**

- 3.18** For what value of k will the pair $3x + 2y = 2$ and $9x + ky = 10$ have no solution? **[2]**
- 3.19** Without solving, state whether the pair $7x + 4y = 4$ and $21x + 12y = 12$ is consistent or inconsistent. How many solutions does it have? **[2]**
- 3.20** For what value of k will the pair $4x + 6y = 3$ and $16x + ky = 12$ have infinitely many solutions? **[2]**
- 3.21** Solve the following pair of linear equations: $-x + 7y = -46$... (1) and $-5x - 7y = -20$... (2) **[3]**
- 3.22** The sum of the digits of a two-digit number is 10. The number obtained by reversing the digits is more than the original number by 72. Find the number. **[3]**
- 3.23** Solve the following pair of linear equations: $-6x - 4y = 10$... (1) and $7x - 2y = 15$... (2) **[3]**
- 3.24** The sum of the digits of a two-digit number is 10. The number obtained by reversing the digits is less than the original number by 18. Find the number. **[3]**
- 3.25** Solve the following pair of linear equations: $-4x + 8y = 68$... (1) and $-6x - 9y = -87$... (2) **[3]**
- 3.26** The sum of the digits of a two-digit number is 7. The number obtained by reversing the digits is more than the original number by 45. Find the number. **[3]**
- 3.27** Solve the following pair of linear equations: $2x + 3y = 18$... (1) and $7x + 5y = 41$... (2) **[3]**
- 3.28** The sum of the digits of a two-digit number is 16. The number obtained by reversing the digits is more than the original number by 18. Find the number. **[3]**
- 3.29** Solve the following pair of linear equations: $9x + 2y = 48$... (1) and $-7x + 9y = -69$... (2) **[3]**
- 3.30** The sum of the digits of a two-digit number is 9. The number obtained by reversing the digits is less than the original number by 63. Find the number. **[3]**
- 3.31** Solve the following pair of linear equations: $3x - 7y = -89$... (1) and $-4x - 5y = -39$... (2) **[3]**
- 3.32** The sum of the digits of a two-digit number is 11. The number obtained by reversing the digits is more than the original number by 9. Find the number. **[3]**
- 3.33** Solve the following pair of linear equations: $x + 6y = 24$... (1) and $-2x - 3y = -12$... (2) **[3]**
- 3.34** The sum of the digits of a two-digit number is 9. The number obtained by reversing the digits is more than the original number by 45. Find the number. **[3]**

- 3.35** Solve the following pair of linear equations: $x + 8y = 65$... (1) and $7x - 3y = -76$... (2) **[3]**
- 3.36** Solve the following pair of linear equations: $x - 5y = 13$... (1) and $2x - 9y = 22$... (2) **[3]**
- 3.37** The sum of the digits of a two-digit number is 13. The number obtained by reversing the digits is more than the original number by 9. Find the number. **[3]**
- 3.38** Solve the following pair of linear equations: $8x + 3y = 19$... (1) and $8x + 9y = 73$... (2) **[3]**
- 3.39** The sum of the digits of a two-digit number is 14. The number obtained by reversing the digits is less than the original number by 36. Find the number. **[3]**
- 3.40** Solve the following pair of linear equations: $-3x - 6y = -21$... (1) and $-7x - 5y = 5$... (2) **[3]**
- 3.41** The sum of the present ages of a father and his son is 53 years. After 5 years, the father's age will be 3 times the son's age minus 13 years. Find their present ages. **[4]**
- 3.42** 8 pens and 6 notebooks together cost ₹344, whereas 7 pens and 8 notebooks cost ₹422. Find the cost of one pen and one notebook. **[4]**
- 3.43** The sum of the present ages of a father and his son is 57 years. After 6 years, the father's age will be 3 times the son's age minus 19 years. Find their present ages. **[4]**
- 3.44** 3 pens and 5 notebooks together cost ₹213, whereas 7 pens and 4 notebooks cost ₹267. Find the cost of one pen and one notebook. **[4]**
- 3.45** The sum of the present ages of a father and his son is 44 years. After 8 years, the father's age will be 3 times the son's age minus 4 years. Find their present ages. **[4]**
- 3.46** A shop sells small bottles at ₹8 each and large bottles at ₹25 each. One day it sold 1396 bottles for a total of ₹29851. How many bottles of each size were sold? **[4]**
- 3.47** The sum of the present ages of a father and his son is 48 years. After 6 years, the father's age will be 3 times the son's age minus 20 years. Find their present ages. **[4]**
- 3.48** The sum of the present ages of a father and his son is 63 years. After 9 years, the father's age will be 3 times the son's age minus 7 years. Find their present ages. **[4]**
- 3.49** The sum of the present ages of a father and his son is 59 years. After 7 years, the father's age will be 3 times the son's age minus 7 years. Find their present ages. **[4]**
- 3.50** 4 pens and 4 notebooks together cost ₹220, whereas 6 pens and 3 notebooks cost ₹198. Find the cost of one pen and one notebook. **[4]**

Chapter 4: Quadratic Equations

50 questions · 166 marks · arranged from 2-mark to 5-mark questions

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|---|------------|
| 4.1 Solve by factorisation: $3x^2 + 32x + 45 = 0$ | [2] |
| 4.2 Find the discriminant of the quadratic equation $2x^2 - 7x - 7 = 0$ and hence find the nature of its roots. | [2] |
| 4.3 Find the value of k for which the quadratic equation $kx(x - 2) + 8 = 0$ has two equal roots. | [2] |
| 4.4 Solve by factorisation: $x^2 + 4x + 3 = 0$ | [2] |
| 4.5 Find the discriminant of the quadratic equation $5x^2 - 11x + 6 = 0$ and hence find the nature of its roots. | [2] |
| 4.6 Find the value of k for which the quadratic equation $kx(x - 2) + 3 = 0$ has two equal roots. | [2] |
| 4.7 Solve by factorisation: $3x^2 + 4x + 1 = 0$ | [2] |
| 4.8 Find the discriminant of the quadratic equation $4x^2 - 5x + 2 = 0$ and hence find the nature of its roots. | [2] |
| 4.9 Find the values of k for which the quadratic equation $x^2 + kx + 4 = 0$ has two equal real roots. | [2] |
| 4.10 Solve by factorisation: $x^2 - x - 20 = 0$ | [2] |
| 4.11 Find the discriminant of the quadratic equation $6x^2 + x - 5 = 0$ and hence find the nature of its roots. | [2] |
| 4.12 Solve by factorisation: $9x^2 - 9x - 40 = 0$ | [2] |
| 4.13 Find the discriminant of the quadratic equation $4x^2 - 3x + 9 = 0$ and hence find the nature of its roots. | [2] |
| 4.14 Find the values of k for which the quadratic equation $x^2 + kx + 36 = 0$ has two equal real roots. | [2] |
| 4.15 Solve by factorisation: $2x^2 - 11x + 12 = 0$ | [2] |
| 4.16 Find the discriminant of the quadratic equation $5x^2 + 3x - 3 = 0$ and hence find the nature of its roots. | [2] |
| 4.17 Find the value of k for which the quadratic equation $kx(x - 2) + 7 = 0$ has two equal roots. | [2] |
| 4.18 Solve by factorisation: $x^2 + 5x + 4 = 0$ | [2] |

- 4.19** Find the discriminant of the quadratic equation $4x^2 - 10x - 5 = 0$ and hence find the nature of its roots. **[2]**
- 4.20** Solve by factorisation: $2x^2 + 23x + 45 = 0$ **[2]**
- 4.21** Find the discriminant of the quadratic equation $6x^2 + 3x + 9 = 0$ and hence find the nature of its roots. **[2]**
- 4.22** Find the value of k for which the quadratic equation $kx(x - 2) + 4 = 0$ has two equal roots. **[2]**
- 4.23** Solve by factorisation: $2x^2 - 13x + 18 = 0$ **[2]**
- 4.24** Find the discriminant of the quadratic equation $3x^2 + 9x + 4 = 0$ and hence find the nature of its roots. **[2]**
- 4.25** Find the value of k for which the quadratic equation $kx(x - 2) + 12 = 0$ has two equal roots. **[2]**
- 4.26** Solve by factorisation: $x^2 + 12x + 35 = 0$ **[2]**
- 4.27** Find the discriminant of the quadratic equation $x^2 - 4x - 1 = 0$ and hence find the nature of its roots. **[2]**
- 4.28** Find the discriminant of the quadratic equation $6x^2 + 7 = 0$ and hence find the nature of its roots. **[2]**
- 4.29** A train travels 96 km at a uniform speed. If the speed had been 8 km/h more, it would have taken 1 hour less for the same journey. Find the speed of the train. **[5]**
- 4.30** Find two consecutive positive integers whose product is 552. **[5]**
- 4.31** The length of a rectangular field is 10 m more than its breadth. If its area is 336 m^2 , find its length and breadth. **[5]**
- 4.32** The sum of the areas of two squares is 1625 m^2 . If the difference of their perimeters is 140 m, find the sides of the two squares. **[5]**
- 4.33** A rectangular park measures 69 m $\times$ 27 m. A rectangular swimming pool is built in the middle, leaving a grass strip of uniform width all around it. If the area of the grass strip is 1148 m^2 , find the dimensions of the swimming pool. **[5]**
- 4.34** The sum of the areas of two squares is 1709 m^2 . If the difference of their perimeters is 52 m, find the sides of the two squares. **[5]**
- 4.35** A rectangular park measures 60 m $\times$ 58 m. A rectangular swimming pool is built in the middle, leaving a grass strip of uniform width all around it. If the area of the grass strip is 456 m^2 , find the dimensions of the swimming pool. **[5]**
- 4.36** Find two consecutive positive integers whose product is 110. **[5]**

-
- 4.37** A train travels 1200 km at a uniform speed. If the speed had been 2 km/h more, it would have taken 1 hour less for the same journey. Find the speed of the train. **[5]**
-
- 4.38** The sum of the areas of two squares is 1170 m^2 . If the difference of their perimeters is 96 m, find the sides of the two squares. **[5]**
-
- 4.39** The length of a rectangular field is 15 m more than its breadth. If its area is 700 m^2 , find its length and breadth. **[5]**
-
- 4.40** The length of a rectangular field is 13 m more than its breadth. If its area is 510 m^2 , find its length and breadth. **[5]**
-
- 4.41** The sum of the areas of two squares is 125 m^2 . If the difference of their perimeters is 20 m, find the sides of the two squares. **[5]**
-
- 4.42** The length of a rectangular field is 12 m more than its breadth. If its area is 448 m^2 , find its length and breadth. **[5]**
-
- 4.43** Find two consecutive positive integers whose product is 650. **[5]**
-
- 4.44** The sum of the areas of two squares is 1570 m^2 . If the difference of their perimeters is 8 m, find the sides of the two squares. **[5]**
-
- 4.45** A rectangular park measures $56 \text{ m} \times 51 \text{ m}$. A rectangular swimming pool is built in the middle, leaving a grass strip of uniform width all around it. If the area of the grass strip is 412 m^2 , find the dimensions of the swimming pool. **[5]**
-
- 4.46** A rectangular park measures $71 \text{ m} \times 52 \text{ m}$. A rectangular swimming pool is built in the middle, leaving a grass strip of uniform width all around it. If the area of the grass strip is 1526 m^2 , find the dimensions of the swimming pool. **[5]**
-
- 4.47** A train travels 440 km at a uniform speed. If the speed had been 4 km/h more, it would have taken 1 hour less for the same journey. Find the speed of the train. **[5]**
-
- 4.48** The length of a rectangular field is 10 m more than its breadth. If its area is 231 m^2 , find its length and breadth. **[5]**
-
- 4.49** The length of a rectangular field is 7 m more than its breadth. If its area is 170 m^2 , find its length and breadth. **[5]**
-
- 4.50** Find two consecutive positive integers whose product is 30. **[5]**
-

Chapter 5: Arithmetic Progressions

50 questions · 140 marks · arranged from 2-mark to 5-mark questions

- | | |
|---|------------|
| 5.1 Find the 38th term of the AP: 30, 32, 34, ... | [2] |
| 5.2 Which term of the AP 5, 6, 7, ... is 40? | [2] |
| 5.3 Find the sum of the first 21 terms of the AP: 9, 11, 13, ... | [2] |
| 5.4 Find the 13th term of the AP: 12, 19, 26, ... | [2] |
| 5.5 Which term of the AP $-14, -6, 2, \dots$ is 130? | [2] |
| 5.6 Find the sum of the first 24 terms of the AP: 10, 16, 22, ... | [2] |
| 5.7 Find the 37th term of the AP: 16, 15, 14, ... | [2] |
| 5.8 Which term of the AP 19, 21, 23, ... is 59? | [2] |
| 5.9 Find the sum of the first 26 terms of the AP: 3, 1, $-1, \dots$ | [2] |
| 5.10 Find the 30th term of the AP: $-19, -21, -23, \dots$ | [2] |
| 5.11 Which term of the AP $-17, -13, -9, \dots$ is 139? | [2] |
| 5.12 Find the sum of the first 13 terms of the AP: 13, 14, 15, ... | [2] |
| 5.13 Find the 40th term of the AP: 6, 5, 4, ... | [2] |
| 5.14 Which term of the AP $-1, 4, 9, \dots$ is 149? | [2] |
| 5.15 Find the sum of the first 20 terms of the AP: 3, 9, 15, ... | [2] |
| 5.16 Find the 16th term of the AP: 0, 7, 14, ... | [2] |
| 5.17 Which term of the AP $-7, -8, -9, \dots$ is -36 ? | [2] |
| 5.18 Find the sum of the first 14 terms of the AP: 1, $-2, -5, \dots$ | [2] |
| 5.19 Find the 37th term of the AP: $-19, -11, -3, \dots$ | [2] |
| 5.20 Which term of the AP $-3, -9, -15, \dots$ is -165 ? | [2] |
| 5.21 Find the sum of the first 27 terms of the AP: $-12, -5, 2, \dots$ | [2] |
| 5.22 Find the 17th term of the AP: 25, 32, 39, ... | [2] |
| 5.23 Which term of the AP $-10, -7, -4, \dots$ is 20? | [2] |
| 5.24 Find the sum of the first 19 terms of the AP: 12, 16, 20, ... | [2] |
| 5.25 Find the 39th term of the AP: 22, 17, 12, ... | [2] |

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- 5.26** Which term of the AP $-15, -13, -11, \dots$ is 15? **[2]**
-
- 5.27** Find the middle term of the AP: $-10, -6, -2, \dots, 30$. **[3]**
-
- 5.28** Find the sum of all integers between 1 and 100 which are multiples of both 2 and 3. **[3]**
-
- 5.29** Find the middle term of the AP: $-28, -33, -38, \dots, -208$. **[3]**
-
- 5.30** Find the sum of all integers between 1 and 250 which are multiples of both 4 and 5. **[3]**
-
- 5.31** Find the middle term of the AP: $1, -3, -7, \dots, -63$. **[3]**
-
- 5.32** Find the sum of all integers between 1 and 500 which are multiples of both 6 and 8. **[3]**
-
- 5.33** Find the middle term of the AP: $-10, -13, -16, \dots, -82$. **[3]**
-
- 5.34** Find the sum of all integers between 1 and 400 which are multiples of both 2 and 5. **[3]**
-
- 5.35** Find the middle term of the AP: $34, 40, 46, \dots, 178$. **[3]**
-
- 5.36** Find the sum of all integers between 1 and 300 which are multiples of both 4 and 5. **[3]**
-
- 5.37** Find the middle term of the AP: $37, 43, 49, \dots, 109$. **[3]**
-
- 5.38** Find the sum of all integers between 1 and 300 which are multiples of both 3 and 7. **[3]**
-
- 5.39** Find the middle term of the AP: $-24, -31, -38, \dots, -276$. **[3]**
-
- 5.40** Find the sum of all integers between 1 and 300 which are multiples of both 6 and 8. **[3]**
-
- 5.41** Find the middle term of the AP: $18, 16, 14, \dots, -6$. **[3]**
-
- 5.42** Find the sum of all integers between 1 and 250 which are multiples of both 3 and 5. **[3]**
-
- 5.43** The 18th term of an AP is 93 and its 19th term is 98. Find the first term, the common difference and the sum of its first 20 terms. **[5]**
-
- 5.44** The 7th term of an AP is 15 and its 24th term is 32. Find the first term, the common difference and the sum of its first 20 terms. **[5]**
-
- 5.45** The 4th term of an AP is -2 and its 8th term is -22 . Find the first term, the common difference and the sum of its first 20 terms. **[5]**
-

5.46 The 7th term of an AP is 0 and its 8th term is -1 . Find the first term, the common difference and the sum of its first 20 terms. **[5]**

5.47 The 4th term of an AP is 25 and its 8th term is 41. Find the first term, the common difference and the sum of its first 20 terms. **[5]**

5.48 The 7th term of an AP is -24 and its 22th term is -84 . Find the first term, the common difference and the sum of its first 20 terms. **[5]**

5.49 The 4th term of an AP is 14 and its 15th term is 25. Find the first term, the common difference and the sum of its first 20 terms. **[5]**

5.50 The 17th term of an AP is 58 and its 22th term is 78. Find the first term, the common difference and the sum of its first 20 terms. **[5]**

Chapter 6: Triangles

50 questions · 125 marks · arranged from 2-mark to 5-mark questions

- 6.1** In ΔPQR , S and T are points on PQ and PR respectively such that $ST \parallel QR$. If $PS = 5$ cm, $SQ = 9$ cm and $PT = 11$ cm, find TR. **[2]**
- 6.2** The perimeters of two similar triangles are 47 cm and 70 cm respectively. If one side of the first triangle is 14 cm, find the corresponding side of the second triangle. **[2]**
- 6.3** $\Delta ABC \sim \Delta DEF$. If $AB = 3$ cm, $BC = 4$ cm, $CA = 5$ cm and $DE = 9$ cm, find EF and FD. **[2]**
- 6.4** In ΔPQR , S and T are points on PQ and PR respectively such that $ST \parallel QR$. If $PS = 4$ cm, $SQ = 3$ cm and $PT = 6$ cm, find TR. **[2]**
- 6.5** The perimeters of two similar triangles are 49 cm and 74 cm respectively. If one side of the first triangle is 11 cm, find the corresponding side of the second triangle. **[2]**
- 6.6** $\Delta ABC \sim \Delta DEF$. If $AB = 6$ cm, $BC = 8$ cm, $CA = 9$ cm and $DE = 9$ cm, find EF and FD. **[2]**
- 6.7** In ΔPQR , S and T are points on PQ and PR respectively such that $ST \parallel QR$. If $PS = 4$ cm, $SQ = 2$ cm and $PT = 2$ cm, find TR. **[2]**
- 6.8** The perimeters of two similar triangles are 77 cm and 27 cm respectively. If one side of the first triangle is 11 cm, find the corresponding side of the second triangle. **[2]**
- 6.9** $\Delta ABC \sim \Delta DEF$. If $AB = 4$ cm, $BC = 6$ cm, $CA = 8$ cm and $DE = 8/3$ cm, find EF and FD. **[2]**
- 6.10** In ΔPQR , S and T are points on PQ and PR respectively such that $ST \parallel QR$. If $PS = 10$ cm, $SQ = 10$ cm and $PT = 7$ cm, find TR. **[2]**
- 6.11** The perimeters of two similar triangles are 31 cm and 50 cm respectively. If one side of the first triangle is 6 cm, find the corresponding side of the second triangle. **[2]**
- 6.12** $\Delta ABC \sim \Delta DEF$. If $AB = 3$ cm, $BC = 4$ cm, $CA = 5$ cm and $DE = 2$ cm, find EF and FD. **[2]**
- 6.13** In ΔPQR , S and T are points on PQ and PR respectively such that $ST \parallel QR$. If $PS = 8$ cm, $SQ = 12$ cm and $PT = 11/2$ cm, find TR. **[2]**
- 6.14** The perimeters of two similar triangles are 58 cm and 23 cm respectively. If one side of the first triangle is 5 cm, find the corresponding side of the second triangle. **[2]**
- 6.15** $\Delta ABC \sim \Delta DEF$. If $AB = 5$ cm, $BC = 6$ cm, $CA = 7$ cm and $DE = 20/3$ cm, find EF and FD. **[2]**
- 6.16** In ΔPQR , S and T are points on PQ and PR respectively such that $ST \parallel QR$. If $PS = 10$ cm, $SQ = 9$ cm and $PT = 15$ cm, find TR. **[2]**

- 6.17** The perimeters of two similar triangles are 43 cm and 80 cm respectively. If one side of the first triangle is 13 cm, find the corresponding side of the second triangle. **[2]**
- 6.18** $\triangle ABC \sim \triangle DEF$. If $AB = 3$ cm, $BC = 4$ cm, $CA = 5$ cm and $DE = 15$ cm, find EF and FD . **[2]**
- 6.19** In $\triangle PQR$, S and T are points on PQ and PR respectively such that $ST \parallel QR$. If $PS = 9$ cm, $SQ = 3$ cm and $PT = 6$ cm, find TR . **[2]**
- 6.20** The perimeters of two similar triangles are 52 cm and 39 cm respectively. If one side of the first triangle is 8 cm, find the corresponding side of the second triangle. **[2]**
- 6.21** $\triangle ABC \sim \triangle DEF$. If $AB = 4$ cm, $BC = 6$ cm, $CA = 8$ cm and $DE = 16/3$ cm, find EF and FD . **[2]**
- 6.22** In $\triangle PQR$, S and T are points on PQ and PR respectively such that $ST \parallel QR$. If $PS = 3$ cm, $SQ = 9$ cm and $PT = 3$ cm, find TR . **[2]**
- 6.23** The perimeters of two similar triangles are 23 cm and 47 cm respectively. If one side of the first triangle is 7 cm, find the corresponding side of the second triangle. **[2]**
- 6.24** $\triangle ABC \sim \triangle DEF$. If $AB = 6$ cm, $BC = 8$ cm, $CA = 9$ cm and $DE = 4$ cm, find EF and FD . **[2]**
- 6.25** In $\triangle PQR$, S and T are points on PQ and PR respectively such that $ST \parallel QR$. If $PS = 9$ cm, $SQ = 10$ cm and $PT = 2$ cm, find TR . **[2]**
- 6.26** In $\triangle ABC$, $DE \parallel BC$, where D lies on AB and E lies on AC . If $AD = x$, $DB = x - 3$, $AE = x + 3$ and $EC = x - 1$, find the value of x . **[3]**
- 6.27** A vertical pole of length 1.4 m casts a shadow 5.1 m long on the ground. At the same time, a tower casts a shadow 17 m long. Find the height of the tower. **[3]**
- 6.28** $ABCD$ is a trapezium in which $AB \parallel DC$ and its diagonals intersect at O . If $AB = 14$ cm, $DC = 16$ cm and $AO = 11$ cm, find OC . **[3]**
- 6.29** In $\triangle ABC$, $DE \parallel BC$, where D lies on AB and E lies on AC . If $AD = x$, $DB = x - 2$, $AE = x + 3$ and $EC = x - 1$, find the value of x . **[3]**
- 6.30** A vertical pole of length 3.7 m casts a shadow 3.3 m long on the ground. At the same time, a tower casts a shadow 51 m long. Find the height of the tower. **[3]**
- 6.31** $ABCD$ is a trapezium in which $AB \parallel DC$ and its diagonals intersect at O . If $AB = 20$ cm, $DC = 10$ cm and $AO = 11$ cm, find OC . **[3]**
- 6.32** In $\triangle ABC$, $DE \parallel BC$, where D lies on AB and E lies on AC . If $AD = x$, $DB = x - 4$, $AE = x + 6$ and $EC = x + 1$, find the value of x . **[3]**
- 6.33** A vertical pole of length 2.5 m casts a shadow 4.1 m long on the ground. At the same time, a tower casts a shadow 54 m long. Find the height of the tower. **[3]**

- 6.34** ABCD is a trapezium in which $AB \parallel DC$ and its diagonals intersect at O. If $AB = 18$ cm, $DC = 16$ cm and $AO = 3$ cm, find OC. **[3]**
- 6.35** In $\triangle ABC$, $DE \parallel BC$, where D lies on AB and E lies on AC. If $AD = x$, $DB = x - 6$, $AE = x + 8$ and $EC = x$, find the value of x. **[3]**
- 6.36** A vertical pole of length 1.6 m casts a shadow 3.9 m long on the ground. At the same time, a tower casts a shadow 43 m long. Find the height of the tower. **[3]**
- 6.37** ABCD is a trapezium in which $AB \parallel DC$ and its diagonals intersect at O. If $AB = 20$ cm, $DC = 17$ cm and $AO = 8$ cm, find OC. **[3]**
- 6.38** In $\triangle ABC$, $DE \parallel BC$, where D lies on AB and E lies on AC. If $AD = x$, $DB = x - 4$, $AE = x + 4$ and $EC = x - 2$, find the value of x. **[3]**
- 6.39** A vertical pole of length 3.3 m casts a shadow 4.4 m long on the ground. At the same time, a tower casts a shadow 58 m long. Find the height of the tower. **[3]**
- 6.40** ABCD is a trapezium in which $AB \parallel DC$ and its diagonals intersect at O. If $AB = 19$ cm, $DC = 10$ cm and $AO = 15$ cm, find OC. **[3]**
- 6.41** In $\triangle ABC$, $DE \parallel BC$, where D lies on AB and E lies on AC. If $AD = x$, $DB = x - 1$, $AE = x + 8$ and $EC = x + 3$, find the value of x. **[3]**
- 6.42** A vertical pole of length 3.1 m casts a shadow 3.7 m long on the ground. At the same time, a tower casts a shadow 51 m long. Find the height of the tower. **[3]**
- 6.43** ABCD is a trapezium in which $AB \parallel DC$ and its diagonals intersect at O. If $AB = 15$ cm, $DC = 10$ cm and $AO = 10$ cm, find OC. **[3]**
- 6.44** In $\triangle ABC$, $DE \parallel BC$, where D lies on AB and E lies on AC. If $AD = x$, $DB = x - 4$, $AE = x + 7$ and $EC = x - 1$, find the value of x. **[3]**
- 6.45** A vertical pole of length 1.6 m casts a shadow 2.4 m long on the ground. At the same time, a tower casts a shadow 37 m long. Find the height of the tower. **[3]**
- 6.46** ABCD is a trapezium in which $AB \parallel DC$ and its diagonals intersect at O. If $AB = 23$ cm, $DC = 5$ cm and $AO = 15$ cm, find OC. **[3]**
- 6.47** In $\triangle ABC$, $DE \parallel BC$, where D lies on AB and E lies on AC. If $AD = x$, $DB = x - 4$, $AE = x + 3$ and $EC = x - 2$, find the value of x. **[3]**
- 6.48** A vertical pole of length 3.8 m casts a shadow 3.2 m long on the ground. At the same time, a tower casts a shadow 16 m long. Find the height of the tower. **[3]**
- 6.49** ABCD is a trapezium in which $AB \parallel DC$ and its diagonals intersect at O. If $AB = 18$ cm, $DC = 7$ cm and $AO = 13$ cm, find OC. **[3]**
- 6.50** In $\triangle ABC$, $DE \parallel BC$, where D lies on AB and E lies on AC. If $AD = x$, $DB = x - 4$, $AE = x + 8$ and $EC = x + 3$, find the value of x. **[3]**

Chapter 7: Coordinate Geometry

50 questions · 124 marks · arranged from 2-mark to 5-mark questions

- 7.1** Find the distance between the points A(6, 5) and B(−39, −19). **[2]**
- 7.2** Find the coordinates of the point which divides the line segment joining A(9, 10) and B(−10, −2) internally in the ratio 3 : 1. **[2]**
- 7.3** The centre of a circle is (−9, −6) and one end of a diameter is (3, 4). Find the coordinates of the other end. **[2]**
- 7.4** Find the distance between the points A(1, 1) and B(−44, −27). **[2]**
- 7.5** Find the coordinates of the point which divides the line segment joining A(3, 9) and B(−5, 7) internally in the ratio 5 : 4. **[2]**
- 7.6** The centre of a circle is (1, 6) and one end of a diameter is (−1, −3). Find the coordinates of the other end. **[2]**
- 7.7** Find the distance between the points A(6, 3) and B(54, −17). **[2]**
- 7.8** Find the coordinates of the point which divides the line segment joining A(−7, −9) and B(3, 9) internally in the ratio 2 : 5. **[2]**
- 7.9** The centre of a circle is (−6, 5) and one end of a diameter is (−9, 5). Find the coordinates of the other end. **[2]**
- 7.10** Find the distance between the points A(4, −3) and B(64, −28). **[2]**
- 7.11** Find the coordinates of the point which divides the line segment joining A(0, 5) and B(1, −7) internally in the ratio 2 : 4. **[2]**
- 7.12** The centre of a circle is (7, −4) and one end of a diameter is (−2, 9). Find the coordinates of the other end. **[2]**
- 7.13** Find the distance between the points A(8, 6) and B(−8, 36). **[2]**
- 7.14** Find the coordinates of the point which divides the line segment joining A(0, 6) and B(0, 10) internally in the ratio 1 : 2. **[2]**
- 7.15** The centre of a circle is (3, 8) and one end of a diameter is (9, 3). Find the coordinates of the other end. **[2]**
- 7.16** Find the distance between the points A(2, 1) and B(−34, −14). **[2]**
- 7.17** Find the coordinates of the point which divides the line segment joining A(−10, −1) and B(4, 6) internally in the ratio 5 : 1. **[2]**
- 7.18** The centre of a circle is (5, 0) and one end of a diameter is (6, −9). Find the coordinates of the other end. **[2]**

- 7.19** Find the distance between the points $A(5, -7)$ and $B(-9, 41)$. **[2]**
- 7.20** Find the coordinates of the point which divides the line segment joining $A(-2, 12)$ and $B(2, -2)$ internally in the ratio $5 : 3$. **[2]**
- 7.21** The centre of a circle is $(4, -1)$ and one end of a diameter is $(-5, 9)$. Find the coordinates of the other end. **[2]**
- 7.22** Find the distance between the points $A(-2, -7)$ and $B(43, 17)$. **[2]**
- 7.23** Find the coordinates of the point which divides the line segment joining $A(10, 2)$ and $B(-7, 12)$ internally in the ratio $1 : 5$. **[2]**
- 7.24** The centre of a circle is $(2, 9)$ and one end of a diameter is $(-7, 6)$. Find the coordinates of the other end. **[2]**
- 7.25** Find the distance between the points $A(7, 3)$ and $B(23, -27)$. **[2]**
- 7.26** Find the coordinates of the point which divides the line segment joining $A(-4, -1)$ and $B(10, -6)$ internally in the ratio $2 : 1$. **[2]**
- 7.27** Find the ratio in which the x-axis divides the line segment joining the points $(-1, -8)$ and $(5, 2)$. Also find the point of division. **[3]**
- 7.28** The points $A(1, -5)$, $B(6, -1)$ and $C(-4, 9)$ are three vertices of a parallelogram ABCD taken in order. Find the fourth vertex D. **[3]**
- 7.29** Find the point on the x-axis which is equidistant from $A(-1, -5)$ and $B(-6, 7)$. **[3]**
- 7.30** Find the ratio in which the x-axis divides the line segment joining the points $(-3, -9)$ and $(-10, 12)$. Also find the point of division. **[3]**
- 7.31** The points $A(-2, 1)$, $B(-8, 6)$ and $C(2, 6)$ are three vertices of a parallelogram ABCD taken in order. Find the fourth vertex D. **[3]**
- 7.32** Find the point on the x-axis which is equidistant from $A(1, 6)$ and $B(-7, -8)$. **[3]**
- 7.33** Find the ratio in which the x-axis divides the line segment joining the points $(7, -11)$ and $(-12, 2)$. Also find the point of division. **[3]**
- 7.34** The points $A(-6, 1)$, $B(-2, 0)$ and $C(-2, -2)$ are three vertices of a parallelogram ABCD taken in order. Find the fourth vertex D. **[3]**
- 7.35** Find the point on the x-axis which is equidistant from $A(8, -4)$ and $B(0, 8)$. **[3]**
- 7.36** Find the ratio in which the y-axis divides the line segment joining the points $(-8, -1)$ and $(11, 0)$. Also find the point of division. **[3]**
- 7.37** The points $A(-6, 7)$, $B(5, -2)$ and $C(3, -1)$ are three vertices of a parallelogram ABCD taken in order. Find the fourth vertex D. **[3]**

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- 7.38** Find the point on the x-axis which is equidistant from A(1, 0) and B(−6, 6). **[3]**
-
- 7.39** Find the ratio in which the y-axis divides the line segment joining the points (6, −12) and (−9, 12). Also find the point of division. **[3]**
-
- 7.40** The points A(4, −1), B(7, 1) and C(5, −6) are three vertices of a parallelogram ABCD taken in order. Find the fourth vertex D. **[3]**
-
- 7.41** Find the point on the x-axis which is equidistant from A(8, 8) and B(−3, −3). **[3]**
-
- 7.42** Find the ratio in which the y-axis divides the line segment joining the points (6, −1) and (−11, 0). Also find the point of division. **[3]**
-
- 7.43** The points A(9, 6), B(−6, −4) and C(−6, 1) are three vertices of a parallelogram ABCD taken in order. Find the fourth vertex D. **[3]**
-
- 7.44** Find the point on the x-axis which is equidistant from A(−8, 4) and B(7, 8). **[3]**
-
- 7.45** Find the ratio in which the y-axis divides the line segment joining the points (9, −1) and (−2, 4). Also find the point of division. **[3]**
-
- 7.46** The points A(2, 7), B(−3, −4) and C(−3, 3) are three vertices of a parallelogram ABCD taken in order. Find the fourth vertex D. **[3]**
-
- 7.47** Find the point on the x-axis which is equidistant from A(1, −4) and B(0, 7). **[3]**
-
- 7.48** Find the ratio in which the y-axis divides the line segment joining the points (−6, 0) and (6, −11). Also find the point of division. **[3]**
-
- 7.49** The points A(2, −4), B(5, 5) and C(6, −1) are three vertices of a parallelogram ABCD taken in order. Find the fourth vertex D. **[3]**
-
- 7.50** Find the point on the x-axis which is equidistant from A(2, 8) and B(3, 7). **[3]**
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Chapter 8: Introduction to Trigonometry

50 questions · 123 marks · arranged from 2-mark to 5-mark questions

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|--|------------|
| 8.1 If $\cos A = 36/39$, find the value of $\sec A + \tan A$. | [2] |
| 8.2 If $\cot \theta = 13/3$, evaluate: $[(1 + \sin \theta)(1 - \sin \theta)] / [(1 + \cos \theta)(1 - \cos \theta)]$ | [2] |
| 8.3 Evaluate: $4\cot^2 90^\circ + 4\operatorname{cosec}^2 30^\circ + \tan^2 45^\circ$ | [2] |
| 8.4 If $\tan \theta = 20/15$, find the value of $\sin \theta + \cos \theta$. | [2] |
| 8.5 If $\cot \theta = 7/12$, evaluate: $[(1 + \sin \theta)(1 - \sin \theta)] / [(1 + \cos \theta)(1 - \cos \theta)]$ | [2] |
| 8.6 Evaluate: $2\operatorname{cosec}^2 60^\circ + \sin^2 0^\circ + \cot^2 45^\circ$ | [2] |
| 8.7 If $\tan \theta = 7/24$, find the value of $\sin \theta + \cos \theta$. | [2] |
| 8.8 If $\cot \theta = 5/1$, evaluate: $[(1 + \sin \theta)(1 - \sin \theta)] / [(1 + \cos \theta)(1 - \cos \theta)]$ | [2] |
| 8.9 Evaluate: $\cos^2 90^\circ - \operatorname{cosec}^2 60^\circ + 3\operatorname{cosec}^2 45^\circ$ | [2] |
| 8.10 If $\sin \theta = 12/37$, where θ is acute, find the values of $\cos \theta$ and $\tan \theta$. | [2] |
| 8.11 Evaluate: $\tan^2 0^\circ - 4\cot^2 60^\circ + 4\operatorname{cosec}^2 30^\circ$ | [2] |
| 8.12 If $\tan \theta = 15/36$, find the value of $\sin \theta + \cos \theta$. | [2] |
| 8.13 If $\cot \theta = 6/13$, evaluate: $[(1 + \sin \theta)(1 - \sin \theta)] / [(1 + \cos \theta)(1 - \cos \theta)]$ | [2] |
| 8.14 Evaluate: $4\operatorname{cosec}^2 45^\circ - 4\sec^2 60^\circ + \sec^2 45^\circ$ | [2] |
| 8.15 If $\tan \theta = 8/15$, find the value of $\sin \theta + \cos \theta$. | [2] |
| 8.16 If $\cot \theta = 11/12$, evaluate: $[(1 + \sin \theta)(1 - \sin \theta)] / [(1 + \cos \theta)(1 - \cos \theta)]$ | [2] |
| 8.17 Evaluate: $\sin^2 30^\circ + 4\tan^2 45^\circ + 3\operatorname{cosec}^2 90^\circ$ | [2] |
| 8.18 If $\sin \theta = 8/17$, where θ is acute, find the values of $\cos \theta$ and $\tan \theta$. | [2] |
| 8.19 If $\cot \theta = 15/14$, evaluate: $[(1 + \sin \theta)(1 - \sin \theta)] / [(1 + \cos \theta)(1 - \cos \theta)]$ | [2] |
| 8.20 Evaluate: $2\operatorname{cosec}^2 60^\circ + \tan^2 60^\circ - \operatorname{cosec}^2 90^\circ$ | [2] |
| 8.21 If $\tan \theta = 16/12$, find the value of $\sin \theta + \cos \theta$. | [2] |
| 8.22 Evaluate: $2\cos^2 90^\circ + \operatorname{cosec}^2 45^\circ - 2\tan^2 30^\circ$ | [2] |
| 8.23 If $\sin \theta = 32/40$, where θ is acute, find the values of $\cos \theta$ and $\tan \theta$. | [2] |
| 8.24 Evaluate: $2\sin^2 90^\circ + \sec^2 60^\circ + 4\cos^2 30^\circ$ | [2] |
| 8.25 If $\sin \theta = 20/25$, where θ is acute, find the values of $\cos \theta$ and $\tan \theta$. | [2] |

- 8.26** Evaluate: $4\sec^2 60^\circ - 3\cos^2 45^\circ + \sec^2 0^\circ$ [2]
- 8.27** Evaluate: $4\sin^2 0^\circ + 3\tan^2 60^\circ - 3\cos^2 60^\circ$ [2]
- 8.28** If $\tan(A + B) = \sqrt{3}$ and $\sin(A - B) = 0$, where $0^\circ < A + B \leq 90^\circ$ and $A \geq B$, find A and B. [3]
- 8.29** If $\sec \theta - \tan \theta = 1/5$, find the values of $\sec \theta$ and $\tan \theta$. [3]
- 8.30** If $\sin(A + B) = 1$ and $\cos(A - B) = 1$, where $0^\circ < A + B \leq 90^\circ$ and $A \geq B$, find A and B. [3]
- 8.31** If $\sec \theta - \tan \theta = 7/9$, find the values of $\sec \theta$ and $\tan \theta$. [3]
- 8.32** If $\sin(A + B) = 1$ and $\cos(A - B) = 1/2$, where $0^\circ < A + B \leq 90^\circ$ and $A \geq B$, find A and B. [3]
- 8.33** If $\sec \theta - \tan \theta = 4/7$, find the values of $\sec \theta$ and $\tan \theta$. [3]
- 8.34** If $\tan \theta = 1/8$, find the value of $(\operatorname{cosec}^2 \theta - \sec^2 \theta) / (\operatorname{cosec}^2 \theta + \sec^2 \theta)$. [3]
- 8.35** If $\cos(A + B) = 1/2$ and $\sin(A - B) = 0$, where $0^\circ < A + B \leq 90^\circ$ and $A \geq B$, find A and B. [3]
- 8.36** If $\sec \theta - \tan \theta = 6/7$, find the values of $\sec \theta$ and $\tan \theta$. [3]
- 8.37** If $\sin(A + B) = \sqrt{3}/2$ and $\tan(A - B) = 1/\sqrt{3}$, where $0^\circ < A + B \leq 90^\circ$ and $A \geq B$, find A and B. [3]
- 8.38** If $\sec \theta - \tan \theta = 2/5$, find the values of $\sec \theta$ and $\tan \theta$. [3]
- 8.39** If $\sin(A + B) = \sqrt{3}/2$ and $\sin(A - B) = 1/2$, where $0^\circ < A + B \leq 90^\circ$ and $A \geq B$, find A and B. [3]
- 8.40** If $\sec \theta - \tan \theta = 1/8$, find the values of $\sec \theta$ and $\tan \theta$. [3]
- 8.41** If $\cos(A + B) = 1/2$ and $\cos(A - B) = 1$, where $0^\circ < A + B \leq 90^\circ$ and $A \geq B$, find A and B. [3]
- 8.42** If $\tan \theta = 15/13$, find the value of $(\operatorname{cosec}^2 \theta - \sec^2 \theta) / (\operatorname{cosec}^2 \theta + \sec^2 \theta)$. [3]
- 8.43** If $\sec \theta - \tan \theta = 1/4$, find the values of $\sec \theta$ and $\tan \theta$. [3]
- 8.44** If $\tan \theta = 3/2$, find the value of $(\operatorname{cosec}^2 \theta - \sec^2 \theta) / (\operatorname{cosec}^2 \theta + \sec^2 \theta)$. [3]
- 8.45** If $\sin(A + B) = 1$ and $\tan(A - B) = 1/\sqrt{3}$, where $0^\circ < A + B \leq 90^\circ$ and $A \geq B$, find A and B. [3]
- 8.46** If $\sec \theta - \tan \theta = 7/11$, find the values of $\sec \theta$ and $\tan \theta$. [3]
- 8.47** If $\tan \theta = 12/13$, find the value of $(\operatorname{cosec}^2 \theta - \sec^2 \theta) / (\operatorname{cosec}^2 \theta + \sec^2 \theta)$. [3]

8.48 If $\sec \theta - \tan \theta = 2/7$, find the values of $\sec \theta$ and $\tan \theta$. **[3]**

8.49 If $\tan \theta = 14/1$, find the value of $(\operatorname{cosec}^2 \theta - \sec^2 \theta) / (\operatorname{cosec}^2 \theta + \sec^2 \theta)$. **[3]**

8.50 If $\sin(A + B) = \sqrt{3}/2$ and $\cos(A - B) = 1$, where $0^\circ < A + B \leq 90^\circ$ and $A \geq B$, find A and B. **[3]**

Chapter 9: Some Applications of Trigonometry

50 questions · 141 marks · arranged from 2-mark to 5-mark questions

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|---|------------|
| 9.1 From a point on the ground 40 m away from the foot of a tower, the angle of elevation of the top of the tower is 60° . Find the height of the tower. | [2] |
| 9.2 The angle of depression of a boat from the top of a cliff 45 m high is 60° . Find the distance of the boat from the foot of the cliff. | [2] |
| 9.3 A kite is flying at a height above the ground. The string attached to it is 150 m long and makes an angle of 60° with the ground. Assuming there is no slack, find the height of the kite. | [2] |
| 9.4 From a point on the ground 80 m away from the foot of a tower, the angle of elevation of the top of the tower is 60° . Find the height of the tower. | [2] |
| 9.5 The angle of depression of a boat from the top of a cliff 10 m high is 30° . Find the distance of the boat from the foot of the cliff. | [2] |
| 9.6 A kite is flying at a height above the ground. The string attached to it is 60 m long and makes an angle of 30° with the ground. Assuming there is no slack, find the height of the kite. | [2] |
| 9.7 From a point on the ground 80 m away from the foot of a tower, the angle of elevation of the top of the tower is 30° . Find the height of the tower. | [2] |
| 9.8 The angle of depression of a boat from the top of a cliff 100 m high is 60° . Find the distance of the boat from the foot of the cliff. | [2] |
| 9.9 A kite is flying at a height above the ground. The string attached to it is 20 m long and makes an angle of 30° with the ground. Assuming there is no slack, find the height of the kite. | [2] |
| 9.10 From a point on the ground 30 m away from the foot of a tower, the angle of elevation of the top of the tower is 45° . Find the height of the tower. | [2] |
| 9.11 The angle of depression of a boat from the top of a cliff 10 m high is 45° . Find the distance of the boat from the foot of the cliff. | [2] |
| 9.12 A kite is flying at a height above the ground. The string attached to it is 120 m long and makes an angle of 30° with the ground. Assuming there is no slack, find the height of the kite. | [2] |
| 9.13 The angle of depression of a boat from the top of a cliff 60 m high is 60° . Find the distance of the boat from the foot of the cliff. | [2] |
| 9.14 A kite is flying at a height above the ground. The string attached to it is 90 m long and makes an angle of 30° with the ground. Assuming there is no slack, find the height of the kite. | [2] |

- 9.15** From a point on the ground 20 m away from the foot of a tower, the angle of elevation of the top of the tower is 45° . Find the height of the tower. **[2]**
- 9.16** A kite is flying at a height above the ground. The string attached to it is 50 m long and makes an angle of 30° with the ground. Assuming there is no slack, find the height of the kite. **[2]**
- 9.17** From a point on the ground 60 m away from the foot of a tower, the angle of elevation of the top of the tower is 45° . Find the height of the tower. **[2]**
- 9.18** The angle of depression of a boat from the top of a cliff 100 m high is 45° . Find the distance of the boat from the foot of the cliff. **[2]**
- 9.19** A kite is flying at a height above the ground. The string attached to it is 100 m long and makes an angle of 30° with the ground. Assuming there is no slack, find the height of the kite. **[2]**
- 9.20** From a point on the ground 25 m away from the foot of a tower, the angle of elevation of the top of the tower is 60° . Find the height of the tower. **[2]**
- 9.21** The angle of depression of a boat from the top of a cliff 10 m high is 60° . Find the distance of the boat from the foot of the cliff. **[2]**
- 9.22** From a point on the ground 100 m away from the foot of a tower, the angle of elevation of the top of the tower is 60° . Find the height of the tower. **[2]**
- 9.23** From a point on the ground 50 m away from the foot of a tower, the angle of elevation of the top of the tower is 45° . Find the height of the tower. **[2]**
- 9.24** The angle of depression of a boat from the top of a cliff 90 m high is 30° . Find the distance of the boat from the foot of the cliff. **[2]**
- 9.25** From a point on the ground 30 m away from the foot of a tower, the angle of elevation of the top of the tower is 30° . Find the height of the tower. **[2]**
- 9.26** The angle of depression of a boat from the top of a cliff 30 m high is 45° . Find the distance of the boat from the foot of the cliff. **[2]**
- 9.27** The angle of depression of a boat from the top of a cliff 75 m high is 60° . Find the distance of the boat from the foot of the cliff. **[2]**
- 9.28** From a point on the ground 50 m away from the foot of a tower, the angle of elevation of the top of the tower is 30° . Find the height of the tower. **[2]**
- 9.29** The angle of depression of a boat from the top of a cliff 15 m high is 45° . Find the distance of the boat from the foot of the cliff. **[2]**
- 9.30** The shadow of a tower 45 m tall is longer when the Sun's altitude is 30° than when it is 45° . Find how much longer it is. **[3]**

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- 9.31** The shadow of a tower 18 m tall is longer when the Sun's altitude is 30° than when it is 45° . Find how much longer it is. **[3]**
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- 9.32** The shadow of a tower 18 m tall is longer when the Sun's altitude is 30° than when it is 60° . Find how much longer it is. **[3]**
-
- 9.33** The shadow of a tower 9 m tall is longer when the Sun's altitude is 45° than when it is 60° . Find how much longer it is. **[3]**
-
- 9.34** The shadow of a tower 45 m tall is longer when the Sun's altitude is 45° than when it is 60° . Find how much longer it is. **[3]**
-
- 9.35** The shadow of a tower 6 m tall is longer when the Sun's altitude is 45° than when it is 60° . Find how much longer it is. **[3]**
-
- 9.36** The shadow of a tower 15 m tall is longer when the Sun's altitude is 45° than when it is 60° . Find how much longer it is. **[3]**
-
- 9.37** The shadow of a tower 6 m tall is longer when the Sun's altitude is 30° than when it is 60° . Find how much longer it is. **[3]**
-
- 9.38** The shadow of a tower 15 m tall is longer when the Sun's altitude is 30° than when it is 60° . Find how much longer it is. **[3]**
-
- 9.39** The shadow of a tower 30 m tall is longer when the Sun's altitude is 45° than when it is 60° . Find how much longer it is. **[3]**
-
- 9.40** The shadow of a tower 12 m tall is longer when the Sun's altitude is 45° than when it is 60° . Find how much longer it is. **[3]**
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- 9.41** The angles of elevation of the top of a tower from two points on the ground, on the same side of the tower and 30 m apart along a line through its foot, are 30° and 45° . Find the height of the tower. **[5]**
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- 9.42** The angles of elevation of the top of a tower from two points on the ground, on the same side of the tower and 10 m apart along a line through its foot, are 30° and 60° . Find the height of the tower. **[5]**
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- 9.43** From the top of a lighthouse, the angles of depression of two ships on the same side of it, one exactly behind the other and 200 m apart, are 60° and 30° . Find the height of the lighthouse. **[5]**
-
- 9.44** The angles of elevation of the top of a tower from two points on the ground, on the same side of the tower and 50 m apart along a line through its foot, are 30° and 45° . Find the height of the tower. **[5]**
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- 9.45** From the top of a lighthouse, the angles of depression of two ships on the same side of it, one exactly behind the other and 10 m apart, are 45° and 30° . Find the height of the lighthouse. **[5]**
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- 9.46** The angles of elevation of the top of a tower from two points on the ground, on the same side of the tower and 50 m apart along a line through its foot, are 30° and 60° . Find the height of the tower. **[5]**
-
- 9.47** From the top of a lighthouse, the angles of depression of two ships on the same side of it, one exactly behind the other and 120 m apart, are 60° and 45° . Find the height of the lighthouse. **[5]**
-
- 9.48** The angles of elevation of the top of a tower from two points on the ground, on the same side of the tower and 100 m apart along a line through its foot, are 45° and 60° . Find the height of the tower. **[5]**
-
- 9.49** The angles of elevation of the top of a tower from two points on the ground, on the same side of the tower and 120 m apart along a line through its foot, are 30° and 60° . Find the height of the tower. **[5]**
-
- 9.50** From the top of a lighthouse, the angles of depression of two ships on the same side of it, one exactly behind the other and 100 m apart, are 60° and 45° . Find the height of the lighthouse. **[5]**
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Chapter 10: Circles

50 questions · 119 marks · arranged from 2-mark to 5-mark questions

- 10.1** The length of the tangent from a point P to a circle is 33 cm and the distance of P from the centre is 65 cm. Find the radius of the circle. **[2]**
- 10.2** PA and PB are tangents drawn from an external point P to a circle with centre O. If $\angle APB = 145^\circ$, find $\angle AOB$ and $\angle OAB$. **[2]**
- 10.3** A quadrilateral ABCD is drawn to circumscribe a circle. If AB = 6 cm, BC = 15 cm and CD = 15 cm, find AD. **[2]**
- 10.4** A point P is at a distance of 55 cm from the centre of a circle of radius 44 cm. Find the length of the tangent drawn from P to the circle. **[2]**
- 10.5** PQ is a tangent to a circle with centre O at the point Q. If $\angle QPO = 45^\circ$, find $\angle POQ$. **[2]**
- 10.6** A quadrilateral ABCD is drawn to circumscribe a circle. If AB = 14 cm, BC = 10 cm and CD = 4 cm, find AD. **[2]**
- 10.7** A point P is at a distance of 5 cm from the centre of a circle of radius 3 cm. Find the length of the tangent drawn from P to the circle. **[2]**
- 10.8** PQ is a tangent to a circle with centre O at the point Q. If $\angle QPO = 55^\circ$, find $\angle POQ$. **[2]**
- 10.9** A quadrilateral ABCD is drawn to circumscribe a circle. If AB = 6 cm, BC = 10 cm and CD = 7 cm, find AD. **[2]**
- 10.10** The length of the tangent from a point P to a circle is 21 cm and the distance of P from the centre is 35 cm. Find the radius of the circle. **[2]**
- 10.11** PQ is a tangent to a circle with centre O at the point Q. If $\angle QPO = 35^\circ$, find $\angle POQ$. **[2]**
- 10.12** A quadrilateral ABCD is drawn to circumscribe a circle. If AB = 11 cm, BC = 13 cm and CD = 6 cm, find AD. **[2]**
- 10.13** The length of the tangent from a point P to a circle is 20 cm and the distance of P from the centre is 25 cm. Find the radius of the circle. **[2]**
- 10.14** PA and PB are tangents drawn from an external point P to a circle with centre O. If $\angle APB = 125^\circ$, find $\angle AOB$ and $\angle OAB$. **[2]**
- 10.15** A quadrilateral ABCD is drawn to circumscribe a circle. If AB = 8 cm, BC = 9 cm and CD = 13 cm, find AD. **[2]**
- 10.16** The length of the tangent from a point P to a circle is 28 cm and the distance of P from the centre is 35 cm. Find the radius of the circle. **[2]**

- 10.17** A quadrilateral ABCD is drawn to circumscribe a circle. If $AB = 14$ cm, $BC = 15$ cm and $CD = 11$ cm, find AD. **[2]**
- 10.18** A point P is at a distance of 15 cm from the centre of a circle of radius 9 cm. Find the length of the tangent drawn from P to the circle. **[2]**
- 10.19** PA and PB are tangents drawn from an external point P to a circle with centre O. If $\angle APB = 65^\circ$, find $\angle AOB$ and $\angle OAB$. **[2]**
- 10.20** A quadrilateral ABCD is drawn to circumscribe a circle. If $AB = 9$ cm, $BC = 9$ cm and $CD = 13$ cm, find AD. **[2]**
- 10.21** A point P is at a distance of 45 cm from the centre of a circle of radius 36 cm. Find the length of the tangent drawn from P to the circle. **[2]**
- 10.22** PA and PB are tangents drawn from an external point P to a circle with centre O. If $\angle APB = 60^\circ$, find $\angle AOB$ and $\angle OAB$. **[2]**
- 10.23** A quadrilateral ABCD is drawn to circumscribe a circle. If $AB = 8$ cm, $BC = 15$ cm and $CD = 11$ cm, find AD. **[2]**
- 10.24** PQ is a tangent to a circle with centre O at the point Q. If $\angle QPO = 70^\circ$, find $\angle POQ$. **[2]**
- 10.25** A quadrilateral ABCD is drawn to circumscribe a circle. If $AB = 8$ cm, $BC = 9$ cm and $CD = 8$ cm, find AD. **[2]**
- 10.26** The length of the tangent from a point P to a circle is 12 cm and the distance of P from the centre is 37 cm. Find the radius of the circle. **[2]**
- 10.27** PA and PB are tangents drawn from an external point P to a circle with centre O. If $\angle APB = 80^\circ$, find $\angle AOB$ and $\angle OAB$. **[2]**
- 10.28** A quadrilateral ABCD is drawn to circumscribe a circle. If $AB = 12$ cm, $BC = 4$ cm and $CD = 15$ cm, find AD. **[2]**
- 10.29** The length of the tangent from a point P to a circle is 12 cm and the distance of P from the centre is 20 cm. Find the radius of the circle. **[2]**
- 10.30** PA and PB are tangents drawn from an external point P to a circle with centre O. If $\angle APB = 115^\circ$, find $\angle AOB$ and $\angle OAB$. **[2]**
- 10.31** A quadrilateral ABCD is drawn to circumscribe a circle. If $AB = 11$ cm, $BC = 12$ cm and $CD = 12$ cm, find AD. **[2]**
- 10.32** Two concentric circles are of radii 68 cm and 60 cm. Find the length of the chord of the larger circle which touches the smaller circle. **[3]**
- 10.33** A circle is inscribed in $\triangle ABC$, which is right-angled at B, with $AB = 7$ cm and $BC = 24$ cm. Find the radius of the circle. **[3]**

- 10.34** Two concentric circles are of radii 50 cm and 48 cm. Find the length of the chord of the larger circle which touches the smaller circle. **[3]**
- 10.35** A circle is inscribed in $\triangle ABC$, which is right-angled at B, with $AB = 24$ cm and $BC = 32$ cm. Find the radius of the circle. **[3]**
- 10.36** Two concentric circles are of radii 39 cm and 36 cm. Find the length of the chord of the larger circle which touches the smaller circle. **[3]**
- 10.37** A circle is inscribed in $\triangle ABC$, which is right-angled at B, with $AB = 20$ cm and $BC = 21$ cm. Find the radius of the circle. **[3]**
- 10.38** Two concentric circles are of radii 45 cm and 36 cm. Find the length of the chord of the larger circle which touches the smaller circle. **[3]**
- 10.39** A circle is inscribed in $\triangle ABC$, which is right-angled at B, with $AB = 10$ cm and $BC = 24$ cm. Find the radius of the circle. **[3]**
- 10.40** Two concentric circles are of radii 25 cm and 20 cm. Find the length of the chord of the larger circle which touches the smaller circle. **[3]**
- 10.41** A circle is inscribed in $\triangle ABC$, which is right-angled at B, with $AB = 6$ cm and $BC = 8$ cm. Find the radius of the circle. **[3]**
- 10.42** Two concentric circles are of radii 65 cm and 60 cm. Find the length of the chord of the larger circle which touches the smaller circle. **[3]**
- 10.43** Two concentric circles are of radii 29 cm and 21 cm. Find the length of the chord of the larger circle which touches the smaller circle. **[3]**
- 10.44** A circle is inscribed in $\triangle ABC$, which is right-angled at B, with $AB = 3$ cm and $BC = 4$ cm. Find the radius of the circle. **[3]**
- 10.45** Two concentric circles are of radii 35 cm and 28 cm. Find the length of the chord of the larger circle which touches the smaller circle. **[3]**
- 10.46** A circle is inscribed in $\triangle ABC$, which is right-angled at B, with $AB = 5$ cm and $BC = 12$ cm. Find the radius of the circle. **[3]**
- 10.47** Two concentric circles are of radii 65 cm and 63 cm. Find the length of the chord of the larger circle which touches the smaller circle. **[3]**
- 10.48** A circle is inscribed in $\triangle ABC$, which is right-angled at B, with $AB = 48$ cm and $BC = 64$ cm. Find the radius of the circle. **[3]**
- 10.49** Two concentric circles are of radii 26 cm and 24 cm. Find the length of the chord of the larger circle which touches the smaller circle. **[3]**
- 10.50** A circle is inscribed in $\triangle ABC$, which is right-angled at B, with $AB = 20$ cm and $BC = 48$ cm. Find the radius of the circle. **[3]**

Chapter 11: Areas Related to Circles

50 questions · 121 marks · arranged from 2-mark to 5-mark questions

- 11.1** Find the length of the arc of a circle of radius 35 cm which subtends an angle of 210° at the centre. (Use $\pi = 22/7$) **[2]**
- 11.2** The minute hand of a clock is 10.5 cm long. Find the area swept by it in 30 minutes. (Use $\pi = 22/7$) **[2]**
- 11.3** The diameter of a wheel is 35 cm. How many complete revolutions will it make to cover a distance of 5500 m? (Use $\pi = 22/7$) **[2]**
- 11.4** Find the length of the arc of a circle of radius 21 cm which subtends an angle of 150° at the centre. (Use $\pi = 22/7$) **[2]**
- 11.5** The minute hand of a clock is 7 cm long. Find the area swept by it in 10 minutes. (Use $\pi = 22/7$) **[2]**
- 11.6** The diameter of a wheel is 70 cm. How many complete revolutions will it make to cover a distance of 4400 m? (Use $\pi = 22/7$) **[2]**
- 11.7** Find the length of the arc of a circle of radius 28 cm which subtends an angle of 150° at the centre. (Use $\pi = 22/7$) **[2]**
- 11.8** The minute hand of a clock is 7 cm long. Find the area swept by it in 25 minutes. (Use $\pi = 22/7$) **[2]**
- 11.9** The diameter of a wheel is 70 cm. How many complete revolutions will it make to cover a distance of 550 m? (Use $\pi = 22/7$) **[2]**
- 11.10** Find the length of the arc of a circle of radius 42 cm which subtends an angle of 270° at the centre. (Use $\pi = 22/7$) **[2]**
- 11.11** The minute hand of a clock is 10.5 cm long. Find the area swept by it in 20 minutes. (Use $\pi = 22/7$) **[2]**
- 11.12** The diameter of a wheel is 21 cm. How many complete revolutions will it make to cover a distance of 264 m? (Use $\pi = 22/7$) **[2]**
- 11.13** The minute hand of a clock is 21 cm long. Find the area swept by it in 5 minutes. (Use $\pi = 22/7$) **[2]**
- 11.14** The diameter of a wheel is 14 cm. How many complete revolutions will it make to cover a distance of 110 m? (Use $\pi = 22/7$) **[2]**
- 11.15** Find the length of the arc of a circle of radius 42 cm which subtends an angle of 30° at the centre. (Use $\pi = 22/7$) **[2]**
- 11.16** The minute hand of a clock is 7 cm long. Find the area swept by it in 35 minutes. (Use $\pi = 22/7$) **[2]**

- 11.17** The diameter of a wheel is 14 cm. How many complete revolutions will it make to cover a distance of 660 m? (Use $\pi = 22/7$) **[2]**
- 11.18** Find the length of the arc of a circle of radius 21 cm which subtends an angle of 120° at the centre. (Use $\pi = 22/7$) **[2]**
- 11.19** The minute hand of a clock is 17.5 cm long. Find the area swept by it in 30 minutes. (Use $\pi = 22/7$) **[2]**
- 11.20** The diameter of a wheel is 84 cm. How many complete revolutions will it make to cover a distance of 264 m? (Use $\pi = 22/7$) **[2]**
- 11.21** Find the length of the arc of a circle of radius 35 cm which subtends an angle of 120° at the centre. (Use $\pi = 22/7$) **[2]**
- 11.22** The minute hand of a clock is 14 cm long. Find the area swept by it in 5 minutes. (Use $\pi = 22/7$) **[2]**
- 11.23** The diameter of a wheel is 42 cm. How many complete revolutions will it make to cover a distance of 2640 m? (Use $\pi = 22/7$) **[2]**
- 11.24** Find the length of the arc of a circle of radius 35 cm which subtends an angle of 90° at the centre. (Use $\pi = 22/7$) **[2]**
- 11.25** The minute hand of a clock is 35 cm long. Find the area swept by it in 35 minutes. (Use $\pi = 22/7$) **[2]**
- 11.26** The diameter of a wheel is 56 cm. How many complete revolutions will it make to cover a distance of 1760 m? (Use $\pi = 22/7$) **[2]**
- 11.27** The minute hand of a clock is 10.5 cm long. Find the area swept by it in 45 minutes. (Use $\pi = 22/7$) **[2]**
- 11.28** The diameter of a wheel is 56 cm. How many complete revolutions will it make to cover a distance of 3520 m? (Use $\pi = 22/7$) **[2]**
- 11.29** Find the length of the arc of a circle of radius 7 cm which subtends an angle of 150° at the centre. (Use $\pi = 22/7$) **[2]**
- 11.30** Find the area of the minor sector and the major sector of a circle of radius 14 cm if the angle of the minor sector is 135° . (Use $\pi = 22/7$) **[3]**
- 11.31** The length of an arc of a circle is $(80/3)\pi$ cm and the area of the sector bounded by it is $(800/3)\pi$ cm². Find the radius of the circle and the central angle. **[3]**
- 11.32** Find the area of the minor sector and the major sector of a circle of radius 14 cm if the angle of the minor sector is 90° . (Use $\pi = 22/7$) **[3]**
- 11.33** The length of an arc of a circle is $(11/6)\pi$ cm and the area of the sector bounded by it is $(121/12)\pi$ cm². Find the radius of the circle and the central angle. **[3]**

- 11.34** Find the area of the minor sector and the major sector of a circle of radius 21 cm if the angle of the minor sector is 120° . (Use $\pi = 22/7$) **[3]**
- 11.35** The length of an arc of a circle is 4π cm and the area of the sector bounded by it is 12π cm². Find the radius of the circle and the central angle. **[3]**
- 11.36** Find the area of the minor sector and the major sector of a circle of radius 28 cm if the angle of the minor sector is 45° . (Use $\pi = 22/7$) **[3]**
- 11.37** The length of an arc of a circle is $(11/2)\pi$ cm and the area of the sector bounded by it is $(121/4)\pi$ cm². Find the radius of the circle and the central angle. **[3]**
- 11.38** Find the area of the minor sector and the major sector of a circle of radius 14 cm if the angle of the minor sector is 120° . (Use $\pi = 22/7$) **[3]**
- 11.39** The length of an arc of a circle is 12π cm and the area of the sector bounded by it is 54π cm². Find the radius of the circle and the central angle. **[3]**
- 11.40** Find the area of the minor sector and the major sector of a circle of radius 14 cm if the angle of the minor sector is 45° . (Use $\pi = 22/7$) **[3]**
- 11.41** The length of an arc of a circle is $(18/5)\pi$ cm and the area of the sector bounded by it is $(81/5)\pi$ cm². Find the radius of the circle and the central angle. **[3]**
- 11.42** The length of an arc of a circle is $(14/5)\pi$ cm and the area of the sector bounded by it is $(49/5)\pi$ cm². Find the radius of the circle and the central angle. **[3]**
- 11.43** The length of an arc of a circle is π cm and the area of the sector bounded by it is $(3/2)\pi$ cm². Find the radius of the circle and the central angle. **[3]**
- 11.44** Find the area of the minor sector and the major sector of a circle of radius 14 cm if the angle of the minor sector is 60° . (Use $\pi = 22/7$) **[3]**
- 11.45** The length of an arc of a circle is $(12/5)\pi$ cm and the area of the sector bounded by it is $(36/5)\pi$ cm². Find the radius of the circle and the central angle. **[3]**
- 11.46** Find the area of the minor sector and the major sector of a circle of radius 7 cm if the angle of the minor sector is 45° . (Use $\pi = 22/7$) **[3]**
- 11.47** The length of an arc of a circle is $(3/2)\pi$ cm and the area of the sector bounded by it is $(9/4)\pi$ cm². Find the radius of the circle and the central angle. **[3]**
- 11.48** Find the area of the minor sector and the major sector of a circle of radius 21 cm if the angle of the minor sector is 60° . (Use $\pi = 22/7$) **[3]**
- 11.49** The length of an arc of a circle is $(36/5)\pi$ cm and the area of the sector bounded by it is $(324/5)\pi$ cm². Find the radius of the circle and the central angle. **[3]**
- 11.50** Find the area of the minor sector and the major sector of a circle of radius 7 cm if the angle of the minor sector is 30° . (Use $\pi = 22/7$) **[3]**

Chapter 12: Surface Areas and Volumes

50 questions · 190 marks · arranged from 2-mark to 5-mark questions

- 12.1** 2 cubes, each of volume 216 cm^3 , are joined end to end. Find the surface area and the volume of the resulting cuboid. **[2]**
- 12.2** 3 cubes, each of volume 729 cm^3 , are joined end to end. Find the surface area and the volume of the resulting cuboid. **[2]**
- 12.3** 3 cubes, each of volume 1000 cm^3 , are joined end to end. Find the surface area and the volume of the resulting cuboid. **[2]**
- 12.4** 2 cubes, each of volume 64 cm^3 , are joined end to end. Find the surface area and the volume of the resulting cuboid. **[2]**
- 12.5** 2 cubes, each of volume 8 cm^3 , are joined end to end. Find the surface area and the volume of the resulting cuboid. **[2]**
- 12.6** 3 cubes, each of volume 8 cm^3 , are joined end to end. Find the surface area and the volume of the resulting cuboid. **[2]**
- 12.7** 2 cubes, each of volume 27 cm^3 , are joined end to end. Find the surface area and the volume of the resulting cuboid. **[2]**
- 12.8** 3 cubes, each of volume 512 cm^3 , are joined end to end. Find the surface area and the volume of the resulting cuboid. **[2]**
- 12.9** 3 cubes, each of volume 343 cm^3 , are joined end to end. Find the surface area and the volume of the resulting cuboid. **[2]**
- 12.10** 3 cubes, each of volume 64 cm^3 , are joined end to end. Find the surface area and the volume of the resulting cuboid. **[2]**
- 12.11** A toy is in the form of a cone of radius 10.5 cm mounted on a hemisphere of the same radius. The total height of the toy is 17.5 cm . Find the volume of the toy. (Use $\pi = \frac{22}{7}$) **[3]**
- 12.12** The largest possible right circular cone is carved out of a cube of side 21 cm . Find the volume of the wood left. (Use $\pi = \frac{22}{7}$) **[3]**
- 12.13** A solid wooden toy is in the form of a hemisphere of radius 3.5 cm surmounted by a cone of the same radius. If the volume of wood used is 154 cm^3 , find the height of the conical part. (Use $\pi = \frac{22}{7}$) **[3]**
- 12.14** The largest possible right circular cone is carved out of a cube of side 7 cm . Find the volume of the wood left. (Use $\pi = \frac{22}{7}$) **[3]**
- 12.15** A toy is in the form of a cone of radius 3.5 cm mounted on a hemisphere of the same radius. The total height of the toy is 16.5 cm . Find the volume of the toy. (Use $\pi = \frac{22}{7}$) **[3]**

- 12.16** A solid wooden toy is in the form of a hemisphere of radius 10.5 cm surmounted by a cone of the same radius. If the volume of wood used is 2772 cm^3 , find the height of the conical part. (Use $\pi = 22/7$) **[3]**
- 12.17** A solid wooden toy is in the form of a hemisphere of radius 10.5 cm surmounted by a cone of the same radius. If the volume of wood used is 3696 cm^3 , find the height of the conical part. (Use $\pi = 22/7$) **[3]**
- 12.18** The largest possible right circular cone is carved out of a cube of side 14 cm. Find the volume of the wood left. (Use $\pi = 22/7$) **[3]**
- 12.19** A toy is in the form of a cone of radius 3.5 cm mounted on a hemisphere of the same radius. The total height of the toy is 8.5 cm. Find the volume of the toy. (Use $\pi = 22/7$) **[3]**
- 12.20** A solid wooden toy is in the form of a hemisphere of radius 10.5 cm surmounted by a cone of the same radius. If the volume of wood used is $6699/2 \text{ cm}^3$, find the height of the conical part. (Use $\pi = 22/7$) **[3]**
- 12.21** A toy is in the form of a cone of radius 3.5 cm mounted on a hemisphere of the same radius. The total height of the toy is 15.5 cm. Find the volume of the toy. (Use $\pi = 22/7$) **[3]**
- 12.22** A solid wooden toy is in the form of a hemisphere of radius 7 cm surmounted by a cone of the same radius. If the volume of wood used is $3080/3 \text{ cm}^3$, find the height of the conical part. (Use $\pi = 22/7$) **[3]**
- 12.23** A toy is in the form of a cone of radius 3.5 cm mounted on a hemisphere of the same radius. The total height of the toy is 10.5 cm. Find the volume of the toy. (Use $\pi = 22/7$) **[3]**
- 12.24** A hemispherical depression of the largest possible diameter is cut out from one face of a cube of side 21 cm. Find the volume of the remaining solid. (Use $\pi = 22/7$) **[3]**
- 12.25** A solid wooden toy is in the form of a hemisphere of radius 10.5 cm surmounted by a cone of the same radius. If the volume of wood used is $7623/2 \text{ cm}^3$, find the height of the conical part. (Use $\pi = 22/7$) **[3]**
- 12.26** A solid is in the shape of a cylinder with two hemispherical ends. The total length of the solid is 24 cm and its diameter is 14 cm. Find its volume and total surface area. (Use $\pi = 22/7$) **[5]**
- 12.27** A tent is in the shape of a cylinder of radius 9 m and height 4 m surmounted by a cone of the same radius. The total height of the tent is 16 m. Find the area of canvas used to make the tent and its cost at ₹500 per m^2 . (Use $\pi = 22/7$) **[5]**
- 12.28** A solid is in the shape of a cylinder with two hemispherical ends. The total length of the solid is 38 cm and its diameter is 28 cm. Find its volume and total surface area. (Use $\pi = 22/7$) **[5]**

- 12.29** A tent is in the shape of a cylinder of radius 48 m and height 2 m surmounted by a cone of the same radius. The total height of the tent is 16 m. Find the area of canvas used to make the tent and its cost at ₹200 per m^2 . (Use $\pi = 22/7$) **[5]**
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- 12.30** A solid is in the shape of a cylinder with two hemispherical ends. The total length of the solid is 29 cm and its diameter is 14 cm. Find its volume and total surface area. (Use $\pi = 22/7$) **[5]**
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- 12.31** A tent is in the shape of a cylinder of radius 7 m and height 5 m surmounted by a cone of the same radius. The total height of the tent is 29 m. Find the area of canvas used to make the tent and its cost at ₹100 per m^2 . (Use $\pi = 22/7$) **[5]**
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- 12.32** A solid is in the shape of a cylinder with two hemispherical ends. The total length of the solid is 24 cm and its diameter is 7 cm. Find its volume and total surface area. (Use $\pi = 22/7$) **[5]**
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- 12.33** A tent is in the shape of a cylinder of radius 12 m and height 6 m surmounted by a cone of the same radius. The total height of the tent is 11 m. Find the area of canvas used to make the tent and its cost at ₹500 per m^2 . (Use $\pi = 22/7$) **[5]**
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- 12.34** A solid is in the shape of a cylinder with two hemispherical ends. The total length of the solid is 34 cm and its diameter is 28 cm. Find its volume and total surface area. (Use $\pi = 22/7$) **[5]**
-
- 12.35** A tent is in the shape of a cylinder of radius 21 m and height 6 m surmounted by a cone of the same radius. The total height of the tent is 26 m. Find the area of canvas used to make the tent and its cost at ₹150 per m^2 . (Use $\pi = 22/7$) **[5]**
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- 12.36** A solid is in the shape of a cylinder with two hemispherical ends. The total length of the solid is 36 cm and its diameter is 21 cm. Find its volume and total surface area. (Use $\pi = 22/7$) **[5]**
-
- 12.37** A tent is in the shape of a cylinder of radius 21 m and height 4 m surmounted by a cone of the same radius. The total height of the tent is 24 m. Find the area of canvas used to make the tent and its cost at ₹100 per m^2 . (Use $\pi = 22/7$) **[5]**
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- 12.38** A solid is in the shape of a cylinder with two hemispherical ends. The total length of the solid is 32 cm and its diameter is 28 cm. Find its volume and total surface area. (Use $\pi = 22/7$) **[5]**
-
- 12.39** A tent is in the shape of a cylinder of radius 20 m and height 6 m surmounted by a cone of the same radius. The total height of the tent is 27 m. Find the area of canvas used to make the tent and its cost at ₹200 per m^2 . (Use $\pi = 22/7$) **[5]**
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- 12.40** A solid is in the shape of a cylinder with two hemispherical ends. The total length of the solid is 20 cm and its diameter is 14 cm. Find its volume and total surface area. (Use $\pi = 22/7$) **[5]**
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- 12.41** A tent is in the shape of a cylinder of radius 7 m and height 2 m surmounted by a cone of the same radius. The total height of the tent is 26 m. Find the area of canvas used to make the tent and its cost at ₹100 per m^2 . (Use $\pi = 22/7$) **[5]**
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- 12.42** A solid is in the shape of a cylinder with two hemispherical ends. The total length of the solid is 23 cm and its diameter is 14 cm. Find its volume and total surface area. (Use $\pi = 22/7$) **[5]**
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- 12.43** A tent is in the shape of a cylinder of radius 12 m and height 3 m surmounted by a cone of the same radius. The total height of the tent is 12 m. Find the area of canvas used to make the tent and its cost at ₹250 per m^2 . (Use $\pi = 22/7$) **[5]**
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- 12.44** A solid is in the shape of a cylinder with two hemispherical ends. The total length of the solid is 18 cm and its diameter is 7 cm. Find its volume and total surface area. (Use $\pi = 22/7$) **[5]**
-
- 12.45** A tent is in the shape of a cylinder of radius 12 m and height 6 m surmounted by a cone of the same radius. The total height of the tent is 15 m. Find the area of canvas used to make the tent and its cost at ₹100 per m^2 . (Use $\pi = 22/7$) **[5]**
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- 12.46** A solid is in the shape of a cylinder with two hemispherical ends. The total length of the solid is 37 cm and its diameter is 28 cm. Find its volume and total surface area. (Use $\pi = 22/7$) **[5]**
-
- 12.47** A tent is in the shape of a cylinder of radius 12 m and height 2 m surmounted by a cone of the same radius. The total height of the tent is 11 m. Find the area of canvas used to make the tent and its cost at ₹500 per m^2 . (Use $\pi = 22/7$) **[5]**
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- 12.48** A solid is in the shape of a cylinder with two hemispherical ends. The total length of the solid is 31 cm and its diameter is 14 cm. Find its volume and total surface area. (Use $\pi = 22/7$) **[5]**
-
- 12.49** A solid is in the shape of a cylinder with two hemispherical ends. The total length of the solid is 38 cm and its diameter is 21 cm. Find its volume and total surface area. (Use $\pi = 22/7$) **[5]**
-
- 12.50** A tent is in the shape of a cylinder of radius 16 m and height 3 m surmounted by a cone of the same radius. The total height of the tent is 15 m. Find the area of canvas used to make the tent and its cost at ₹100 per m^2 . (Use $\pi = 22/7$) **[5]**
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Chapter 13: Statistics

50 questions · 160 marks · arranged from 2-mark to 5-mark questions

13.1 For a moderately skewed distribution, the mean is 50 and the mode is 59. Find the median. **[2]**

13.2 For a moderately skewed distribution, the mode is 41 and the median is 55. Find the mean. **[2]**

13.3 For a moderately skewed distribution, the mode is 29 and the median is 35. Find the mean. **[2]**

13.4 For a moderately skewed distribution, the mean is 54 and the median is 58. Find the mode. **[2]**

13.5 For a moderately skewed distribution, the mode is 39 and the median is 53. Find the mean. **[2]**

13.6 For a moderately skewed distribution, the mean is 32 and the mode is 26. Find the median. **[2]**

13.7 For a moderately skewed distribution, the mean is 49 and the median is 46. Find the mode. **[2]**

13.8 For a moderately skewed distribution, the mean is 49 and the mode is 31. Find the median. **[2]**

13.9 For a moderately skewed distribution, the mean is 60 and the median is 57. Find the mode. **[2]**

13.10 For a moderately skewed distribution, the mean is 12 and the median is 17. Find the mode. **[2]**

13.11 Find the mean of the following frequency distribution. **[3]**

Class	0-20	20-40	40-60	60-80	80-100	100-120
Frequency	7	18	7	3	5	10

13.12 Find the median of the following frequency distribution. **[3]**

Class	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	2	14	4	9	18	2

13.13 Find the mode of the following frequency distribution. **[3]**

Class	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	4	15	20	5	16	7

13.14 Find the mean of the following frequency distribution. **[3]**

Class	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	5	11	12	18	17	17

13.15 Find the median of the following frequency distribution. **[3]**

Class	0-10	10-20	20-30	30-40	40-50
Frequency	3	12	2	4	14

13.16 Find the mode of the following frequency distribution. **[3]**

Class	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	4	6	20	18	16	8

13.17 Find the mean of the following frequency distribution. **[3]**

Class	0-20	20-40	40-60	60-80	80-100	100-120
Frequency	18	18	9	19	7	9

13.18 Find the median of the following frequency distribution. **[3]**

Class	0-10	10-20	20-30	30-40	40-50
Frequency	13	18	10	13	10

13.19 Find the mode of the following frequency distribution. **[3]**

Class	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	7	5	18	9	20	6

13.20 Find the mean of the following frequency distribution. **[3]**

Class	0-5	5-10	10-15	15-20	20-25	25-30
Frequency	7	6	6	20	11	14

13.21 Find the median of the following frequency distribution. **[3]**

Class	0-5	5-10	10-15	15-20	20-25
Frequency	2	10	13	15	10

13.22 Find the mode of the following frequency distribution. **[3]**

Class	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	7	4	17	20	3	2

13.23 Find the mean of the following frequency distribution. **[3]**

Class	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	13	14	4	6	9	9

13.24 Find the median of the following frequency distribution. **[3]**

Class	0-20	20-40	40-60	60-80	80-100
Frequency	4	9	20	12	9

13.25 Find the mode of the following frequency distribution. **[3]**

Class	0-20	20-40	40-60	60-80	80-100
Frequency	18	5	20	10	2

13.26 Find the mean of the following frequency distribution. **[3]**

Class	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	19	11	15	6	16	13

13.27 Find the median of the following frequency distribution. **[3]**

Class	0-5	5-10	10-15	15-20	20-25	25-30
Frequency	20	11	6	20	18	19

13.28 Find the mode of the following frequency distribution. **[3]**

Class	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	3	15	2	19	2	10

13.29 Find the mean of the following frequency distribution. **[3]**

Class	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	16	2	8	12	8	2

13.30 Find the median of the following frequency distribution. **[3]**

Class	0-20	20-40	40-60	60-80	80-100	100-120
Frequency	13	12	20	12	2	20

13.31 Find the mode of the following frequency distribution. **[3]**

Class	0-10	10-20	20-30	30-40	40-50
Frequency	16	12	9	2	3

13.32 Find the mean of the following frequency distribution. **[3]**

Class	0-10	10-20	20-30	30-40	40-50
Frequency	14	12	20	12	6

13.33 Find the median of the following frequency distribution. **[3]**

Class	0-20	20-40	40-60	60-80	80-100
Frequency	17	15	16	14	2

13.34 Find the mode of the following frequency distribution. **[3]**

Class	0-5	5-10	10-15	15-20	20-25	25-30
Frequency	9	2	2	20	13	7

13.35 Find the mean of the following frequency distribution. **[3]**

Class	20-30	30-40	40-50	50-60	60-70
Frequency	16	18	9	18	19

13.36 Find the median of the following frequency distribution. **[3]**

Class	0-10	10-20	20-30	30-40	40-50
Frequency	18	20	11	10	4

13.37 Find the mode of the following frequency distribution. **[3]**

Class	0-10	10-20	20-30	30-40	40-50
Frequency	9	13	14	13	11

13.38 Find the mean of the following frequency distribution. **[3]**

Class	0-20	20-40	40-60	60-80	80-100
Frequency	12	4	6	3	15

13.39 Find the median of the following frequency distribution. **[3]**

Class	0-5	5-10	10-15	15-20	20-25	25-30
Frequency	3	7	9	16	2	17

13.40 Find the mode of the following frequency distribution. **[3]**

Class	0-20	20-40	40-60	60-80	80-100
Frequency	14	12	9	12	5

13.41 The median of the following data is 15 and the sum of all frequencies is 48. Find the values of x and y . **[5]**

Class	0-5	5-10	10-15	15-20	20-25
Frequency	x	2	9	y	20

13.42 The median of the following data is 22 and the sum of all frequencies is 40. Find the values of x and y . **[5]**

Class	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	x	10	5	3	11	y

13.43 The median of the following data is 50 and the sum of all frequencies is 65. Find the values of x and y . **[5]**

Class	0-20	20-40	40-60	60-80	80-100
Frequency	15	x	19	y	3

13.44 The median of the following data is 75 and the sum of all frequencies is 66. Find the values of x and y . **[5]**

Class	0-20	20-40	40-60	60-80	80-100	100-120
Frequency	17	x	5	4	y	16

13.45 The median of the following data is 57.5 and the sum of all frequencies is 63. Find the values of x and y . **[5]**

Class	0-20	20-40	40-60	60-80	80-100
Frequency	2	x	12	y	11

13.46 The median of the following data is 52.5 and the sum of all frequencies is 59. Find the values of x and y . **[5]**

Class	0-20	20-40	40-60	60-80	80-100
Frequency	6	x	12	y	16

13.47 The median of the following data is 50 and the sum of all frequencies is 49. Find the values of x and y . **[5]**

Class	0-20	20-40	40-60	60-80	80-100
Frequency	15	x	3	y	18

13.48 The median of the following data is 16 and the sum of all frequencies is 64. Find the values of x and y . **[5]**

Class	0-5	5-10	10-15	15-20	20-25	25-30
Frequency	13	9	x	15	y	3

13.49 The median of the following data is 11.5 and the sum of all frequencies is 69. Find the values of x and y . **[5]**

Class	0-5	5-10	10-15	15-20	20-25
Frequency	20	x	15	17	y

13.50 The median of the following data is 37.5 and the sum of all frequencies is 72. Find the values of x and y . **[5]**

Class	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	9	x	20	8	10	y

Chapter 14: Probability

50 questions · 100 marks · arranged from 2-mark to 5-mark questions

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|--|------------|
| 14.1 Two dice are thrown at the same time. Find the probability that the same number appears on both dice (a doublet). | [2] |
| 14.2 2 cards of clubs and 1 card of spades are missing from a pack of 52 cards. A card is drawn at random from the remaining cards. Find the probability that it is a card of hearts. | [2] |
| 14.3 A bag contains 12 red, 10 blue and 1 green balls. One ball is drawn at random. Find the probability that the ball drawn is not blue. | [2] |
| 14.4 Cards numbered 7 to 87 are put in a box and mixed thoroughly. One card is drawn at random. Find the probability that the number on the card is a prime number. | [2] |
| 14.5 3 coins are tossed simultaneously. Find the probability of getting exactly 1 head. | [2] |
| 14.6 Two dice are thrown at the same time. Find the probability that the sum is at most 5. | [2] |
| 14.7 5 cards of hearts and 4 cards of diamonds are missing from a pack of 52 cards. A card is drawn at random from the remaining cards. Find the probability that it is a card of diamonds. | [2] |
| 14.8 A bag contains 11 red, 10 blue and 6 green balls. One ball is drawn at random. Find the probability that the ball drawn is red. | [2] |
| 14.9 Cards numbered 1 to 95 are put in a box and mixed thoroughly. One card is drawn at random. Find the probability that the number on the card is divisible by 6. | [2] |
| 14.10 3 coins are tossed simultaneously. Find the probability of getting at least 1 head. | [2] |
| 14.11 Two dice are thrown at the same time. Find the probability that the number on each die is less than 3. | [2] |
| 14.12 5 cards of diamonds and 1 card of clubs are missing from a pack of 52 cards. A card is drawn at random from the remaining cards. Find the probability that it is a card of spades. | [2] |
| 14.13 A bag contains 6 red balls and some white balls. If the probability of drawing a red ball is $\frac{3}{10}$, find the number of white balls. | [2] |
| 14.14 Cards numbered 10 to 78 are put in a box and mixed thoroughly. One card is drawn at random. Find the probability that the number on the card is even but not divisible by 3. | [2] |
| 14.15 3 coins are tossed simultaneously. Find the probability of getting at most 3 heads. | [2] |

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- 14.16** A card is drawn at random from a well-shuffled pack of 52 playing cards. Find the probability of getting a red card. **[2]**
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- 14.17** A bag contains 6 red, 12 blue and 2 green balls. One ball is drawn at random. Find the probability that the ball drawn is not blue. **[2]**
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- 14.18** Cards numbered 6 to 55 are put in a box and mixed thoroughly. One card is drawn at random. Find the probability that the number on the card is even but not divisible by 3. **[2]**
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- 14.19** Two dice are thrown at the same time. Find the probability that the number on each die is less than 4. **[2]**
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- 14.20** A card is drawn at random from a well-shuffled pack of 52 playing cards. Find the probability of getting a black face card. **[2]**
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- 14.21** A bag contains 8 red balls and some white balls. If the probability of drawing a red ball is $\frac{4}{11}$, find the number of white balls. **[2]**
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- 14.22** Cards numbered 1 to 82 are put in a box and mixed thoroughly. One card is drawn at random. Find the probability that the number on the card is a prime number. **[2]**
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- 14.23** 2 coins are tossed simultaneously. Find the probability of getting at least 2 heads. **[2]**
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- 14.24** A card is drawn at random from a well-shuffled pack of 52 playing cards. Find the probability of getting a red queen. **[2]**
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- 14.25** A bag contains 6 red, 12 blue and 7 green balls. One ball is drawn at random. Find the probability that the ball drawn is red. **[2]**
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- 14.26** Cards numbered 7 to 117 are put in a box and mixed thoroughly. One card is drawn at random. Find the probability that the number on the card is a perfect square or a perfect cube. **[2]**
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- 14.27** Two dice are thrown at the same time. Find the probability that the sum is a multiple of 5. **[2]**
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- 14.28** 2 cards of hearts and 2 cards of diamonds are missing from a pack of 52 cards. A card is drawn at random from the remaining cards. Find the probability that it is a card of clubs. **[2]**
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- 14.29** A bag contains 6 red, 11 blue and 1 green balls. One ball is drawn at random. Find the probability that the ball drawn is red. **[2]**
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- 14.30** Cards numbered 4 to 65 are put in a box and mixed thoroughly. One card is drawn at random. Find the probability that the number on the card is a perfect square or a perfect cube. **[2]**
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- 14.31** 3 coins are tossed simultaneously. Find the probability of getting exactly 2 heads. **[2]**
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- 14.32** Two dice are thrown at the same time. Find the probability that the sum is at most 9. **[2]**
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- 14.33** 3 cards of diamonds and 4 cards of clubs are missing from a pack of 52 cards. A card is drawn at random from the remaining cards. Find the probability that it is a card of clubs. **[2]**
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- 14.34** A bag contains 12 red, 6 blue and 6 green balls. One ball is drawn at random. Find the probability that the ball drawn is not blue. **[2]**
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- 14.35** Cards numbered 1 to 62 are put in a box and mixed thoroughly. One card is drawn at random. Find the probability that the number on the card is divisible by 5. **[2]**
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- 14.36** 2 coins are tossed simultaneously. Find the probability of getting exactly 2 heads. **[2]**
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- 14.37** Two dice are thrown at the same time. Find the probability that the sum of the numbers is 7. **[2]**
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- 14.38** 4 cards of spades and 3 cards of clubs are missing from a pack of 52 cards. A card is drawn at random from the remaining cards. Find the probability that it is a card of spades. **[2]**
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- 14.39** A bag contains 2 red, 5 blue and 3 green balls. One ball is drawn at random. Find the probability that the ball drawn is not blue. **[2]**
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- 14.40** Cards numbered 3 to 83 are put in a box and mixed thoroughly. One card is drawn at random. Find the probability that the number on the card is even but not divisible by 3. **[2]**
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- 14.41** 2 coins are tossed simultaneously. Find the probability of getting exactly 1 head. **[2]**
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- 14.42** Two dice are thrown at the same time. Find the probability that the product of the numbers is a prime number. **[2]**
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- 14.43** 1 card of spades and 3 cards of clubs are missing from a pack of 52 cards. A card is drawn at random from the remaining cards. Find the probability that it is a card of spades. **[2]**
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- 14.44** A bag contains 6 red, 10 blue and 5 green balls. One ball is drawn at random. Find the probability that the ball drawn is red. **[2]**
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- 14.45** Cards numbered 5 to 112 are put in a box and mixed thoroughly. One card is drawn at random. Find the probability that the number on the card is divisible by 6. **[2]**
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14.46 A bag contains 6 red, 9 blue and 7 green balls. One ball is drawn at random. Find the probability that the ball drawn is red. **[2]**

14.47 Cards numbered 10 to 112 are put in a box and mixed thoroughly. One card is drawn at random. Find the probability that the number on the card is divisible by 5. **[2]**

14.48 2 coins are tossed simultaneously. Find the probability of getting at least 1 head. **[2]**

14.49 2 cards of spades and 2 cards of hearts are missing from a pack of 52 cards. A card is drawn at random from the remaining cards. Find the probability that it is a card of spades. **[2]**

14.50 A bag contains 12 red, 9 blue and 3 green balls. One ball is drawn at random. Find the probability that the ball drawn is not blue. **[2]**
