SSLC

MATHEMATICS

PREVIOUS YEAR QUESTION PAPERS

CHAPTERWISE QUESTIONS

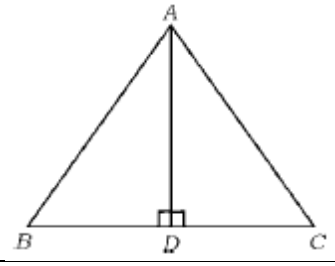
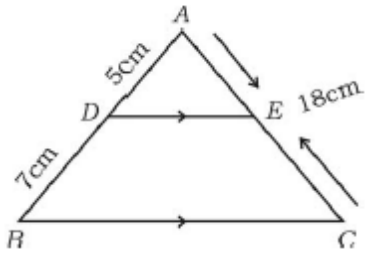
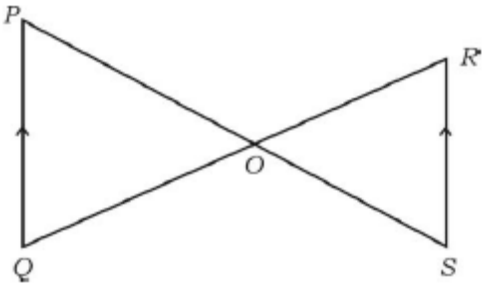
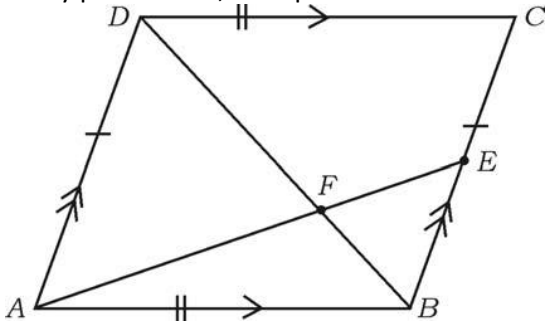
CHAPTER 01 – ARITHMETIC PROGRESSION		
01.	If the n-th term of an arithmetic progression an = 24 − 3n , then its 2nd term is (A) 18 (B) 15 (C) 0 (D) 2	A2019 MCQ
02.	Find the sum of first twenty terms of Arithmetic series 2 + 7 + 12 + ... using suitable formula.	A2019–2
03.	The seventh term of an Arithmetic progression is four times its second term and twelfth term is 2 more than three times of its fourth term. Find the progression. OR A line segment is divided into four parts forming an Arithmetic progression. The sum of the lengths of 3rd and 4th parts is three times the sum of the lengths of first two parts. If the length of fourth part is 14 cm, find the total length of the line segment.	A2019–3
04.	If the n-th term of an arithmetic progression is 5n + 3, then 3rd term of the arithmetic progression is (A) 11 (B) 18 (C) 12 (D) 13	J2019 MCQ
05.	Write the formula to find the sum of the first n terms of an Arithmetic progression, whose first term is a and the last term is a_n .	J2019 – 1
06.	The sum of the fourth and eighth terms of an arithmetic progression is 24 and the sum of the sixth and tenth terms is 44. Find the first three terms of the Arithmetic progression.	J2019 – 4
07.	The 10^{th} term of an A.P. 5,9,13, ... is A) 36 B) 31 C) 41 D) 21	MQP2020– MCQ
08.	If the first term and the common difference of an A.P. are 6 and 5 respectively, find its 3rd term .	MQP2020– 1
09.	In an arithmetic progression, if an = 2n + 1, then the common difference of the given progression is (A) 0 (B) 1 (C) 2 (D) 3.	M2020 - MCQ
10.	The pth, qth and rth term of an A.P. are a, b and c respectively. Prove that a(q-r) + b(r-p)+ c(p-q) =0. OR The sum of the first three terms of an A.P. is 33. If the product of the first term and third term exceeds the 2nd term by 29, then find the A.P.	MQP2020– 4
11.	If the nth term of an arithmetic progression is $4n^2$ -1, then the 8th term is. A) 32 B) 31 C) 256 D) 255	MQP2020– MCQ
12.	The sum of first n terms of an AP is 210 and sum of its first (n–1) terms is 171. IF the first term is 3, then write the AP.	MQP2020– 3
13.	If the sum of first 8 terms of an AP is 136 and the sum of the first 15 terms is 465, then find the sum of the first 25 terms. OR The sum of the 5^{th} and 9^{th} terms of an AP is 40 and the sum of the 8^{th} and 14^{th} terms is 64, find the sum of first 20 terms.	MQP2020– 4
14.	Find the sum of 5 + 8 + 11 + ... to 10 terms using the formula.	M2020 – 2
15.	There are five terms in an Arithmetic Progression. The sum of these terms is 55, and the fourth term is five more than the sum of the first two terms. Find the terms of the Arithmetic progression. **OR** In an Arithmetic Progression sixth term is one more than twice the third term. The sum of the fourth and fifth terms is five times the second term. Find the tenth term of the Arithmetic Progression.	M2020 – 4
16.	If the nth term of an arithmetic progression an = 3n − 2 , then its 9th term is (A) – 25 (B) 5 (C) – 5 (D) 25.	S2020 – MCQ

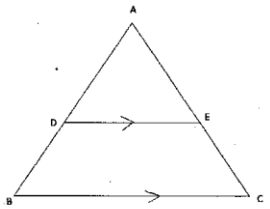
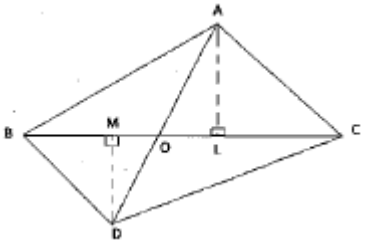
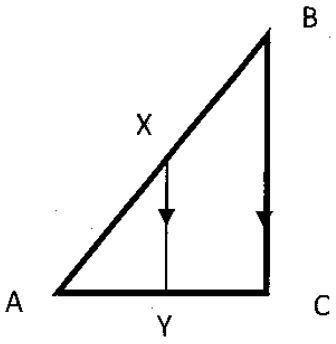
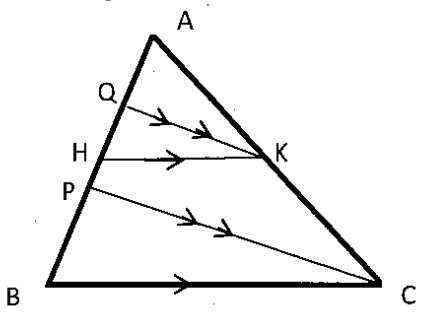
17.	Find the sum of first 20 terms of arithmetic series 5 + 10 + 15 + ... using suitable formula.	S2020 – 2
18.	The common difference of two different arithmetic progressions are equal. The first term of the first progression is 3 more than the first term of second progression. If the 7th term of first progression is 28 and 8th term of second progression is 29, then find the both different arithmetic progressions.	S2020 – 5
19.	The sum of first 15 terms of an arithmetic progression is 465 and the sum of first 14 terms of the same arithmetic progression is 406. Then its 15th term is A. 95 B. 59 C. 69 D. 58	MQP2021–MCQ
20.	The 20th term of an Arithmetic progression 1, 5, 9, 13 ..... is A. 77 B. 75 C. 76 D. 74	MQP2021–MCQ
21.	The first term and the last term of an arithmetic progression are 'a' and 'l' respectively, then the sum of its first 'n' terms is A. $S\eta = \frac{n(2a+l)}{2}$ B. $S\eta = \frac{n(a+(n-1)d)}{2}$ C. $S\eta = \frac{n(a+l)}{2}$ D. $S\eta = \frac{a(n+l)}{2}$	MQP2021–MCQ
22.	If 8, x, 20 are in arithmetic progression, the value of 'x' is A. 10 B. −10 C. 14 D. 8	MQP2021–MCQ
23.	If x, 8, 11, y are the consecutive terms of an Arithmetic progression. The values of 'x' and 'y' are respectively equal to A. 6 and 13 B. 4 and 15 C. 3 and 16 D. 5 and 14	MQP2021–MCQ
24.	The 10th term of the Arithmetic progression -3, -1, 1, 3 ..... is A. 20 B. -21 C. -15 D. 15	MQP2021–MCQ
25.	The nth term of an Arithmetic progression is given by an =7 – 4n then the common difference is A. 4 B. -4 C. 3 D. -3	MQP2021–MCQ
26.	If 4, a, b, 28 are in arithmetic progression then the value of 'b' is A. 20 B. 19 C. 23 D. 12	MQP2021–MCQ
27.	Two arithmetic progressions has the same common difference. If the first term of the first progression is 5 and that of the other is 8, then the difference between their 3rd term is A. 2 B. 3 C. 4 D. 5	MQP2021–MCQ
28.	The sum of first 'n' terms of an arithmetic progression is given by the formula $S_n = 3n^2 + n$, then its 3rd term is A. 14 B. 16 C. 22 D. 42	MQP2021–MCQ
29.	The *n*th term of an Arithmetic Progression is $a_n = 4n + 5$. Then its 5th term is: (A) 20 (B) 14 (C) 25 (D) 24	J2021–1
30.	Which of the following is an Arithmetic Progression? (A) 1, – 1, – 2, ... (B) 1, 5, 9, ... (C) 2, – 2, 2, – 2, ... (D) 1, 2, 4, 8, ...	J2021–1
31.	The 11th term of the Arithmetic Progression – 3, – 1, 1, 3, ... is (A) 23 (B) – 23 (C) – 17 (D) 17	J2021–1
32.	The sum of the first 10 terms of an Arithmetic Progression is 155 and the sum of the first 9 terms of the same progression is 126 then the 10th term of the progression is (A) 27 (B) 126 (C) 29 (D) 25	J2021–1
33.	If 4, x, 10 are in Arithmetic Progression the value of x is: (A) 14 (B) – 6 (C) – 7 (D) 7	J2021–1
34.	The sum of first *n* terms of an arithmetic progression 2, 4, 6, ... is (A) $S_n = n(n+1)$ (B) $S_n = \frac{n(2n+1)}{2}$ (C) $S_n = \frac{n(n-1)}{2}$ (D) $S_n = \frac{n(2n-1)}{2}$	S2021–MCQ

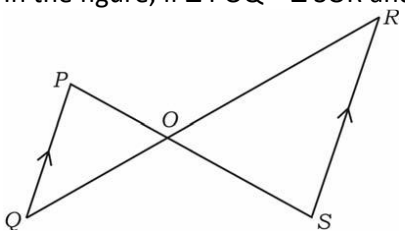
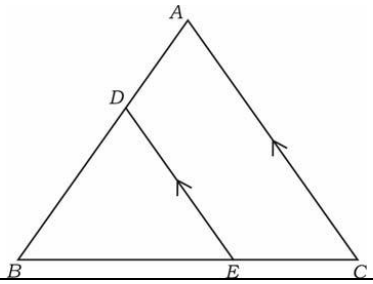
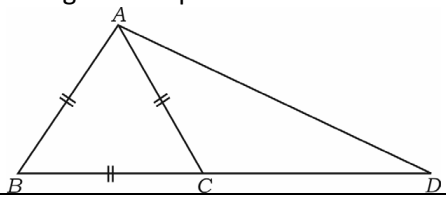
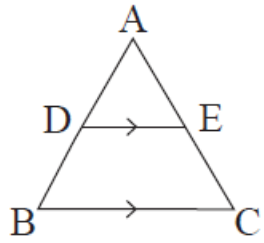
35.	The *n*-th term of an arithmetic progression is given by $a_n = 7 - 4n$. Then the first term of the arithmetic progression is (A) 3 (B) 4 (C) – 4 (D) – 3	S2021–1
36.	If x, 5, 12, y are in Arithmetic progression the values of x and y are respectively equal to (A) 7 and 17 (B) 2 and 19 (C) – 2 and 19 (D) – 3 and 17	S2021–1
37.	The sum of first 20 terms of an Arithmetic progression is 650 and the sum of its first 19 terms is 589, then the 20th term of the same Arithmetic progression is (A) 58 (B) 69 (C) 60 (D) 61	S2021–1
38.	The common difference of the Arithmetic progression 100, 93, 86, ... is A) 4 B) 8 C) 7 D) –7	MQP2022–MCQ
39.	In an Arithmetic progression the sum of first four terms is 20 and the sum of first three terms is 12 then find the fourth term of the arithmetic progression.	MQP2022–1
40.	Find the 15th term of the arithmetic progression 6, 10, 14 ..... using the formula.	MQP2022–2
41.	Find the sum of first 15 terms of 3 + 6 + 9 ..... using the formula **OR** Verify whether 130 is a term of the arithmetic progression 3, 7, 11	MQP2022–2
42.	The sum of `700 is to be used to give seven cash prizes to students of a school for their overall academic performance. If each prize is `20 less than its preceding prize, Find the value of each of the prizes.	MQP2022–3
43.	The common difference of the Arithmetic progression 8, 5, 2, – 1, ... is (A) – 3 (B) – 2 (C) 3 (D) 8.	A2022–MCQ
44.	In an Arithmetic progression if *'a'* is the first term and *'d'* is the common difference, then write its n term.	A2022–1
45.	Find the 30th term of the arithmetic progression 5, 8, 11, ... by using formula.	A2022–2
46.	Find the sum of first 20 terms of the Arithmetic progression 10, 15, 20, ... by using formula. OR Find the sum of first 20 positive integers using formula.	A2022–2
47.	The sum of first 9 terms of an Arithmetic progression is 144 and its 9th term is 28 then find the first term and common difference of the Arithmetic progression.	A2022–3
48.	If the nth term of an arithmetic progression is an=3n+1, then the 4th term of the progression is (A) 10 (B) 13 (C) 11 (D) 12	MQP–2023
49.	Find the 30th term of the arithmetic progression 7, 11, 15 ..... using formula.	MQP–2023–2
50.	The sum of first 'n' terms of an arithmetic progression is 222 and sum of its first (n-1) terms is 187. If the first term of the progression is 2, then find the arithmetic progression. OR The last term of an arithmetic progression consisting of 12 terms is 37. If the sum of the two middle terms of the progression is 41, then find the arithmetic progression and also the sum of the terms of the arithmetic progression.	MQP–2023–4
51.	Find the 20th term of the Arithmetic progression 4, 7, 10, ... by using formula.	A2023–2
52.	The sum of 2nd and 4th terms of an arithmetic progression is 54 and the sum of its first 11 terms is 693. Find the arithmetic progression. Which term of this progression is 132 more than its 54th term ? OR The first and the last terms of an arithmetic progression are 3 and 253 respectively. If the 20th term of the progression is 98, then find the arithmetic progression. Also find the sum of the last 10 terms of this progression.	A2023–4
53.	If the nth term of an arithmetic progression is an = 2n+1 then its (n–1)th term is: (A) (2n–2) (B) (2n+3) (C) (2n–1) (D) 2n	J2023–MCQ
54.	If x, 7, 10 are in arithmetic progression then write the value of x.	J2023–1
55.	Find the 21st term of the arithmetic progression 5, 9, 13, ... by using formula.	J2023–2
56.	Find the sum of the first 40 positive integers divisible by 6.	J2023–3

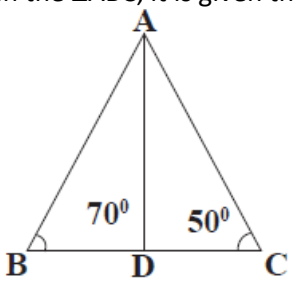
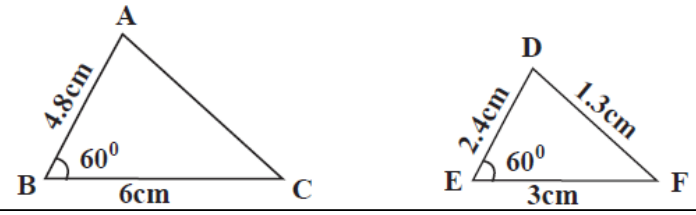
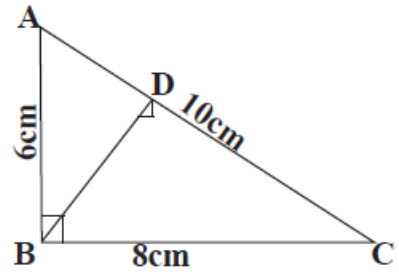
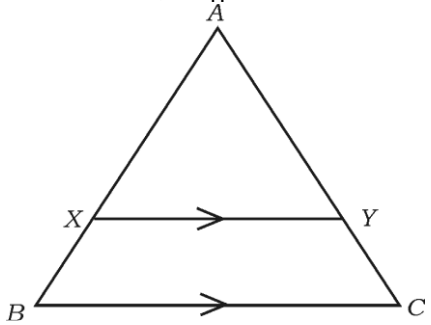
	OR The second and third terms of an arithmetic progression are 14 and 18 respectively. Find the sum of the first 26 terms of the arithmetic progression using the formula.	

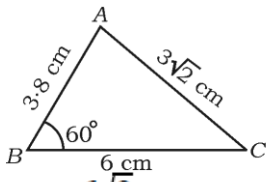
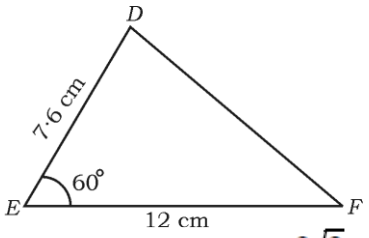
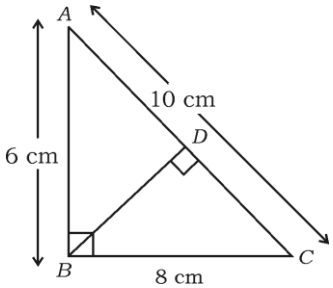
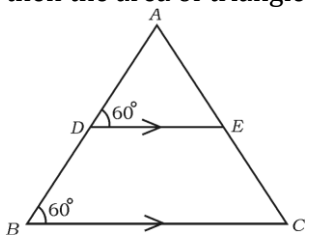
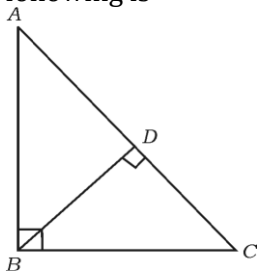
CHAPTER 02 - TRIANGLES

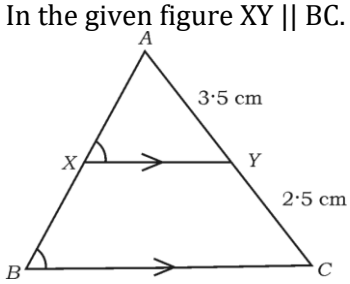
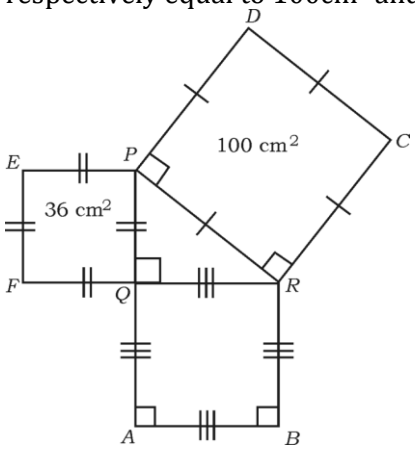
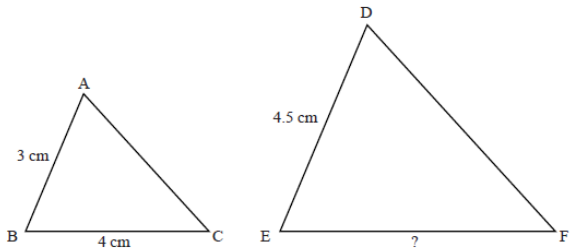
01.	In Δ ABC, AD ⊥ BC and AD2 = BD ×CD . Prove that $AB^2 + AC^2 = (BD + CD)^2$.  	A2019– 2
02.	In Δ ABC, DE || BC. If AD = 5 cm, BD = 7 cm and AC = 18 cm, find the length of AE.  **OR** In the given figure if PQ || RS, prove that Δ POQ ~ Δ SOR.  	A2019–2
03.	Prove that "the ratio of the areas of two similar triangles is equal to the square of the ratio of their corresponding sides".	A2019–4
04.	Δ ABC ~ Δ DEF and their areas are 64 cm^2 and 100 cm^2 respectively. If EF = 12 cm then find the measure of BC. **OR** A vertical pole of height 6 m casts a shadow 4 m long on the ground, and at the same time a tower on the same ground casts a shadow 28 m long. Find the height of the tower.	J2019 – 2
05.	The diagonal BD of parallelogram ABCD intersects AE at F as shown in the figure. If E is any point on BC, then prove that DF × EF = FB × FA.  	J2019 – 2
06.	Prove that "In a right triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides".	J2019 – 4

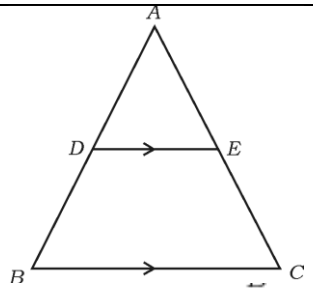
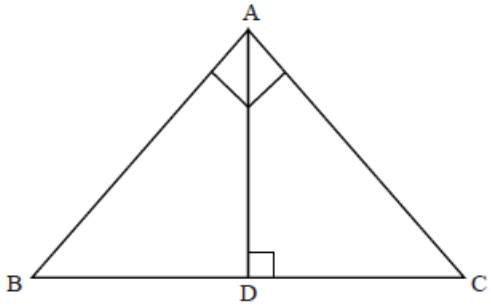
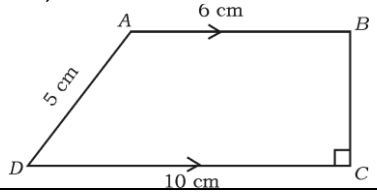
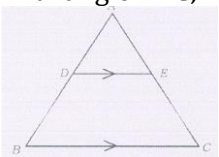
07.	In the given Δ ABC, DE || BC. If DE = 5cm, BC = 8cm and AD = 3.5cm, then the length of AB is  A)5.6cm B) 4.8cm C) 5.2cm D) 6.4 cm	MQP2020–MCQ
08.	State Basic proportionality theorem.	MQP2020–1
09.	The perimeters of two similar triangles are 25cm and 15cm. If one side of the first triangle is 9cm, find the corresponding side of the second triangle. OR In the given figure Δ ABC and Δ DBC are on the same base BC . AD intersects BC at '0'. If AL BC and DM BC , prove that area of Δ ABC/area of ΔDBC=AO/ DO  	MQP2020–2
10.	In the adjoining figure, XY||BC, AX=p–3, BX=2p–2 and $\frac{AY}{CY}=\frac{1}{4}$ .Find the value of p  OR In the figure, PC||QK and BC||HK. If AQ=6cm, QH=4cm, HP=5cm and KC=18cm, then find the length of AK and AB.  	MQP2020–2

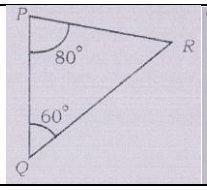
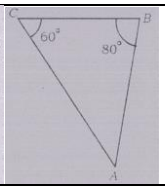
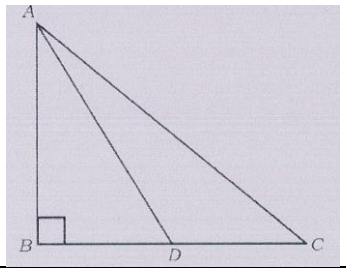
11.	In the figure, if Δ POQ ~ Δ SOR and PQ : RS = 1 : 2, then OP : OS is:  (A) 1 : 2 (B) 2 : 1 (C) 3 : 1 (D) 1 : 3.	M2020 – MCQ
12.	Prove that "the ratio of the areas of two similar triangles is equal to the square of the ratio of their corresponding sides".	MQP2020–4
13.	State “Basic proportionality theorem”.	M2020 – 1
14.	State and prove the converse of Pythagoras theorem.	MQP2020–5
15.	State and prove Pythagoras theorem.	M2020 – 5
16.	In the Δ ABC, if DE || AC, then the correct relation is: (A) $\frac{BD}{AB}=\frac{AC}{DE}=\frac{BC}{BE}$ (B) $\frac{BD}{AB}=\frac{DE}{AC}=\frac{BE}{BC}$ (C) $\frac{AB}{BD}=\frac{AC}{DE}=\frac{BE}{EC}$ (D) $\frac{AD}{BD}=\frac{DE}{AC}=\frac{BE}{EC}$.  	S2020 – MCQ
17.	In the Δ ABD, C is a point on BD such that BC : CD = 1 : 2, and Δ ABC is an equilateral triangle. Then prove that $AD^2 = 7AC^2$.  	S2020 – 3
18.	Prove that “if in two triangles, corresponding angles are equal, then their corresponding sides are in the same ratio (or proportion) and hence the two triangles are similar”.	S2020 – 4
19.	In the ΔABC, if DE || BC then the relation which is true is:  A. $\frac{AC}{AD}=\frac{EC}{BD}$ B. $\frac{AD}{DE}=\frac{AE}{BC}$ C. $\frac{AD}{AB}=\frac{AE}{AC}$ D. $\frac{AB}{BC}=\frac{AE}{BD}$	MQP2021–MCQ
20.	ΔABC ~ ΔPQR and their areas are in the ratio 25 : 9. If BC = 5cm, the length of QR is A. 8 cm B. 3 cm C. 3.5 cm D. 9 cm	MQP2021–MCQ
21.	The measure of three angles of a triangle are in the ratio 1:2:3, then the triangle is A. equilateral B. right angled C. isosceles D. obtuse angled	MQP2021–MCQ

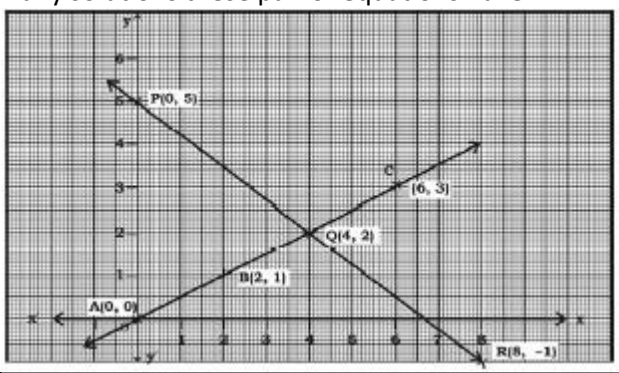
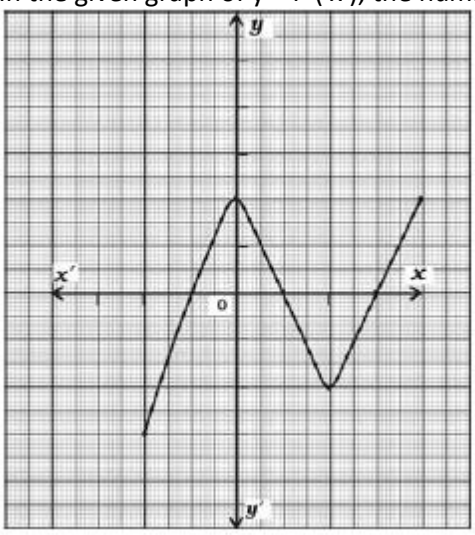
22.	The true statement in the following A. two similar triangles are always congruent. B. a square and a rectangle are always similar. C. two equiangular triangles are always similar. D. a square and a rhombus are always similar.	MQP2021–MCQ
23.	The correct relation between the sides of the triangle ABC given in the figure is A. $c^2 = b^2 + a^2$ B. $a^2 = b^2 + c^2$ C. $b^2 = c^2 - a^2$ D. $b^2 = a^2 + c^2$	MQP2021–MCQ
24.	In the ΔABC, it is given that AB/AC = BD/CD. If ∠B=70°, ∠C=50° then ∠BAD is  A. 30° B. 40 ° C. 45 ° D. 50 °	MQP2021–MCQ
25.	In the given figure ΔABC~ΔDEF and ∠ABC=∠DEF = 60° then the length of AC A. 2.4 cm B. 2.6 cm C. 3.9 cm D. 3.2 cm 	MQP2021–MCQ
26.	In the ΔABC, DE || BC. If AB : AD = 5 : 3 then area of ΔABC : area of ΔADE is A. 3 : 5 B. 6 : 10C. 9 : 25 D. 25 : 9	MQP2021–MCQ
27.	In the given figure ∠ABC=90°, BD ⊥ AC. If AB=6cm, BC=8cm, CA=10cm then the length of AD is A. 6.3 cm B. 3.6 cm C. 3 cm D. 4 cm 	MQP2021–MCQ
28.	The sides of some triangles are given below. Identify which does not form a Right Triangle A. 5cm, 12cm, 13cm B. 8cm, 15cm, 17cm C. 3cm, 8cm, 6cm D. 7cm, 24cm, 25cm	MQP2021–MCQ
29.	In the ΔABC, $XY \parallel BC$ then  (A) $\frac{AX}{AB} = \frac{AC}{AY}$ (B) $\frac{AX}{BX} = \frac{AY}{CY}$ (C) $\frac{AX}{BX} = \frac{XY}{AY}$ (D) $\frac{AB}{BX} = \frac{AC}{AY}$	J2021–1

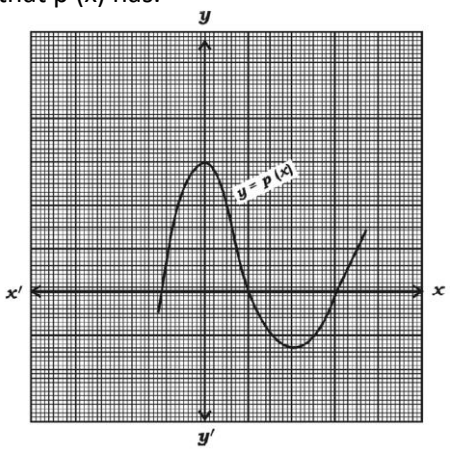
30.	Observe the given two triangles and then identify the length of *DF* in the following:   (A) $6\sqrt{2}$ cm (B) $3\sqrt{2}$ cm (C) 4.2 cm (D) 8.4 cm	J2021–1
31.	$\Delta ABC \sim \Delta PQR$. Area of ΔABC = 64 cm^2 and the area of ΔPQR = 100 cm^2 . If *AB* = 8 cm then the length of *PQ* is (A) 12 cm (B) 15 cm (C) 10 cm (D) 8 cm	J2021–1
32.	In the ΔABC, $\angle B = 90°$ and $BD \perp AC$. If *AB* = 6 cm, *BC* = 8 cm then the length of *CD* is:  (A) 10 cm (B) 6.4 cm (C) 4.8 cm (D) 3.6 cm	J2021–1
33.	In the given figure *DE* || *BC*. If *DE* = 3 cm, *BC* = 6 cm and the area of *ADE* = 15 cm2 , then the area of triangle *ABC* is  (A) 60 cm^2 (B) 45 cm^2 (C) 30 cm^2 (D) 75 cm^2	S2021–1
34.	In the given figure $\angle B = 90°$ and BD ⊥ AC, then the correct relation among the following is  (A) $AB^2 = AD \cdot DC$ (B) $BC^2 = AD \cdot BC$ (C) $BC^2 = CD \cdot AC$ (D) $BC^2 = AB^2 + AC^2$	S2021–1

35.	In the given figure XY || BC. If AY = 3·5 cm and YC = 2·5 cm then AX/BX is equal to  (A) 12/7 (B) 5/7 C) 7/12 (D) 7/5	S2021–1
36.	In the right angled ΔPQR, ∠Q = 90°. Squares on the sides PR, PQ and QR are drawn as shown in the figure. The areas of the squares PRCD and PQFE are respectively equal to 100cm² and 36cm² . Then the length of the side QR is  (A) 8 cm (B) 6 cm (C) 10 cm (D) 64 cm	S2021–1
37.	In the right angled triangle *ABC*, *C* = 90° and *AC* = *CB* = 3 cm then the length of its hypotenuse is (A) 6 cm (B) 3√2 cm (C) 2√3 cm (D) 18 cm	S2021–1
38.	Which of the following pair of triangles are always similar A) Two isosceles triangles B) Two scalene triangles C) Two equilateral triangles D) Two right angle triangles	MQP2022–MCQ
39.	State "Pythagoras's" theorem	MQP2022–1
40.	State and prove basic proportionality theorem (Thales theorem).	MQP2022–5
41.	Write the statement of "Basic Proportionality" theorem (Thales theorem).	A2022–1
42.	Prove that "the ratio of the areas of two similar triangles is equal to the square of the ratio of their corresponding sides".	A2022–5
43.	In the figure ABC ~ DEF. If AB=3cm, BC= 4cm and DE = 4.5cm, then the measure of EF is  (A) 8 cm (B) 6 cm (C) 7 cm (D) 6.5 cm	MQP–2023
44.	If the ratio of the areas of two similar triangles is 64 : 121, then find the ratio of their corresponding sides.	MQP–2023–1
45.	In the figure, if DE || BC, then the correct relation among the following is	A2023–MCQ

	 (A) $\frac{AD}{AB} = \frac{AE}{EC}$ (B) $\frac{AD}{DB} = \frac{EC}{AE}$ (C) $\frac{AD}{DB} = \frac{AE}{EC}$ (D) $\frac{DB}{AD} = \frac{AE}{EC}$	
46.	In the figure, ABC is a right angled triangle and BAC = 90°. If AD⊥BC and BD=DC then prove that $BC^2 = 4AD^2$. 	MQP–2023–2
47.	State and prove 'Basic Proportionality Theorem' (Thales Theorem).	MQP–2023–4
48.	Δ ABC ~ Δ PQR. Area of the Δ ABC is 64 cm^2 and the area of the Δ PQR is 100 cm^2 . If AB = 8 cm, then find the length of PQ.	A2023–1
49.	In the given figure, ABCD is a trapezium in which AB || DC, and BC ⊥ DC. If AB = 6 cm, CD = 10 cm and AD = 5 cm, then find the distance between the parallel lines. 	A2023–2
50.	Prove that "If in two triangles, corresponding angles are equal, then their corresponding sides are in the same ratio (or proportion) and hence the two triangles are similar".	A2023–4
51.	In triangle ABC, if DE||BC, then the correct relation among the following is:  (A) $\frac{AD}{BD} = \frac{AE}{EC}$ (B) $\frac{AB}{AD} = \frac{EC}{BD}$ (C) $\frac{AD}{AE} = \frac{CE}{BD}$ (D) $\frac{DE}{BC} = \frac{AE}{AD}$	J2023–MCQ
52.	In the figure, name the side of triangle PQR which is corresponding to the side AB of triangle ABC.	J2023–1

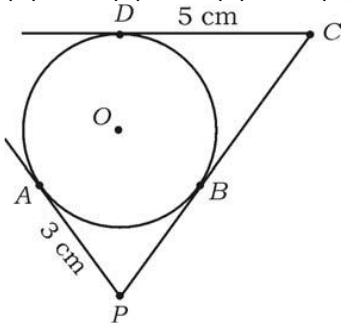
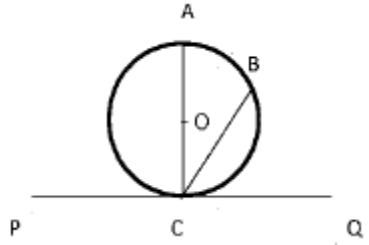
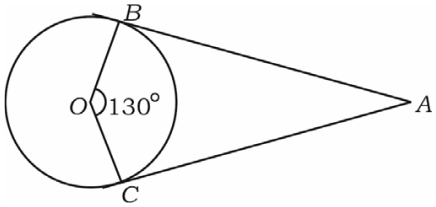
	 	
53.	In triangle ABC, ∠ABC = 90° and D is the midpoint of BC. Prove that $AC^2 = AD^2 + 3CD^2$. 	J2023–2
54.	Prove that "the ratio of the areas of two similar triangles is equal to the square of the ratio of their corresponding sides",	J2023–4

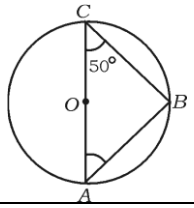
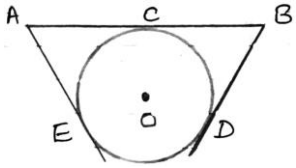
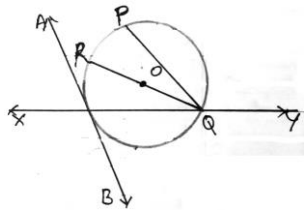
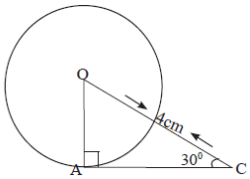
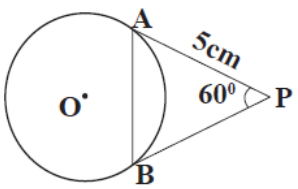
CHAPTER 03 – PAIR OF LINEAR EQUATIONS IN TWO VARIABLES		
01.	The lines represented by 2x + 3y – 9 = 0 and 4x + 6y – 18 = 0 are (A) Intersecting lines (B) Perpendicular lines to each other (C) Parallel lines (D) Coincident lines	A2019 MCQ
02.	The given graph represents a pair of linear equations in two variables. Write how many solutions these pair of equations have.  	A2019–1
03.	Solve the following pair of linear equations by any suitable method: x + y = 5 & 2x – 3y = 5.	A2019–2
04.	Find the solution of the following pairs of linear equation by the graphical method. 2x + y = 6 & 2x – y = 2	A2019–4
05.	If the lines drawn to the linear equations of the type $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ are coincident on each other, then the correct relation among the following is: (A) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ (B) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ (C) $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ (D) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2} = \frac{c_1}{c_2}$	J2019 MCQ
06.	In the given graph of y = P (x), the number of zeros is (A) 4 (B) 3 (C) 2 (D) 7  	J2019 MCQ
07.	If a pair of linear equations represented by lines has no solutions (inconsistent) then write what kinds of lines are these.	J2019 – 1
08.	Find the solution for the pair of linear equations : x + y = 14; x – y = 4	J2019 – 2
09.	Solve graphically: 2x + y = 8 ; x – y = 1	J2019 – 4
10.	In the pair of linear equations x + y =9 and x – y =1, the value of x and y are A) 5 and 4 B) 4 and 5 C) 6 and 3 D) 3 and 6	MQP2020–1
11.	Solve: 10x +3y =75 and 6x — 5y = 11	MQP2020–2

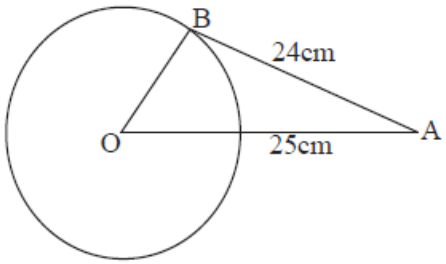
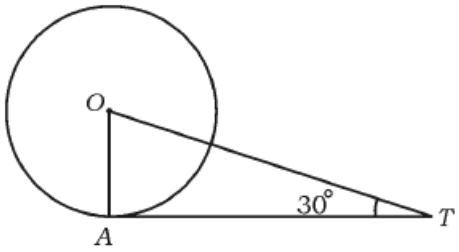
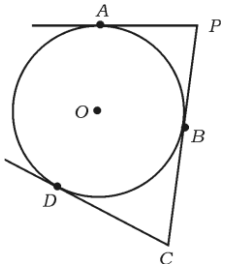
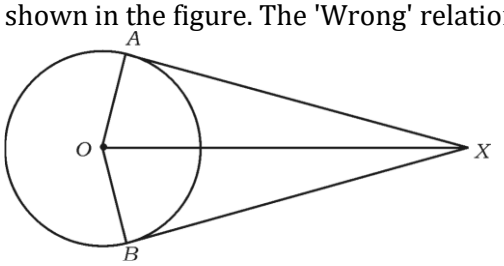
12.	In the pair of linear equations a1x + b1y + c1 = 0 and a2x + b2y + c2 = 0 , if $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ then the: (A) equations have no solution (B) equations have unique solution (C) equations have three solutions (D) equations have infinitely many solutions.	M2020 - MCQ
13.	Solve the pair of linear equations graphically: x — 2y =0 and 3x + 4y = 20	MQP2020–4
14.	Write the general from of the following: a) Linear polynomial b) cubic polynomial	MQP2020–2
15.	Solve graphically: 5x + y = 17 and 2x – 2y = 2	MQP2020–3
16.	The following graph represents the polynomial y = p (x). Write the number of zeroes that p (x) has. 	M2020 – 1
17.	Solve : 2x + y = 11; x + y = 8	M2020 – 2
18.	Find the value of k, if the pair of linear equations 2x – 3y = 8 and 2 (k – 4) x – ky = k + 3 are inconsistent.	M2020 – 2
19.	Find the solution of the pair of linear equations by graphical method. x + y = 7 ; 3x – y = 1	M2020 – 4
20.	The lines represented by x + 2y – 4 = 0 and 2x + 4y – 12 = 0 are: (A) intersecting lines (B) parallel lines (C) coincident lines (D) perpendicular lines to each other.	S2020 – MCQ
21.	In two linear equations a1x + b1y + c1 = 0 and a2x + b2y + c2 = 0 , if $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$, then write the number of solutions these pair of equations have.	S2020 – 1
22.	Solve the following pair of linear equations: 2x + 3y = 11; 2x – 4y = – 24	S2020 – 2
23.	Find the solution of the following pair of linear equations by the graphical method. $2x + y = 8; x + y = 5$	S2020 – 4
24.	The values of 'x' and 'y' which satisfy the linear equation 2x + 3y = 16 are A. x = 5, y = 2 B. x = 2, y = 5 C. x = −5, y = −2 D. x = −5, y = 2	MQP2021– MCQ
25.	By solving a pair of linear equations x + y = 8 and 2y − x = 1, the values of 'x' and 'y' are A. x = 3, y = 5 B. x = 4, y = 4 C. x = 5, y = 3 D. x = −5, y = -3	MQP2021– MCQ
26.	The pair of coincident lines in the following are A. x − 2y = 0;3x + 4y = 20 B. 2x + 3y = 9;4x + 6y = 18 C. x + 2y = 4;2x + 4y = 12 D. x + y = 8;x − y = 4	MQP2021– MCQ

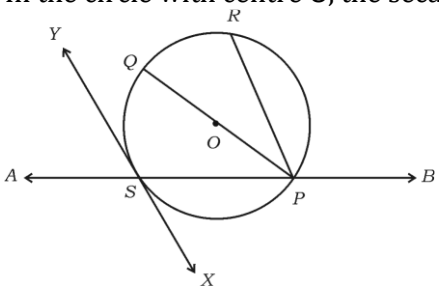
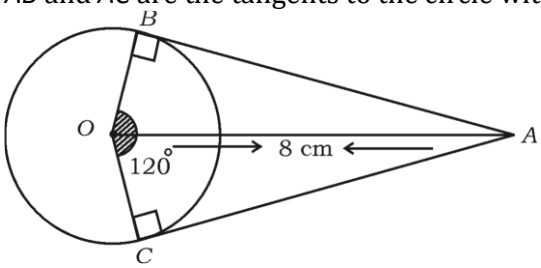
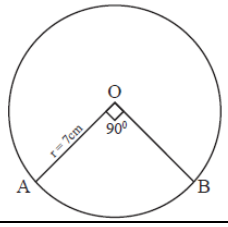
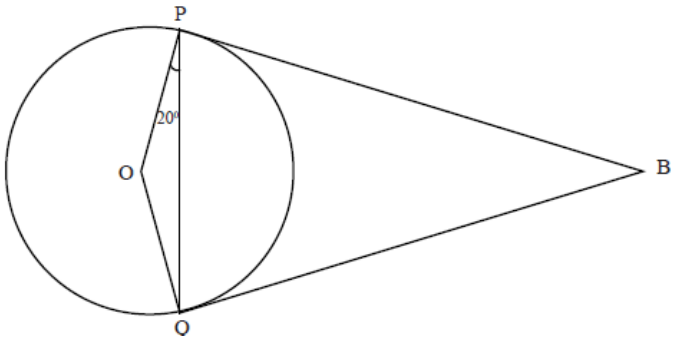
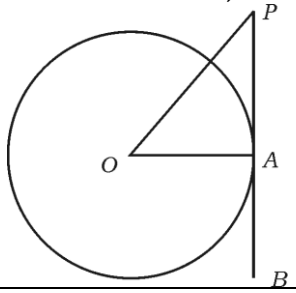
27.	If a pair of linear equations 3x + 2Ky = 2 and 2x + 5y + 1 = 0 are parallel to each other, then the value of 'K' A. $15/4$ B. $3/2$ C. 5 D. $4/15$	MQP2021–MCQ
28.	The pair of equations 2x–5y+4=0 and 2x+y–8=0 has A. Exactly two solutions B. Infinity many solutions C. A unique solution D. No solution	MQP2021–MCQ
29.	The values of 'x' and 'y' when a point lies on the linear equation 2x - 3y = 12 A. x = 0, y = -3 B. x = 2, y = 3 C. x = 3, y = -2 D. x = -2, y = +3	MQP2021–MCQ
30.	Identify the wrong statement with respect to a pair of linear equations A. If lines are parallel there is no solution B. If the lines are perpendicular to each other, there is no solution C. Many solutions if the lines coincide each other D. A unique solution if they intersect	MQP2021–MCQ
31.	x – 2y = 0 and 3x + 4y – 20 = 0 are: (A) Intersecting lines (B) Coincident lines (C) Parallel lines (D) Perpendicular lines	J2021–1
32.	The pair of equations of lines as shown in the graph are: (A) x + y = 1 and 2x–y=1 (B) 2x+y=2 and x+y=2 (C) 2x – y = 2 and 4x – y = 4 (D) y – x = 0 and x – y = 1	J2021–1
33.	If the pair of linear equations in two variables $a_1x + b_1y + c_1 =$ and $a_2x + b_2y + c_2 = 0$ are parallel lines then the correct relation of their coefficients is: (A) $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ (B) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ (C) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ (D) $\frac{a_1}{b_2} = \frac{b_1}{a_2}$	J2021–1
34.	If the pair of lines 2x + 3y + 7 = 0 and ax + by + 14 = 0 are coincident lines then the values of 'a' and 'b' are respectively equal to: (A) 2 and 3 (B) 3 and 2 (C) 4 and 6 (D) 1 and 2	J2021–1
35.	The correct values of *a* and *b* which satisfy the linear equation *x* + 2*y* = 6 in the table given below are x | 0 | a | 2 | 4 y | 3 | 0 | 2 | b (A) *a* = 6 and *b* = 0 (B) *a* = 2 and *b* = 2 (C) *a* = – 6 and *b* = 2 (D) *a* = 6 and *b* = 1	S2021–MCQ
36.	The inconsistent pair of linear equations among the following are (A) *x* – 2*y* = 0; 3*x* – 4*y* – 20 = 0 (B) 2*x* + 3*y* – 9 = 0; 4*x* + 6*y* – 18 = 0 (C) *x* + 2*y* – 4 = 0; 2*x* + 4*y* + 12 = 0 (D) *x* + *y* – 10 = 0; *x* – *y* – 6 = 0	S2021–MCQ
37.	If the pair of equations $a_1 x + b_1 y + c_1 =0$ and $a_2 x + b_2 y + c_2 =0$ are intersecting lines, then the correct relation among the following is (A) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ (B) $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ (C) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ (D) $\frac{a_1}{b_1} = \frac{a_2}{b_2}$	S2021–MCQ
38.	The values of *x* and *y* in the following pair of linear equations *x* + *y* = 8 and 2*x* – *y* = 4 are (A) *x* = 4, *y* = 2 (B) *x* = 4, *y* = 4 (C) *x* = 5, *y* = 3 (D) *x* = 4, *y* = 8	S2021–MCQ

39.	If a pair of linear equations $a_1x + b_1y + c_1=0$ $a_2x + b_2y + c_2=0$ in two variables have unique solution then correct relation among the following is A) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ B) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ C) $\frac{a_1}{a_2} = \frac{b_1}{b_2}$ D) $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$	MQP2022–MCQ
40.	If a pair of linear equations in two variables are inconsistent then write how many solutions do they have.	MQP2022–1
41.	Solve the pair of linear equations by elimination method. 2x + y = 3; 4x – y = 9 **OR** Show that the lines represented by linear pair of equations 2x + 3y = 1 and 5x + 6y = 2 are intersecting lines by comparing their co-efficients.	MQP2022–2
42.	Solve graphically x + y = 5;x – y = 1	MQP2022–4
43.	The graphical representation of the pair of lines x + 2y – 4 = 0 and 2x + 4y – 12 = 0 is (A) intersecting lines (B) parallel lines (C) coincident lines (D) perpendicular lines.	A2022–MCQ
44.	If the pair of linear equations in two variables are inconsistent, then how many solutions do they have ?	A2022–1
45.	Solve the given pair of linear equations by Elimination method: 2x + y = 8; x – y = 1	A2022–2
46.	Find the solution of the given pair of linear equations by graphical method : $x + 2y = 6$; $x + y = 5$	A2022–4
47.	In a class, "the number of boys (x) is 5 more than the number of girls (y)." The linear equation form of this statement is (A) x - y = 5 (B) x = 5y (C) y - x = 5 (D) x + y = 5	MQP–2023–MCQ
48.	How many solutions do the pair of linear equations has, if the lines represented by them are coincident?	MQP–2023–1
49.	Solve the given pair of linear equations: 2x+y = 7; x-y = 2	MQP–2023–2
50.	Find the solution of the given pair of linear equations by graphical method: x + y= 5; 2x + y = 7	MQP–2023–4
51.	The lines represented by the equations 4x + 5y – 10 = 0 and 8x + 10y + 20 = 0 are (A) intersecting lines (B) perpendicular lines to each other (C) coincident lines (D) parallel lines	A2023–MCQ
52.	If the pair of lines represented by the linear equations x + 2y – 4 = 0 and ax + by – 12 = 0 are coincident lines, then find the values of ‘a’ and ‘b’.	A2023–1
53.	Solve the given pair of linear equations: 3x + y = 12; x + y = 6	A2023–2
54.	Find the solution of the given pair of linear equations by graphical method : $2x + y = 8$; $x – y = 1$	A2023–4
55.	How many solutions do the pair of linear equations x + 2y – 4 = 0, and 3x + 2y – 5 = 0 have?	J2023–1
56.	Find the solution for the given pair of linear equations: x + y = 10 and 2x – y = 8	J2023–2
57.	Find the solution of the given pair of linear equations by graphical method: x + y = 5 and 2x + y = 6	J2023–4
58.	The denominator of a fraction is 3 more than its numerator. If the sum of this fraction and its reciprocal is 29/10 then find the fraction. **OR** A student bought some books for Rs. 60. Had he bought 5 more books for the same amount each book would have cost him Re. 1 less. Find the number of books bought by him.	J2023–4

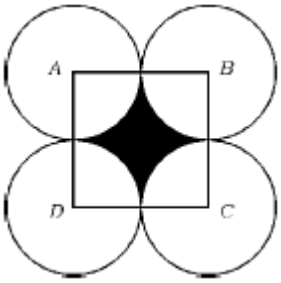
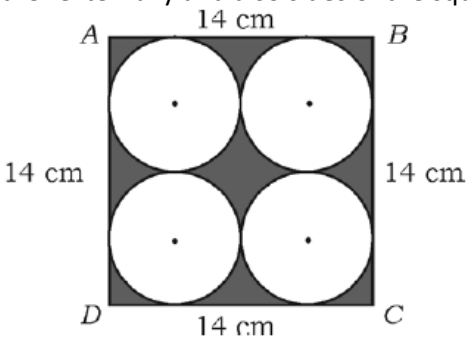
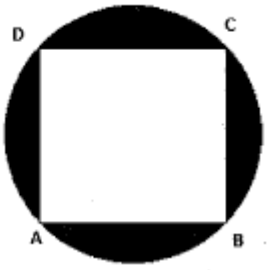
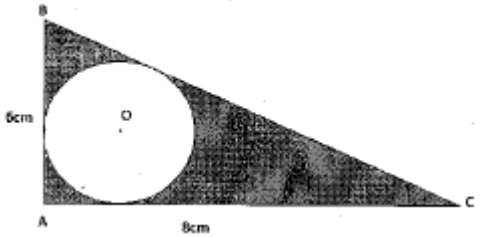
CHAPTER 04 – CIRCLES		
01.	A straight line which passes through two points on a circle is (A) a chord (B) a secant (C) a tangent (D) the radius	A2019 MCQ
02.	Prove that "the lengths of tangents drawn from an external point to a circle are equal". OR In the given figure PQ and RS are two parallel tangents to a circle with centre O and another tangent AB with point of contact C intersecting PQ at A and RS at B. Prove that ∠AOB = 90°.	A2019–3
03.	In the following figure, PA, PC and CD are tangents drawn to a circle of centre O. If AP = 3 cm, CD = 5 cm, then the length of PC is: (A) 3 cm (B) 5 cm (C) 8 cm (D) 2 cm 	J2019 - MCQ
04.	Prove that "the lengths of tangents drawn from an external point to a circle are equal". OR Two concentric circles of radii 5 cm and 3 cm are drawn. Find the length of the chord of the larger circle which touches the smaller circle.	J2019 – 3
05.	The maximum number of tangents that can be drawn to a circle from an external point is A) 1 B) 2 C) 3 D) 4	MQP2020– MCQ
06.	Prove that the tangents drawn to a circle from an external point are equal.	MQP2020– 3
07.	A straight line passing through a point on a circle is (A) a tangent (B) a secant (C) a radius (D) a transversal.	M2020 – MCQ
08.	In the figure BC is a  A) Radius B) Chord C) Diameter D) secant	MQP2020– MCQ
09.	If the perimeter and area of a circle are numerically equal, then find the radius of the circle.	MQP2020– 1
10.	Prove that the tangent at any point of a circle is perpendicular to the radius through the point of contact.	MQP2020– 3
11.	In the figure AB and AC are the two tangents drawn from the point A to the circle with centre O. If ∟BOC = 130° then find ∟BAC . 	M2020 – 1

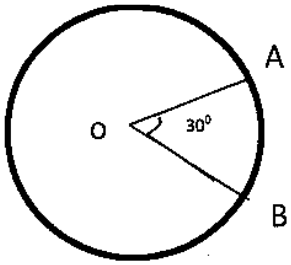
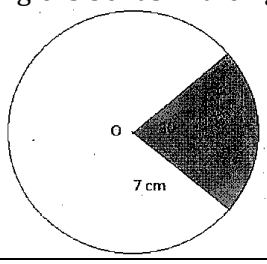
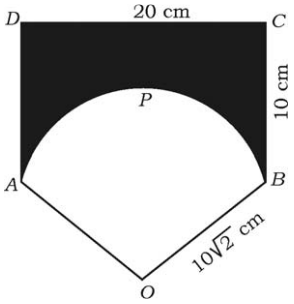
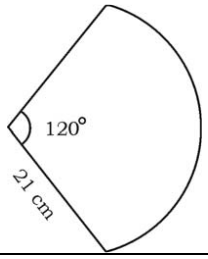
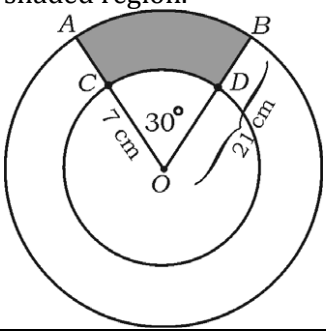
12.	Prove that the "lengths of tangents drawn from an external point to a circle are equal".	M2020 – 3
13.	In the figure, O is the centre of a circle, AC is a diameter. If ACB = 50°, then find the measure of BAC. 	S2020 – 1
14.	Prove that "the lengths of tangents drawn from an external point to a circle are equal".	S2020 – 3
15.	The lengths of the tangents drawn to a circle from a point outside it A. are unequal B. are equal C. are equal to radius of the circle D. are equal to diameter of the circle	MQP2021– MCQ
16.	In the given circle with centre 'O' ACB, AE and BD are the tangents. If AB=12cm, AE=3cm the length of BD is  A. 6 cm B. 3 cm C. 8 cm D. 9 cm	MQP2021– MCQ
17.	In a circle with centre 'O' the secant is  A. PQ B. XY C. QR D. AB	MQP2021– MCQ
18.	In a circle with centre 'O' AC is a tangent at 'A'. If OC=4cm and ∠ACO=30° then the radius of the circle is  A. √3 cm B. 4√3cm C. 2cm D. 3cm	MQP2021– MCQ
19.	Four statements are given below with respect to the tangents. The wrong statement is A. There are exactly two tangents that can be drawn to a circle from a point lying outside the circle. B. There is only one tangent passing through a point lying on a circle. C. Only two tangents can be drawn from a point lying inside a circle. D. The lengths of the tangents drawn from an external point to a circle are equal.	MQP2021– MCQ
20.	In the given figure PA and PB are the tangents to a circle with centre 'O'. If PA=5cm and ∠APB=60 then the length of the chord AB is A. 5 2cm B. 5 3cm C. 5cm D. 5.2cm 	MQP2021– MCQ

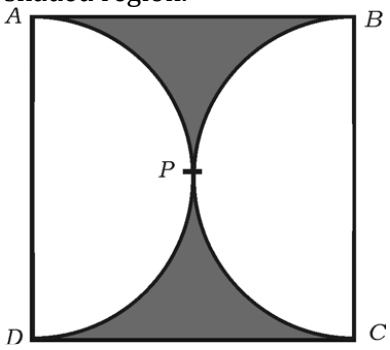
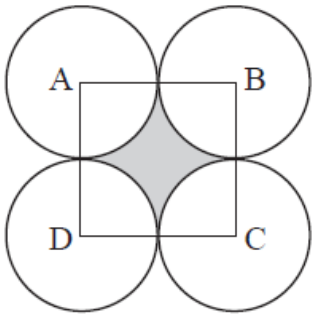
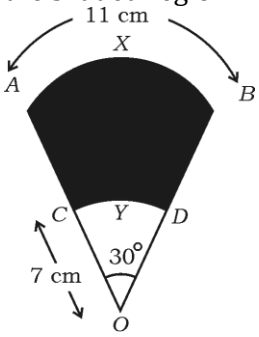
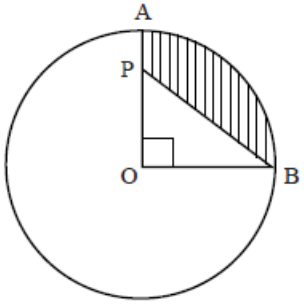
21.	The angle between the two radius of a circle is 130°. Then the angle between the tangents drawn at the ends of the radii is A. 65° B. 40° C. 70° D. 50°	MQP2021–MCQ
22.	'O' is the centre of the circle. The length of the tangent AB=24cm and if OA=25cm. the radius of the circle is  A. 12cm B. 7cm C. 15cm D. 16cm	MQP2021–MCQ
23.	In the given figure *AT* is a tangent drawn at the point *A* to the circle with centre *O* such that *OT* = 4 cm. If $\angle OTA = 30^\circ$ then *AT* is:  (A) 4 cm (B) 2 cm (C) $2\sqrt{3}$ cm (D) $4\sqrt{3}$ cm	J2021–1
24.	In the given figure *PA*, *PBC* and *CD* are the tangents to a circle with centre *O*. If *PC* = 8 cm and *AP* = 5 cm, the length of the tangent *CD* is  (A) 5 cm (B) 3 cm (C) 8 cm (D) 13 cm	J2021–1
25.	The wrong statement in the following is (A) a tangent to a circle touches the circle exactly at one point (B) when a straight line is drawn to a circle it always passes through a point on the circle (C) the point common to the circle and its tangent is called the point of contact (D) the tangent drawn at any point to a circle is perpendicular to the radius drawn at the point of contact	J2021–1
26.	*O* is the centre of the circle, *XA* and *XB* are the tangents drawn to the circle as shown in the figure. The 'Wrong' relation among the following is:  (A) AX = BX (B) ∠AXO = ∠BXO (C) ∠AOX = ∠BOX (D) AX = OX	S2021–MCQ

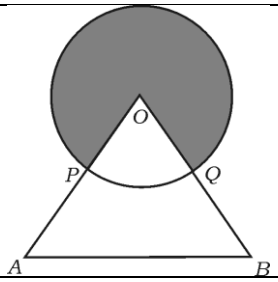
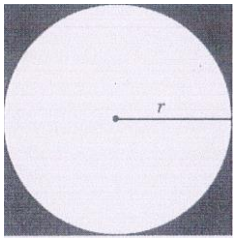
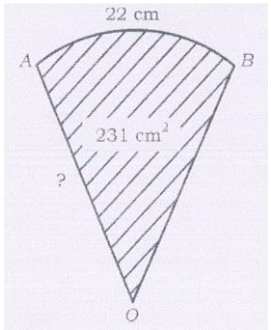
27.	In the circle with centre O, the secant is:  (A) XY (B) AB (C) PQ (D) PR	S2021–MCQ
28.	*AB* and *AC* are the tangents to the circle with centre *O* as shown in the figure.  If $\angle BOC = 120^\circ$ and $AO = 8$ cm then the length of the radius of the circle is: (A) $4\sqrt{3}$cm (B) $8\sqrt{3}$cm (C) 4cm (D) 6cm	S2021–MCQ
29.	In the figure find the length of an arc AB of a circle & centre 'O' if AOB = 90°  	MQP2022–1
30.	Prove that "the tangents drawn to a circle from an external point are equal."	MQP2022–3
31.	In a circle, the angle between the tangent and the radius at the point of contact is (A) 30° (B) 60° (C) 90° (D) 180°.	A2022–MCQ
32.	In the figure, BP and BQ are the tangents to the circle with centre 'O'. If ∠OPQ = 20°, then the measure of ∠PBQ is  (A) 40° (B) 160° (C) 140° (D) 20°	MQP–2023
33.	Prove that "the lengths of tangents drawn from an external point to a circle are equal".	A2022–3
34.	In the given figure, PB is a tangent drawn at the point A to the circle with centre 'O'. If ∠AOP = 45°, then the measure of ∠OPA is:  	A2023–MCQ

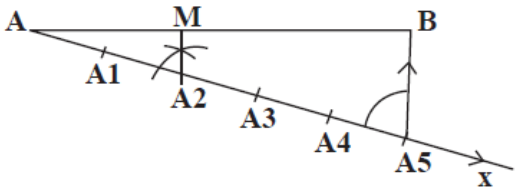
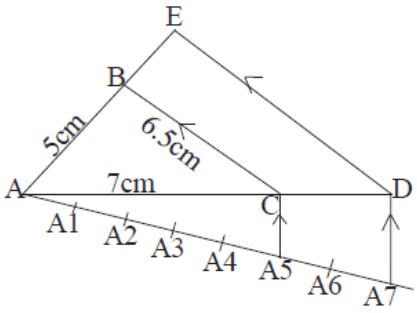
	(A) 45° (B) 90° (C) 35° (D) 65°	
35.	Prove that “The lengths of tangents drawn from an external point to a circle are equal”.	A2023–3
36.	The distance between two parallel tangents in a circle of radius 3cm is: (A) 3cm (B) 1.5cm (C) 9cm (D) 6cm	J2023–MCQ
37.	Prove that “The tangent at any point of a circle is perpendicular to the radius through the point of contact”.	J2023–3

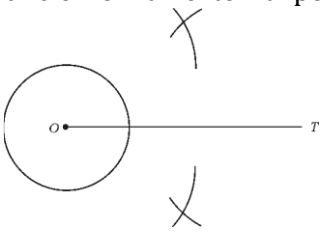
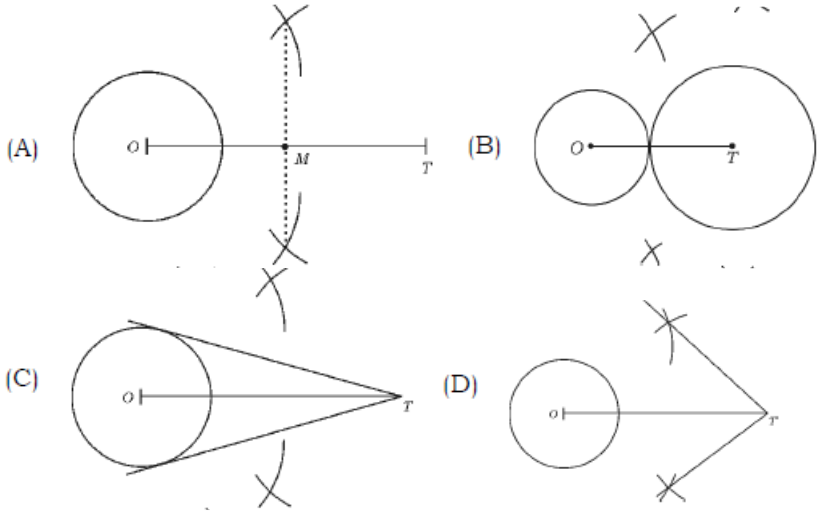
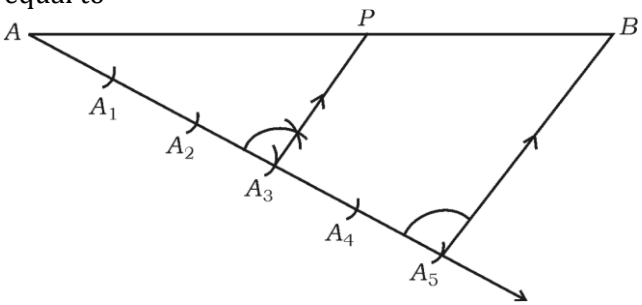
CHAPTER 05 – AREAS RELATED TO CIRCLES		
01.	If the area of a circle is 49π sq.units then its perimeter is (A) 7 π units (B) 9 π units (C) 14 π units (D) 49 π units	A2019 MCQ
02.	In the figure, ABCD is a square of side 14 cm. A, B, C and D are the centres of four congruent circles such that each circle touches externally two of the remaining three circles. Find the area of the shaded region.  	A2019–2
03.	Write the formula to find area of a sector of a circle, if angle at the centre is 'θ' degrees.	J2019 – 1
04.	ABCD is a square of side 14 cm. Four congruent circles are drawn in the square as shown in the figure. Calculate the area of the shaded region. [Circles touch each other externally and also sides of the square]  	J2019 – 2
05.	In the figure ABCD is a square, whose vertices lie on the circle. Find the area of the shaded region, if the perimeter of the circle is 88cm.  OR ABC is right angled at A. The sides AB, BC and AC are the tangents to the circle with centre '0' as shown in the figure.  If AB = 6cm, BC = 8cm, find the area of the shaded region.	MQP2020–3
06.	Length of an arc of a sector of a circle of radius r and angle θ is: (A) $\frac{\theta}{360^\circ} \times \pi r^2$ (B) $\frac{\theta}{360^\circ} \times 2\pi r^2$	M2020 – MCQ

	(C) $\frac{\theta}{180^\circ} \times 2\pi r$ (D) $\frac{\theta}{360^\circ} \times 2\pi r$.	
07.	The perimeter of circle with centre '0' is 24cm, the angle formed by an arc of the circle at its centre is 30°. Find the length of the arc AB. 	MQP2020–1
08.	Find the area of unshaded region in the given circle of radius 7cm and sector angle is 30° as in the figure. 	MQP2020–2
09.	ABCD is a rectangle of length 20 cm and breadth 10 cm. OAPB is a sector of a circle of radius 10√2 cm. Calculate the area of the shaded region. [Take π = 3·14]  **OR** A hand fan is made up of cloth fixed in between the metallic wires. It is in the shape of a sector of a circle of radius 21 cm and of angle 120° as shown in the figure. Calculate the area of the cloth used and also find the total length of the metallic wire required to make such a fan. 	M2020 – 3
10.	AB and CD are the arcs of two concentric circles with centre O of radius 21 cm and 7 cm respectively. If AOB = 30° as shown in the figure, find the area of the shaded region. 	S2020 – 3

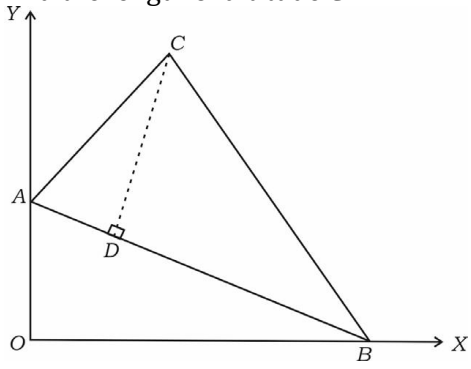
	OR In the figure, ABCD is a square, and two semicircles touch each other externally at P. The length of each semi–circular arc is equal to 11 cm. Find the area of the shaded region.  	
11.	In the figure ABCD is a square of side 14cm with Centre A,B,C and D four circles are drawn such that each circle touch externally two of the remaining three circles as shown in the figure. Find the area of the shaded region.  	MQP2022–3
12.	In the figure *AXB* and *CYD* are the arcs of two concentric circles with centre *O*. The length of the arc *AXB* is 11 cm. If *OC* = 7 cm and *AOB* = 30°, then find the area of the shaded region.  	A2022–4
13.	In the figure, the length of the arc AB of the circle with centre 'O' is. 11cm. If OP=4cm then find the area of the shaded region.  	MQP–2023–3
14.	In the given figure, 'O' is the centre of a circle and OAB is an equilateral triangle. P and Q are the mid-points of OA and OB respectively. If the area of Δ OAB is $36\sqrt{3}$ cm^2 , then find the area of the shaded region.	A2023–3

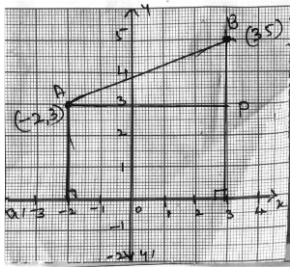
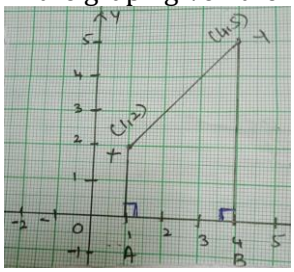
		
15.	The sides of a square touch the circle of radius 'r' as shown in the figure. IF the area of the shaded region is 42cm2, then find the radius of the circle.  OR In the figure the area of the sector OAB is 231cm2 and the length of the arc AB is 22cm. Find the radius of the sector. 	J2023–3

CHAPTER 06 – CONSTRUCTIONS		
01.	Draw a circle of radius 4 cm and construct a pair of tangents such that the angle between them is 60°.	A2019–2
02.	Construct a triangle with sides 5 cm, 6 cm and 7 cm and then construct another triangle whose sides are 7/5 of the corresponding sides of the first triangle.	A2019–3
03.	Draw a pair of tangents to a circle of radius 3·5 cm which are inclined to each other at an angle of 60°.	J2019 – 2
04.	Construct a triangle with sides 5 cm, 6 cm and 7 cm and then construct another triangle whose sides are 3/5 of the corresponding sides of the given triangle.	J2019 – 3
05.	Draw a circle of radius 3cm. Construct a pair of tangents to it, from a point 8cm away from its center.	MQP2020–2
06.	Draw a triangle ABC with side base BC = 8cm and altitude 4cm, and then construct another triangle whose sides are 5/3 times the corresponding sides of the isosceles triangle ABC.	MQP2020–3
07.	Draw a circle of radius 4cm and construct a pair of tangents to the circle from a point 8cm away from its center.	MQP2020–2
08.	Draw a right angled triangle in which the sides (other than the hypotenuse) are lengths 8cm and 6cm, then construct another triangle whose sides are 5/3 times the corresponding sides of the given triangle.	MQP2020–4
09.	Draw a pair of tangents to a circle of radius 3 cm which are inclined to each other at an angle of 60°.	M2020 – 2
10.	Construct a triangle ABC with sides BC = 3 cm, AB = 6 cm and AC = 4·5 cm. Then construct a triangle whose sides are 4/3 of the corresponding sides of the triangle ABC.	M2020 – 3
11.	Draw a circle of radius 4 cm, and construct a pair of tangents to the circle, such that the angle between the tangents is 60°.	S2020 – 2
12.	Construct a triangle with sides 6 cm, 7 cm and 8 cm and then construct another triangle whose sides are 3/4 of the corresponding sides of the constructed triangle.	S2020 – 3
13.	A student divided a line of length 9cm in the ratio 2:3 geometrically as shown in the figure. The correct lengths of AM and MB obtained by calculation are respectively equal to  A 6.3cm and 2.7cm B. 3.5cm and 5.5cm C. 3.6cm and 5.4cm D. 2.8m and 6.2cm	MQP2021–MCQ
14.	A student constructed a triangle ABC with sides AB=5cm, BC=6.5cm and AC=7cm and then constructed a ΔADE similar to ΔABC such that each of its sides are 7/5 of the corresponding sides of ΔABC. The length of AD and AE obtained by calculation are respectively equal to  A. 7cm and 9.8cm B. 3.4cm and 6.5cm C. 6.5cm and 9.8cm D. 10cm and 11.5cm	MQP2021–MCQ

15.	Which is the next step of construction while constructing a pair of tangents to a circle from an external point '*T*', given in the figure ?   	J2021–1
16.	A line *AB* of length 11 cm is divided in the ratio 6 : 5 geometrically as shown in the figure. The correct lengths of *AP* and *BP* obtained by calculation are respectively equal to  (A) 6 cm and 5 cm (B) 6·6 cm and 4·4 cm (C) 6·5 cm and 4·5 cm (D) 4·5 cm and 5·5 cm	S2021– MCQ
17.	Divide the line segment AB = 10cm in the ratio 2 : 3 geometrically.	MQP2022– 2
18.	Construct a pair of tangents to a circle of radius 4cm from a point 9cm away from its centre.	MQP2022– 3
19.	Construct a triangle of sides 6cm, 4cm and 7cm then construct an another triangle whose corresponding sides are 3/4 of the sides of the first triangle.	MQP2022– 4
20.	Draw a line segment of length 10 cm and divide it in the ratio 2 : 3 by geometric construction.	A2022–2
21.	Construct two tangents to a circle of radius 3 cm from a point 8 away from its centre.	A2022–3
22.	Construct a triangle with sides 4·5 cm, 6 cm and 8 cm. Then construct another triangle whose sides are ¾ of the corresponding sides of the first triangle.	A2022–4
23.	Construct a pair of tangents to the circle of radius 3.5cm, which are inclined to each other at an angle of 80°.	MQP– 2023–2
24.	Construct a triangle of sides 6cm, 8cm and 10cm. Then construct another triangle whose sides are 3/4 times the corresponding sides of the given triangle.	MQP– 2023–3

25.	Draw a circle of radius 4 cm and construct a pair of tangents to the circle such that the angle between them is 60°.	A2023–2
26.	Construct a triangle with sides 5 cm, 6 cm and 8 cm and then construct another triangle whose sides are ¾ of the corresponding sides of the first triangle.	A2023–3 J2023–3
27.	Construct two tangents to a circle of radius 3cm from a point 7cm away from its centre.	J2023–2

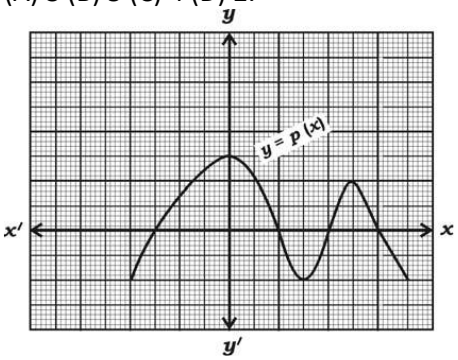
CHAPTER 07 – COORDINATE GEOMETRY		
01.	Find the co-ordinates of point which divides the line segment joining the points A(4, – 3) and B (8, 5) in the ratio 3 : 1 internally.	A2019–2
02.	The vertices of a Δ ABC are A(– 3, 2), B(– 1, – 4) and C(5, 2). If M and N are the mid-points of AB and AC respectively, show that 2 MN = BC. OR The vertices of a Δ ABC are A(– 5, – 1), B(3, – 5), C(5, 2). Show that the area of the Δ ABC is four times the area of the triangle formed by joining the mid-points of the sides of the triangle ABC.	A2019–3
03.	The distance between the origin and co-ordinates of a point (x, y) is	J2019 MCQ
04.	Find the distance between the points (2, 3) and (4, 1).	J2019 – 2
05.	Find the area of a triangle whose vertices are (1, – 1), (– 4, 6) and (– 3, – 5).	J2019 – 2
06.	The distance between the point (4,3) and the Origin is A) 7 units B) 25 units C) 5 units D) 6 units	
07.	Find the co-ordinates of the mid-point of the line segments joining the points (6,2) and (4,4).	MQP2020–1
08.	Find the coordinates of the mid-point of the line joining the points (x1 , y1) and (x2 , y2) .	M2020 – 1
09.	Find the distance between the points A(8,-3) and B (0,9) by using distance formula.	MQP2020–2
10.	Find the ratio in which the point P(2,x) divides the line joining the points A(-2,2) and B(3,7) internally Also find the value of x. OR Find the area of the triangle formed by joining the mid-points of the sides of the triangle whose vertices are A (2,3), B (4,4) and C (2,6)	MQP2020–3
11.	Find the perimeter of the triangle whose vertices are (–2, 1), (4, 6) and (6, 3). OR Three consecutive vertices of a parallelogram are A(1, 2), (B2, 3) and C(8,5). Find the fourth vertex.	MQP2020–3
12.	Find the distance between the points (– 5, 7) and (– 1, 3). OR Find the coordinates of the point which divides the line joining the points (1, 6) and (4, 3) in the ratio 1 : 2.	M2020 – 2
13.	The points A (1, 1), B (3, 2) and C (5, 3) cannot be the vertices of the triangle ABC. Justify.	M2020 – 2
14.	Find the coordinates of the mid-point of the line segment joining the points (2, 3) and (4, 7).	S2020 – 2
15.	In the figure, the vertices of Δ ABC are A(0,6), B(8,0) and C(5,8). If CD ⊥ AB, then find the length of altitude CD.  **OR** Show that the triangle whose vertices are A (8, – 4), B (9, 5) and C (0, 4) is an isosceles triangle.	S2020 – 3

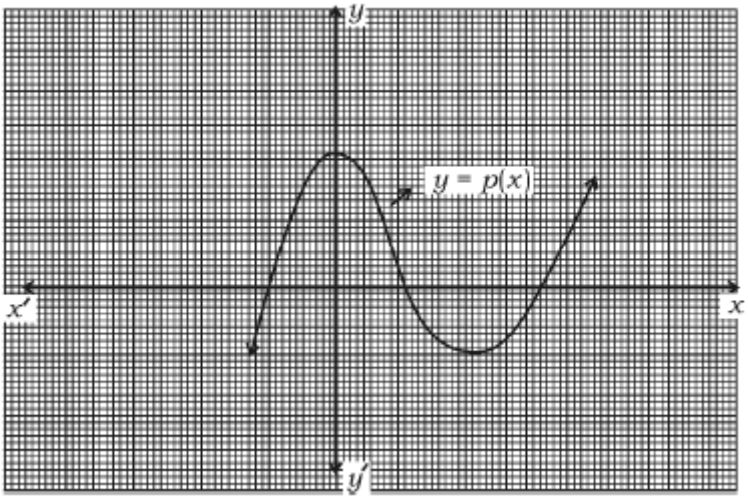
16.	The distance between the points A(0, 5) and B(-5, 0) is A. 5 units B. $2\sqrt{5}$ units C. $5\sqrt{2}$ units D. $\sqrt{10}$ units	MQP2021–MCQ
17.	The formula to find the mid-point of the line segment joining the points A (x1 , y1) and B (x2 , y2) is: (A) $\left(\frac{x_2+x_1}{2}, \frac{y_2+y_1}{2}\right)$ (B) $\left(\frac{x_2-x_1}{2}, \frac{y_2-y_1}{2}\right)$ (C) $\left(\frac{x_2+y_2}{3}, \frac{x_1+y_1}{3}\right)$ (D) $\left(\frac{x_2+x_1}{3}, \frac{y_2+y_1}{3}\right)$	MQP2021–MCQ, J2021–1
18.	In the given graph the length of 'BP' is:  A. 2 units B. 5 units C. 3 units D. 4 units	MQP2021–MCQ
19.	If P (x, y) divides the line join A (x1 y1) B (x2 y2) in the ratio m1 : m2 then x and y are equal to A. $x=\frac{m_1x_1+m_2x_2}{m_1+m_2}, y=\frac{m_1y_1+m_2y_2}{m_1+m_2}$ B. $x=\frac{m_1x_2+m_2x_1}{m_1+m_2}, y=\frac{m_1y_2+m_2y_1}{m_1+m_2}$ C. $x=\frac{m_1x_2-m_2x_1}{m_1+m_2}, y=\frac{m_1y_2-m_2y_1}{m_1+m_2}$ D. $x=\frac{m_1x_2+m_2x_1}{m_1-m_2}, y=\frac{m_1y_2+m_2y_1}{m_1-m_2}$	MQP2021–MCQ
20.	If origin is the midpoint of the line joining of the points A(4, –6) and B(a, b) the values of 'a' and 'b' are equal to A. a = 4 and b = 6 B. a = -4 and b = -6 C . a = -4 and b = 6 D. a = 6 and b = 4	MQP2021–MCQ
21.	The distance between the points A(x1, y1) and B(x2, y2) is given by the formula A. $d=\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$ B. $d=\sqrt{(x_1-y_1)^2+(x_2-y_2)^2}$ C. $d=\sqrt{(x_1-y_2)^2+(x_2-y_1)^2}$ D. $d=\sqrt{(x_2-x_1)+(y_2-y_1)}$	MQP2021–MCQ
22.	If the points A(1, 2) O(0, 0) and C(a, b) are collinear then. A. a = b B. b = 2a C. a = 2b D. a + b = 0	MQP2021–MCQ
23.	In the graph given the length AB is  A. 1 unit B. 5 units C. 3 units D. 4 units	MQP2021–MCQ
24.	The distance between the points (x1,y2) and (x2 ,y2) is: (A) $\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}$ (B) $\sqrt{(x_2-x_1)^2-(y_2-y_1)^2}$ (C) $\sqrt{(x_1+x_2)^2-(y_1+y_2)^2}$ (D) $\sqrt{(x_2+x_1)^2+(y_2+y_1)^2}$	J2021–1
25.	The mid-point of the line segment joining the points (2, 3) and (0, 1) is (A) (2, 4) (B) (4, 2) (C) (1, 2) (D) (2, 1)	S2021–1

26.	The length of the line segment joining the 'origin' and the point (x, y) is: (A) $x^2 + y^2$ (B) $x^2 - y^2$ (C) $\sqrt{x^2 + y^2}$ (D) $\sqrt{x^2 - y^2}$	S2021–1
27.	The area of the Δ OAB formed by joining the points A (5, 0), B (0, 5) and the origin 'O' is (A) 25 sq.units (B) 10 sq.units (C) 12 sq.units (D) 12·5 sq.units	S2021–1
28.	The co-ordinates of the point P (x, y) which divides the line joining the points A (x1 ,y1) and B (x2, y2) internally in the ratio m1:m2 are (A) $\left[\frac{m_1x_2 + m_2x_1}{m_1 + m_2}, \frac{m_1y_2 + m_2y_1}{m_1 + m_2}\right]$ (B) $\left[\frac{m_1x_2 - m_2x_1}{m_1 - m_2}, \frac{m_1y_2 - m_2y_1}{m_1 - m_2}\right]$ (C) $\left[\frac{m_1x_2 + m_2y_2}{m_1 + m_2}, \frac{m_1x_1 + m_2y_1}{m_1 + m_2}\right]$ (D) $\left[\frac{x_2 + x_1}{m_1 + m_2}, \frac{y_2 + y_1}{m_1 + m_2}\right]$	S2021–1
29.	The distance of the point *P* (*x, y*) from the origin is (A) $\sqrt{x^2 + y^2}$ (B) $x^2 + y^2$ (C) $x^2 - y^2$ (D) $\sqrt{x^2 - y^2}$.	A2022–MCQ
30.	The distance of a point p(x, y) from the origin is: A) $\sqrt{x^2 - y^2}$ B) $\sqrt{x - y}$ C) $\sqrt{x^2 + y^2}$ D) $\sqrt{y - x}$	MQP2022–MCQ
31.	A point 'P' divides the line joining of points A (x1,y1) and B (x2,y2) in the ratio m1 : m2 internally then write the co-ordinates of P.	MQP2022–1
32.	Find the distance between the points (3, 1) and (6, 2) using distance formula.	MQP2022–2
33.	Find the area of a triangle ABC whose vertices are A(2, 2) B(3,4) and C(–1,3). **OR** Find the coordinates of the points of "trisection" of the line joining the points (6, –2) and (10, 8).	MQP2022–3
34.	Write the distance of the point (4, 3) from *x*-axis.	A2022–1
35.	Find the distance between the points *A* (2, 6) and *B* (5, 10) by using distance formula. OR Find the coordinates of the mid-point of the line segment joining the points *P* (3, 4) and *Q* (5, 6) by using 'mid-point' formula.	A2022–2
36.	Find the coordinates of the point on the line segment joining the points *A* (– 1, 7) and *B* (4, – 3) which divides *AB* internally in the ratio 2 : 3. OR Find the area of triangle *PQR* with vertices *P* (0, 4), *Q* (3, 0) and *R* (3, 5).	A2022–3
37.	The coordinates of the midpoint of the line segment joining the points (4, 3) and (2, 1) is (A) (2, 3) (B) (2, 2) (C) (3, 2) (D) (1, 1)	MQP–2023–MCQ
38.	Find the distance between the origin and the point (3, 4).	MQP–2023–1
39.	Find the coordinates of the point which divides the line segment joining the points (-1,7) and (4,-3) in the ratio 2:3. OR Find the area of the triangle whose vertices are (7, -2), (5, 1) and (1, 4)	MQP–2023–3
40.	The distance of the point (– 8, 3) from the x-axis is (A) – 8 units (B) 3 units (C) – 3 units (D) 8 units	A2023–MCQ
41.	Find the coordinates of the mid-point of the line segment joining the points (6, 3) and (4, 7).	A2023–MCQ
42.	Find the ratio in which the line segment joining the points A(– 6, 10) and B(3, –8) is divided by the point (– 4, 6).	A2023–3

	OR Find the area of a triangle whose vertices are A(1,–1), B(–4, 6) and C(–3,–5)	
44.	The coordinates of the midpoint of the line segment joining the points (3, 4) and (5, 6) is: (A) (–4, –5) (B) (4, 5) (C) (4, –5) (D) (–4, 5)	J2023–MCQ
45.	Write the formula to find the area of a triangle PQR having vertices p(x_1, y_1), Q(x_2, y_2) and R(x_3, y_3).	J2023–1
46.	The points A, B and C are collinear. If A (I, O) , B (4, 4) and AC= 8 cm, then find the coordinates of point C.	J2023–3

CHAPTER 08 – REAL NUMBERS		
01.	If a and b are any two positive integers then HCF (a, b) × LCM (a, b) is equal to (A) a + b (B) a – b (C) a × b (D) a ÷ b	A2019 MCQ
02.	17 = 6 × 2 + 5 is compared with Euclid's Division lemma a = bq + r, then which number is representing the remainder?	A2019–1
03.	Prove that $3+\sqrt{5}$ is an irrational number.	A2019–2
04.	If the HCF of 72 and 120 is 24, then their LCM is: (A) 36 (B) 720 (C) 360 (D) 72	J2019 MCQ
05.	Write 96 as the product of prime factors.	J2019 – 1
06.	Prove that $5+\sqrt{3}$ is an irrational number.	J2019 – 2
07.	Express the denominator of 20/23 in the form of $2^n \times 5^m$ and state whether the given fraction is terminating or non-terminating repeating decimal.	M2020 – 1
08.	In the following numbers, irrational number is A) $\sqrt{16}-\sqrt{9}$ B) ¾ C) 0.3333..... D) $2+\sqrt{3}$	MQP2020– MCQ
09.	In Euclid's division lemma , if a = 3q + r, then write all the possible values of r.	MQP2020– 1
10.	The LCM of 24 and 36 is 48 and hence find their HCF.	MQP2020– 1
11.	The product of prime factors of 120 is A) 23 x32 x51 B) 22 x 31 x 51 C)23 x 31 x 52 D) 23 x 31 x 51	MQP2020– MCQ
12.	Prove that √2 + √3 is an irrational number.	MQP2020– 2
13.	Prove that 7 + √5 is irrational.	MQP2020– 2
14.	Prove that √5 is an irrational number. OR Find the HCF of 24 and 40 by using Euclid's division algorithm. Hence find the LCM of HCF (24, 40) and 20.	M2020 – 3
15.	Find the H.C.F. of the smallest prime number and the smallest composite number.	S2020 – 1
16.	Prove that √5 is an irrational number. **OR** Find L.C.M. of H.C.F. (306, 657) and 12.	S2020 – 3
17.	The rational number having a non-terminating and repeating decimal expansion in the following is (A) $\frac{1}{5^2}$ (B) $\frac{7}{2^2 \times 5}$ (C) $\frac{5}{2 \times 7}$ (D) $\frac{1}{2^3}$	MQP–2023
18.	Find the HCF of 7 and 11.	MQP–2023
19.	The number that represents the remainder when 19 = 6 × 3 + 1 is compared with Euclid's division lemma a = bq + r is (A) 3 (B) 6 (C) 1 (D) 19	A2023– MCQ
20.	Express the denominator of $\frac{7}{80}$ in the form of $2^n \times 5^m$.	A2023–1
21.	Show that 5 + √3 is an irrational number. OR Find the H.C.F. of 72 and 120 by using Euclid's division algorithm.	A2023–2
22.	The HCF of any two prime numbers is: (A) 0 (B) 2 (C) 1 (D) –1	J2023– MCQ
23.	According to Euclid's division lemma, if 13 = 4x3 + r, then find the value of r.	J2023–1
24.	Prove that 2+√3 is an irrational number.	J2023–2

CHAPTER 09 – POLYNOMIALS		
01.	Find the zeroes of the polynomial P (x) = $x^2 - 3$.	A2019–1
02.	Write the degree of the polynomial P (x) = $2x^2 - x^3 + 5$.	A2019–1
03.	The sum and product of the zeroes of a quadratic polynomial P(x) = $ax^2 + bx + c$ are – 3 and 2 respectively. Show that b + c = 5a.	A2019–2
04.	Find the quotient and the remainder when P(x) = $3x^3 + x^2 + 2x + 5$ is divided by g (x) = $x^2 + 2x + 1$.	A2019–2
05.	Find the degree of the polynomial P (x) = $x^3 + 2x^2 - 5x - 6$	J2019 – 1
06.	Sum and product of the zeroes of a quadratic polynomial P (x) = $ax^2 + bx - 4$ are 1/4 and – 1 respectively. Then find the values of a and b. **OR** Find the quotient and remainder when P (x) = $2x^2 + 3x + 1$ is divided by g (x) = x + 2.	J2019 – 2
07.	Find the value of k, in which one of its zeros is – 4 of the polynomial P (x) = $x^2 - x - (2k + 2)$.	J2019 - 2
08.	If one of the zeros of the polynomial $p(x) = x^2 - x + k$ is 2 then the value of k is A) 2 B) -2 C) -6 D) 6	MQP2020–MCQ
09.	If 3 and -3 are two zeros of the polynomial p(x) = $x^4 + x^3 - 11x^2 - 9x + 18$,then find the remaining two zeros of the' polynomial.	MQP2020–3
10.	Write the number of zeros of the polynomial p(x) = $x^3 + 2x^2 + x + 6$.	MQP2020–1
11.	The degree of a linear polynomial is: (A) 0 (B) 1 (C) 2 (D) 3.	M2020 – MCQ
12.	If α and β are the zeroes of the polynomial p(x) = $3x^2 - 12x + 15$, find the value of $\alpha^2 + \beta^2$.	MQP2020–2
13.	If one zero of the polynomial p (x) = $x^2 - 6x + k$ is twice the other then find the value of k. OR Find the polynomial of least degree that should be subtracted from p(x) = $x^3 - 2x^2 + 3x + 4$ so that it is exactly divisible by g(x) = $x^2 - 3x + 1$.	M2020 – 2
14.	In the given graph, the number of zeros of the polynomial y = p(x) is: (A) 3 (B) 5 (C) 4 (D) 2. 	S2020 – MCQ
15.	If P(x) = $2x^3 + 3x^2 - 11x + 6$, then find the value of P (1).	S2020 – 1
16.	Find the value of k of the polynomial P(x) = $2x^2 - 6x + k$, such that the sum of zeros of it is equal to half of the product of their zeros.	S2020 – 2
17.	The quadratic polynomial whose sum and product of zeroes are 4 and 5 respectively is (A) p(x) = x^2-4x-5 (B) p(x) = x+4x-5 (C) p(x) = x^2-5x+4 (D) p(x) = x^2-4x+5	MQP–2023
18.	Write the degree of the polynomial p(x) = x^2+2x3-5x4+6 ?	MQP–2023
19.	Prove that 5+√3 is an irrational number. OR Find the LCM of 12, 15 and 21 by the method of prime factorization.	MQP–2023–2
20.	Divide the polynomial p(x) = x3-3x^2+5x-3 by the polynomial g(x) = x^2-2 and find the quotient q(x) and remainder r(x).	MQP–2023–3

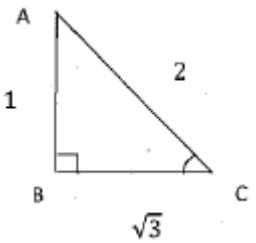
21.	The number of zeroes of the polynomial $y = p(x)$ in the given graph is  (A) 3 (B) 2 (C) 1 (D) 4	A2023–MCQ
22.	Write the degree of the polynomial $P(x) = 3x^3 - x^4 + 2x^2 + 5x + 2$.	A2023–1
23.	Divide $p(x) = 3x^3 + x^2 + 2x + 5$ by $g(x) = x^2 + 2x + 1$ and find the quotient $[q(x)]$ and remainder $[r(x)]$. OR Find the zeroes of the quadratic polynomial $p(x)=x^2 + 7x + 10$, and verify the relationship between zeroes and the coefficients.	A2023–3
24.	The degree of the polynomial $P(x) = 3x^3 - 8x2 + 6x - 3$ is: (A) 3 (B) 2 (C) 1 (D) 0	J2023–MCQ
25.	Find the sum of the zeroes of the polynomial $p(x) = x^2 - 5x + 6$	J2023–1
26.	Divide $P(x) = x^3 - 3x^2 + 5x - 3$ by $g(x) = x^2 - x + 1$ then find the quotient $q(x)$ and remainder $r(x)$.	J2023–3

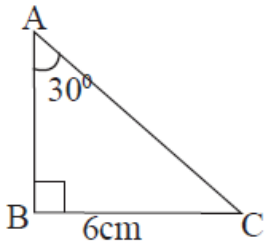
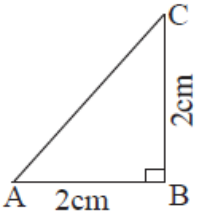
CHAPTER 10 – QUADRATIC EQUATIONS		
01	"The product of two consecutive positive integers is 30." This can be expressed algebraically as (A) x (x + 2) = 30 (B) x (x – 2) = 30 (C) x (x – 3) = 30 (D) x (x + 1) = 30	A2019 MCQ
02.	Find the value of the Discriminant of the quadratic equation $2x^2 - 4x + 3 = 0$.	A2019–1
03.	Solve $2x^2 - 5x + 3 = 0$ by using formula.	A2019–2
04.	The length of a rectangular field is 3 times its breadth. If the area of the field is 147 sq.m, find its length and breadth.	A2019–2
05.	Solve the equation $x^2 - 3x - 10 =$ by using formula.	J2019 – 2
06.	The ages of two students A and B are 19 years and 15 years respectively. Find how many years it will take so that the product of their ages becomes equal to 480. **OR** If the quadratic equation $(b – c)x^2 + (c – a) x + (a – b) = 0$ has equal roots, then show that $2b = a + c$.	J2019 – 4
07.	Write the discriminant of the quadratic equation $ax^2 + bx + c = 0$.	MQP2020–1
08.	Find the roots of the quadratic equation $x^2 + 7x + 12 = 0$.	MQP2020–1
09.	Find the roots of the equation $6x^2 + 7x - 10 = 0$	MQP2020–2
10.	The sum of the numerator and the denominator of a given fraction is 12. If 3 is added to its denominator, then the fraction becomes 1/2 . Find the given fraction. OR 'Seven times a two digit number is equal to four times the number obtained by reversing the places of its digits. If the difference between the digits is 3, find the number.	MQP2020–3
11.	The sum of the areas of two squares is 640 m^2. If the difference between their perimeters is 64m, then find sides of the square. OR If the roots of the equation $(a^2 + b^2)x^2 + 2(bc-ad)x + c^2 + d^2 = 0$ are equal, show that $ac + bd = 0$.	MQP2020–3
12.	A fraction becomes $\frac{8}{11}$ if 3 is added to both the numerator and the denominator, also if 3 is subtracted from the numerator and the denominator, it becomes $\frac{2}{5}$. Find the fraction. OR 10 years hence, the age of x will be 2 times that of age of y. 10 years ago, the age of x was 6 times that of age of y. What are their present ages?	MQP2020–3
13.	Find two consecutive positive integers, whose sum of their squares is 365.	MQP2020–3
14.	A man drives his car with uniform speed from place A to place B which is 150km away. Again he returns to the place A by increasing the speed of the car by 10km/h and there by reaches 30 minutes earlier than the time taken in his forward journey. Find the total time taken by him in forward and return journey. OR A, B and P are three non–collinear points on a plane. The distance between the points A and P is 2m more than the distance between the points B and P. If the distance between points A and B is 10m and AB is the longest side of the triangle ABC. Is ABC a right angled triangle or not. Justify your answer using the discriminant of quadratic equation and also find the measure of AP and BP.	MQP2020–3
15.	Write $\frac{x+1}{2} = \frac{1}{x}$, in the standard form of a quadratic equation.	M2020 – 1

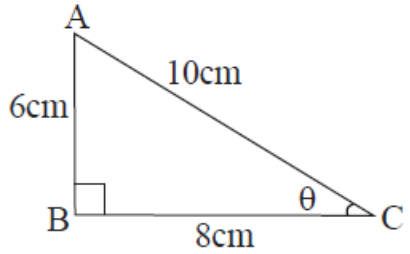
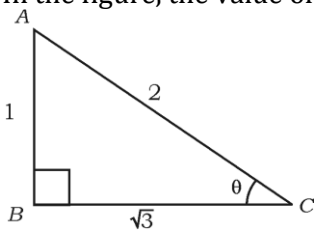
16.	Find the discriminant of the equation $2x^2 - 5x + 3 = 0$ and hence write the nature of the roots.	M2020 – 2
17.	To save fuel, to avoid air pollution and for good health two persons A and B ride bicycle for a distance of 12 km to reach their office everyday. As the cycling speed of B is 2 km/h more than that of A, B takes 30 minutes less than that of A to reach the office. Find the time taken by A and B to reach the office.	M2020 – 3
18.	If one root of the equation (x+4)(x+3) = 0 is – 4, then find the another root of the equation.	S2020 – 1
19.	Find the value of the discriminant of the quadratic equation $2x^2 - 5x - 1 = 0$, and hence write the nature of its roots.	S2020 – 2
20.	The diagonal of a rectangular playground is 60 m more than the smaller side of the rectangle. If the longer side is 30 m more than the smaller side, find the sides of the playground. **OR** The altitude of a triangle is 6 cm more than its base. If its area is 108 cm^2 , find the base and height of the triangle.	S2020 – 3
21.	The standard form of the quadratic equation $3x^2 = 4(5x - 3)$ is A. $3x^2 - 5x + 3 = 0$ B. $3x^2 + 20x - 12 = 0$ C. $3x^2 - 20x + 3 = 0$ D. $3x^2 - 20x + 12 = 0$	MQP2021–MCQ
22.	The roots of the quadratic equation $4x^2 - 81 = 0$ are A. $\pm\frac{2}{9}$ B. $\pm\sqrt{\frac{9}{2}}$ C. $\pm\frac{81}{4}$ D. $\pm\frac{9}{2}$	MQP2021–MCQ
23.	The roots of the quadratic equation $ax^2 + b x + c = 0$ are : A. $x=\frac{-b\pm\sqrt{c^2-4ab}}{2a}$ B. $x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$ C. $x=\frac{-a\pm\sqrt{b^2-4ac}}{2}$ D. $x=\frac{-b\pm\sqrt{b^2-4ac}}{2}$	MQP2021–MCQ
24.	In finding the roots of the quadratic equation $6x^2 - x - 2 = 0$ by the method of factorisation, the middle term '−x' can be written as A. 3x and −4x B. −3x and +4x C. −3x and −4x D. −5x and 4x	MQP2021–MCQ
25.	The quadratic equation in the following is A. $x^2 + 3x + 1 = x^2 + 2x$ B. $3x + 2y - 14 = 0$ C. $x + 2x = x^2$ D. $x^2 - x + 3 = 0$	MQP2021–MCQ
26.	The constant term in the quadratic equation $3x^2–3(2x-4) = 0$, after reducing it to the standard form $ax^2 + bx + c=0$ is A. 3 B. 4 C. -12 D. 12	MQP2021–MCQ
27.	One root of the quadratic equation (2x-3)(x+5)=0 is -5, then the other root is A. 5 B. –3/2 C. 3/2 2/3	MQP2021–MCQ
28.	The nature of the roots of the quadratic equation $x^2–2x + 1=0$ are A. real and equal B. real, rational and distinct C. real, irrational and distinct D. complex	MQP2021–MCQ
29.	The sum of the squares of two consecutive odd numbers is 394. The mathematical equation for the above statement is A. $x^2+(x+1)^2=394$ B. $x^2+(x+2)^2=394$ C. $(x+1)^2+ (x+2)^2 =394$ D. $x+(x+2)^2=3941$	MQP2021–MCQ
30.	When the quadratic equation $5x^2 = 2(2x + 3)$ is expressed in the standard form, the constant term obtained is: (A) 5 (B) 6 (C) 4 (D) – 6	S2021–MCQ
31.	If one root of the equation $2x^2 + ax + 6 = 0$ is 2, then the value of 'a' is: (A) 7 (B) $\frac{7}{2}$ (C) – 7 (D) $-\frac{7}{2}$	J2021–1

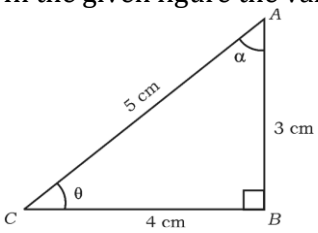
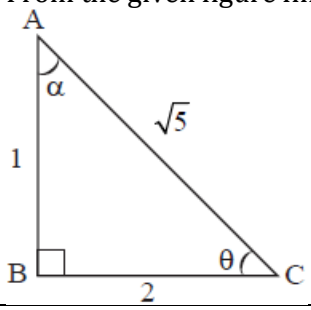
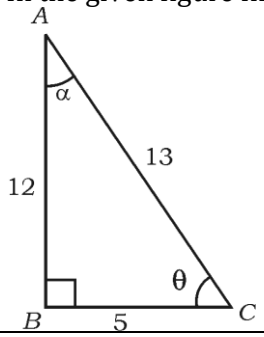
32.	The discriminant of the Quadratic equation $px^2 + qx + r = 0$ is: (A) $q^2 - 4pr$ (B) $q^2 + 4pr$ (C) $p^2 - 4pr$ (D) $p^2 - 4qr$	J2021–1
33.	The roots of the quadratic equation $ax^2 + bx + c = 0$ are: (A) $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ (B) $x = \frac{-b \pm \sqrt{b^2 + 4ac}}{2a}$ (C) $x = \frac{-b - \sqrt{b^2 - 4c}}{2a}$ (D) $x = \frac{-b + \sqrt{b^2 - 4ac}}{2a}$	J2021–1
34.	The roots of the equation $(x - 3) (x + 2) = 0$ are (A) – 3, 2 (B) 3, – 2 (C) – 3, – 2 (D) 3, 2	J2021–1
35.	If the sum of two consecutive integers is 27, then the integers are (A) 7 and 20 (B) 13 and 14 (C) 1 and 26 (D) – 13 and – 14	J2021–1
36.	The standard form of the quadratic equation $2x^2 = 3 (4x + 7)$ is (A) $2x^2 + 12x + 7 = 0$ (B) $2x^2 - 12x - 21 = 0$ (C) $2x^2 - 4x - 7 = 0$ (D) $2x^2 - 12x - 7 = 0$	S2021–MCQ
37.	If one root of the quadratic equation $2x^2 + kx + 9 = 0$ is 3 then the value of k is (A) $k = -9$ (B) $k = 9$ (C) $k = -5$ (D) $k = -3$	S2021–MCQ
38.	If the roots of the equation $ax^2 + bx + c = 0$ are equal then (A) $b^2 - 4ac < 0$ (B) $b^2 - 4ac > 0$ (C) $b^2 - 4ac = 0$ (D) $b - 4ac = 0$	S2021–MCQ
39.	The discriminant of the quadratic equation $2x^2 - 3x - 4 = 0$ is (A) – 21 (B) $\sqrt{-21}$ (C) $\sqrt{41}$ (D) 41	S2021–MCQ
40.	The roots of the quadratic equation $x^2 - 16x = 0$ are (A) 0 and 8 (B) 0 and 16 (C) 4 and 0 (D) 16 and 4	S2021–1
41.	The quadratic equation among the following is (A) $x^2 + 3x + 1 = x^2 + 2x$ (B) $x^2 = x - 3$ (C) $x + \frac{2}{x} = x^2$ (D) $x (x^2 - 3) = 0$	S2021–1
42.	If the value of the discriminant of a quadratic equation is zero then the nature of the roots are A) Real distinct and irrational B) Real and equal C) Real distinct and rational D) Not real	MQP2022–MCQ
43.	Solve $3x^2 - 2x - 3 = 0$ by using quadratic formula.	MQP2022–2
44.	Find the value of the discriminant and hence write the nature of roots of the equation $x^2 + 3x + 2 = 0$	MQP2022–2
45.	A train travels 360 km at a uniform speed. If the speed had been 5 km/h more it would have taken 1 hour less for the same journey. Find the speed of the train. **OR** By selling an article for `18.75 a person loses as much percent as it cost him in Rupees. Find the cost price of the article.	MQP2022–4
46.	The standard form of $2x^2 = x - 7$ is: (A) $2x^2 - x = -7$ (B) $2x^2 + x - 7 = 0$ (C) $2x^2 - x + 7 = 0$ (D) $2x^2 + x + 7 = 0$.	A2022–MCQ
47.	Write the standard form of quadratic equation.	A2022–1
48.	Find the roots of $x^2 + 5x + 2 = 0$ by using quadratic formula.	A2022–2
49.	Find the value of the discriminant and hence write the nature of roots of the quadratic equation $x^2 + 4x + 4 = 0$.	A2022–2
50.	The diagonal of a rectangular field is 60 m more than If the longer side is 30 m more than the shorter side, then find the sides of the field. In a right angled triangle, the length of the hypotenuse is 13 cm. Among the remaining two than the other side. Find the sides of the triangle.	A2022–3

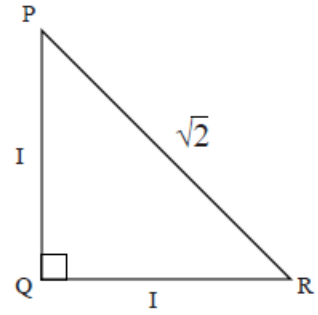
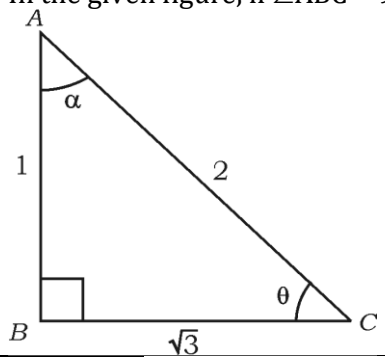
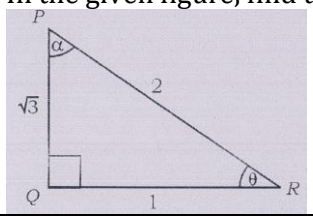
51.	Find the discriminant of the quadratic equation x^2-2x-3=0.	MQP–2023–1
52.	Express the equation x (2 + x) = 3 in the standard form of a quadratic equation.	A2023–1
53.	Find the roots of the quadratic equation x^2+4x+5=0, using the 'quadratic formula'. OR Find the roots of the quadratic equation $2x^2$+x-4=0 by the method of completing the square.	MQP–2023–2
54.	Find the discriminant of the quadratic equation $2x^2 - 4x + 3 = 0$.	A2023–1
55.	Find the roots of the equation $2x^2 - 5x + 3 = 0$ by using 'quadratic formula'. OR Find the roots of the equation $5x^2 - 6x - 2 = 0$ by the method of completing the square.	A2023–2
56.	The distance between two cities 'A' and 'B' is 132 km. Flyovers are built to avoid the traffic in the intermediate towns between these cities. Because of this, the average speed of a car travelling in this route through flyovers increases by 11 km/h and hence, the car takes 1 hour less time to travel the same distance than earlier. Find the current average speed of the car.	A2023–3
57.	Find the value of the discriminant of the quadratic equation $x^2 - 5x + 1 = 0$	J2023–1
58.	Find the roots of the equation $x^2 - 3x + 1 = 0$ using quadratic formula. OR Solve the equation $x^2 - 2x - 10 = 0$ by completing the square method.	J2023–2

CHAPTER 11 – TRIGONOMETRY		
01.	The value of cos 48° – sin 42° is (A) 0 (B) 1/4 (C) 1/2 (D) 1	A2019 MCQ
02.	If sin θ = 13/12 , find the values of cos θ and tan θ. **OR** If $\sqrt{3}$ tan θ =1 and θ is acute, find the value of sin 3θ + cos 2θ.	A2019–2
03.	Prove that $\left(\frac{1+\cos\theta}{1-\cos\theta}\right) = (\text{cosec}\,\theta + \cot\theta)^2$.	A2019–2
04.	The value of sin 30° + cos 60° is: (A) $\frac{1}{2}$ (B) $\frac{3}{2}$ (C) $\frac{1}{4}$ (D) 1	J2019 MCQ
05.	In a Δ ABC, ∠ABC = 90° and ∠ACB = 30°, then find AB : AC.	J2019 – 1
06.	If cosec θ = 12/13 , then find the value of cos θ.	J2019 – 2
07.	Show that (tan A × sin A) + cos A = sec A.	J2019 – 2
08.	If Sin A = $\frac{1}{\sqrt{2}}$, the magnitude of ∠ A is A) 90^0 B) 60^0 C) 30^0 D) 45^0.	MQP2020 –MCQ
09.	If 13 sin θ = 12, then the value of cosec θ is: (A) $\frac{12}{5}$ (B) $\frac{13}{5}$ (C) $\frac{12}{13}$ (D) $\frac{13}{12}$.	M2020 - MCQ
10.	If Sin θ = 3/5 and cos θ = 4/5 find the value of $\sin^2\theta + \cos^2\theta$	MQP2020 –1
11.	Find the value of sin 30° + cos 60°.	MQP2020 –1
12.	If cos A = 0.6, show that 4 sin A – 3 tan A = 0 OR Prove that $(\sec^4 A - \sec^2 A) = \tan^2 A + \tan^4 A$	MQP2020 –2
13.	In the figure, the value of sin C is A) $2/\sqrt{3}$ B) $\sqrt{3}/2$ C) ½ D) 1 	MQP2020 –MCQ
14.	Find the value of sin 90° + tan45°.	MQP2020 –1
15.	Show that $\frac{\sin\theta}{1+\cos\theta} + \frac{1+\cos\theta}{\sin\theta} = 2\,\text{cosec}\,\theta$	MQP2020 –4
16.	Find the value of tan 45° + cot 45°.	M2020 – 1

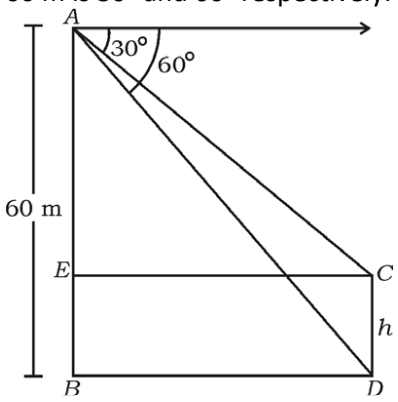
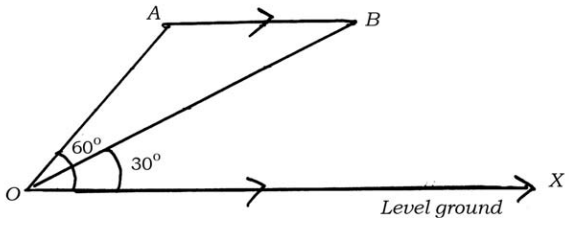
17.	If $x = p\tan\theta + q\sec\theta$ and $y = p\sec\theta + q\tan\theta$ then prove that $x^2 - y^2 = q^2 - p^2$. OR Prove that $\frac{\cot^2(90^\circ - \theta)}{\tan^2\theta - 1} + \frac{\text{cosec}^2\theta}{\sec^2\theta - \text{cosec}^2\theta} = \frac{1}{\sin^2\theta - \cos^2\theta}$.	M2020 – 3
18.	The value of $\sec^2 26^\circ - \tan^2 26^\circ$ is: (A) 1/2 (B) 0 (C) 2 (D) 1.	S2020 – MCQ
19.	If $\cos\theta = 24/25$, then write the value of $\sec\theta$.	S2020 – 1
20.	If $\sin^2 A = 0$, then find the value of cos A.	S2020 – 1
21.	Prove that cosec A (1 – cos A) (cosec A + cot A) = 1. **OR** Prove that $\frac{\tan A - \sin A}{\tan A + \sin A} = \frac{\sec A - 1}{\sec A + 1}$.	S2020 – 2
22.	In the right angle ΔABC, ∠B=90°. If tan C = 3 , the value of the angle 'A' is A. 30° B. 60° C. 45° D. 15°	MQP2021 –MCQ
23.	If Sin θ = 3/5 the value of $(1 - \text{Cos}^2\theta)$ is A. $\frac{9}{5}$ B. $\frac{6}{10}$ C. $\frac{9}{25}$ D. $\frac{25}{9}$	MQP2021 –MCQ
24.	If Sin $(\propto + \beta) = 1$ and cos $(\propto - \beta) = 1$ where $\propto + \beta < 90$, then the value of $\propto$ and β are respectively equal to A. 60° and 30° B. 30° and 60° C. 90° and 0° D. 45° and 45°	MQP2021 –MCQ
25.	In the figure ABC is a right angle in which ∠B=90°,BC=6cm and ∠A=30° then the length of AC is  A. 6√3cm B. 12cm C. 2√3cm D. 12√3cm	MQP2021 –MCQ
26.	Which one of the following is a correct relation? A. $\tan^2\theta = Sec^2\theta + 1$ B. $Sin\,\theta = \frac{1}{Sec\theta}$ C. $\tan\theta = \frac{Cos\theta}{Sin\theta}$ D. $Sin^2\theta + Cos^2\theta = 1$	MQP2021 –MCQ
27.	In the given figure ∠B = 90°, AB = BC = 2cm, then the length of AC is  A. 2√2 cm B. 4√3cm C. 2cm D. 4cm	MQP2021 –MCQ

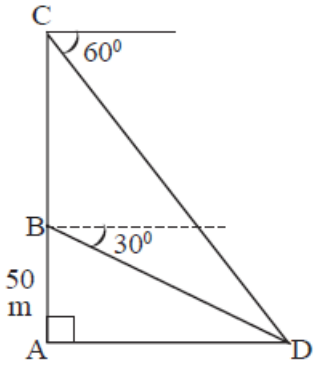
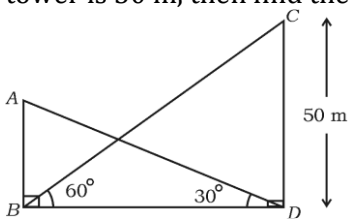
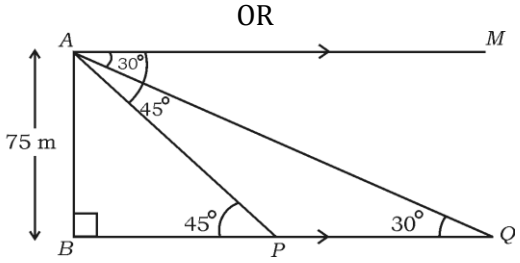
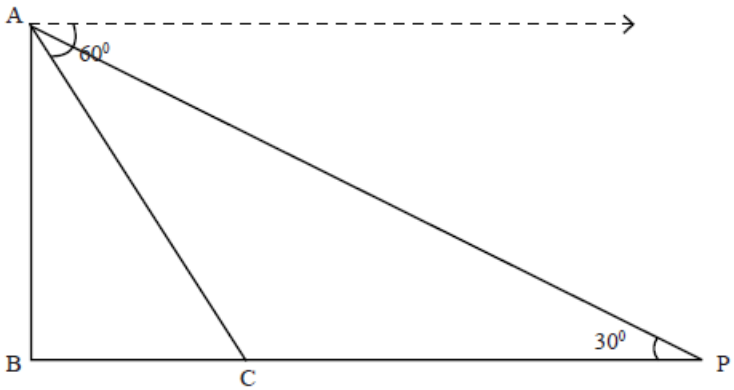
28.	In the given figure ∠B=90°, AB=6cm, BC=8cm and AC=10cm then the value of Sin(90-θ) is  A. $\frac{6}{10}$ B. $\frac{10}{6}$ C. $\frac{10}{8}$ D. $\frac{8}{10}$	MQP2021 –MCQ
29.	If 2Sin 2θ = 3 the value of 'θ' is A. 90° B. 60° C. 30° D. 45°	MQP2021 –MCQ
30.	If sin θ = x/y then Cos 'θ' is A. $\frac{y}{\sqrt{y^2-x^2}}$ B. $\frac{y}{x}$ C. $\frac{x}{\sqrt{y^2-x^2}}$ D. $\frac{\sqrt{y^2-x^2}}{y}$	MQP2021 –MCQ
31.	If Sin A + Sin^2 A = 1 then the value of Cos^2 A + Cos^4 A is A. 1/2 B. 2 C. 3 D. 1	MQP2021 –MCQ
32.	In the figure, the value of sin θ is:  (A) $\frac{1}{2}$ (B) $\frac{\sqrt{3}}{2}$ (C) $\sqrt{3}$ (D) $\frac{2}{\sqrt{3}}$	J2021–1
33.	The value of (sin 30° + cos 60° – tan 45°) is: (A) 1 (B) – 1 (C) 2 (D) 0	J2021–1
34.	3 + sec^{2}θ is equal to: (A) 4 + tan^{2}θ (B) 4 + cot^{2}θ (C) 2 + cot^{2}θ (D) 3 + cot^{2}θ	J2021–1
35.	The value of (sin θ × cosec θ) is: (A) 2 (B) 1 (C) $-\frac{1}{2}$ (D) $\frac{\sqrt{3}}{2}$	J2021–1
36.	sin 65° is equal to (A) cos 65° (B) $\frac{\sqrt{3}}{2}$ (C) cos 25° (D) $\frac{1}{2}$	S2021–1
37.	If tan θ = √3 then the value of sec θ is (A) 2 (B) 2/√3 (C) 1/2 (D) 9	S2021–1

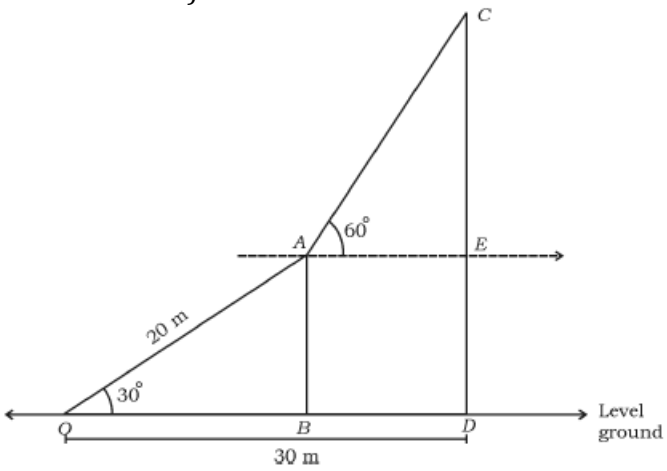
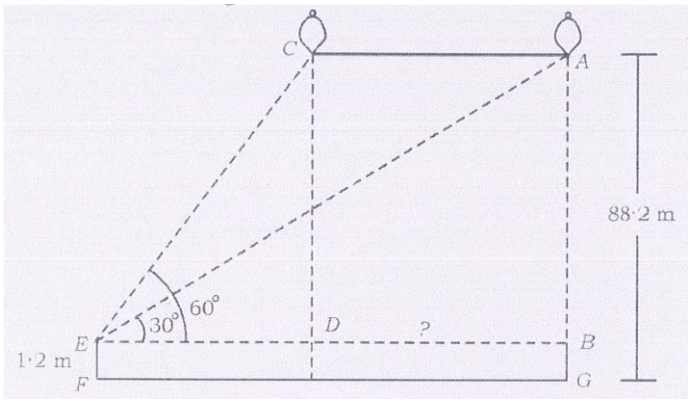
38.	In the given figure the value of sin θ tan α is  (A) 3/5 (B) 4/5 (C) 7/8 (D) 5/4	S2021–1
39.	If cos 9θ = sinθ where 9θ < 90°, then the value of tan 5θ is (A) 1/√3 (B) 1 (C) √3 (D) 0	S2021–1
40.	Which of the following is not a correct relation? (A) $\sin^2\theta = 1 - \cos^2\theta$ (B) $\sec^2\theta = 1 + \tan^2\theta$ (C) $\operatorname{cosec}^2\theta = 1 + \cot^2\theta$ (D) $\sec^2\theta = 1 - \tan^2\theta$	S2021–1
41.	The value of cos (90° – 30°) is (A) – 1 (B) ½ (C) 0 (D) 1.	S2021–MCQ
42.	The value of cosec 45° is: A) 1 B) √2 C) 1/√2 D) 0	MQP2022–MCQ
43.	Find the value of $\sin^2\theta + \cos^2\theta + 1$	MQP2022–1
44.	From the given figure find the value of a) Sin θ b) tan α  	MQP2022–2
45.	Evaluate 4 Sin 30° + tan 48° . tan 42° – 3tan 45° **OR** 6 cos 60° – Sin 30° + Sin²45° + cos²45°	MQP2022–3
46.	Write the value of $\frac{\sin 18^\circ}{\cos 72^\circ}$	A2022–1
47.	In the given figure find the values of i) sin θ ii) tan α.  	A2022–2
48.	Prove that $(\sin A + \operatorname{cosec} A)^2 + (\cos A + \sec A)^2 = 7 + \tan^2 A + \cot^2 A.$ OR Prove that : sec θ (1 – sin θ) (sec θ + tan θ) = 1.	A2022–3
49.	Prove that $(\operatorname{cosec}A - \sin A)(\sec A - \cos A) = \frac{1}{\tan A + \cot A}$	MQP–2023–3

	OR Find the value of $\frac{\sin 30^\circ + \tan 45^\circ - \operatorname{cosec} 60^\circ}{\sec 30^\circ + \cos 60^\circ + \cot 45^\circ}$	
50.	In the figure, write the value of sinP and sin (90°-R). 	MQP–2023–2
51.	In the given figure, if ∠ABC = 90°, then find the values of sin θ and cos α. 	A2023–2
52.	Prove that $\sqrt{\frac{1+\cos A}{1-\cos A}} = \operatorname{cosec} A + \cot A$ OR Prove that $\frac{\sin A}{1+\cos A} + \frac{1+\cos A}{\sin A} = 2 \operatorname{cosec} A.$	A2023–3
53.	In the given figure, find the values of cos α and tan θ 	J2023–2
54.	Prove that (sec A – cos A)(cot A + tan A) = tan A.sec A. OR If A, B and C are interior angles of a triangle then prove that $1+\tan^2\left(\frac{A+B}{2}\right) = \operatorname{cosec}^2\left(\frac{C}{2}\right)$	J2023–3

CHAPTER 12 – APPLICATIONS OF TRIGONOMETRY

01.	The angles of elevation of the top of a tower from two points at a distance of 4 m and 9 m from the base of the tower and in the same straight line with it are complementary. Find the height of the tower.	A2019–4
02.	From the top of a vertical building of $50\sqrt{3}$ m height on a level ground the angle of depression of an object on the same ground is observed to be 60°. Find the distance of the object from the foot of the building. **OR** Two windmills of height 50 m and $40\sqrt{3}$ m are on either side of the field. A person observes the top of the windmills from a point in between them. The angle of elevation was found to be 45° and 30°. Find the distance between the windmills.	J2019 – 3
03.	The angle of elevation of the top of an unfinished vertical building on a ground, at a point which is 100m from the base of the building is 45°. How much height the building must be raised, so that its angle of elevation from the same point be 60°.(Take √3= 1.73)	MQP2020–4
04.	In the figure, the angle of elevation θ is A) 30° B) 45° C) 90° D) 60°	MQP2020–MCQ
05.	The angle of elevation of the top of a vertical tower on a level ground from a point, at a distance of 9√3m from its foot on the same ground is 60o. Find the height of the tower.	MQP2020–2
06.	A tower and a pole stand vertically on the same level ground. It is observed that the angles of depression of top and foot of the pole from the top of the tower of height 60 m is 30° and 60° respectively. Find the height of the pole. 	M2020 – 4
07.	An aircraft flying parallel to the ground in the sky from the point A through the point B is observed, the angle of elevation of aircraft at A from a point on the level ground is 60°, after 10 seconds it is observed that the angle of elevation of aircraft at B is found to be 30° from the same point. Find at what height the aircraft is flying, if the velocity of aircraft is 648 km/hr. (Use 3 = 1·73) 	S2020 – 4
08.	The angle of elevation of the top of a tower from a point on the ground, which is 30 metres away from the foot of the tower, is 30°. Then the height of the tower is: (A) 10 m (B) 30 m (C) $10\sqrt{3}$ m (D) $30\sqrt{3}$ m	J2021–1

09.	The angle of depression from the top of a vertical tower to a point on the ground is found to be 60° and from a point 50m above the foot of the tower the angle of depression to the same point is found to be 30° as shown in the figure find the height of the tower.  	MQP2022–4
10.	The angle of elevation of the top of a building from the foot of a tower is 30° and the angle of elevation of the top of the tower from the foot of the building is 60°. Both the tower and building are on the same level ground. If the height of the tower is 50 m, then find the height of the building.  OR  As observed from the top of a 75 m high light house from the sea–level, the angles of depression of two ships are 30° and 45°. If one ship is exactly behind the other on the same side of the light house, then find the distance between the two ships.	A2022–4
11.	As observed from the top of a building standing vertically on the ground, the angle of depression of a point 'C' on the ground is 60°. From the foot (B) of the building when moved through point 'C' in a straight line and observe the top of the building, from point 'P', if the angle of elevation has to be 30O (as shown in the figure) then show that the distance moved from 'C' to 'P' is twice the distance BC.  	MQP–2023–4
12.	In the given figure, a rope is tightly stretched and tied from the top of a vertical pole to a peg on the same level ground such that the length of the rope is 20 m	A2023–4

	and the angle made by it with the ground is 30°. A circus artist climbs the rope, reaches the top of the pole and from there he observes that the angle of elevation of the top of another pole on the same ground is found to be 60°. If the distance of the foot of the longer pole from the peg is 30 m, then find the height of this pole. (Take $\angle 3 = 1{\cdot}73$)  	
13.	A 1.2 m tall girl spots a balloon moving with the wind in a horizontal line at a height of 882 m from the ground. The angle of elevation of the balloon from the eyes of the girl at any instant is 60^{o}. After some time the angle of elevation reduces to 30^{o} (see the figure). Find the distance travelled by the balloon during the interval.  	J2023–4

CHAPTER 13 – STATISTICS

01. Calculate the median of the following frequency distribution table :

Class-interval	*Frequency* (f_i)
1 — 4	6
4 — 7	30
7 — 10	40
10 — 13	16
13 — 16	4
16 — 19	4

$\Sigma f_i = 100$

OR

Calculate the mode for the following frequency distribution table.

Class-interval	*Frequency* (f_i)
10 — 25	2
25 — 40	3
40 — 55	7
55 — 70	6
70 — 85	6
85 — 100	6

$\Sigma f_i = 30$

A2019–3

02. During the medical check-up of 35 students of a class, their weights were recorded as follows. Draw a less than type of ogive for the given data :

Weight (in kg)	*Number of students*
Less than 38	0
Less than 40	3
Less than 42	5
Less than 44	9
Less than 46	14
Less than 48	28
Less than 50	32
Less than 52	35

A2019–3

03. Find the mode for the following data in the frequency distribution table:

Family size	1 - 3	3 - 5	5 - 7	7 - 9	9 - 11
Number of families	7	8	2	2	1

OR

Find the median for the following data in the frequency distribution table:

Weight (in kg)	15-20	20-25	25-30	30-35	35-40
Number of students	2	3	6	4	5

J2019 – 3

04.	The following table gives production yield per hectare of wheat of 100 farms of a village. Change the distribution to a more than type distribution, and draw its ogive. *Production yield in kg/hectare* | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 *Number of farms* | 2 | 8 | 12 | 24 | 38 | 16	J2019 – 3
05.	The following table gives the production yield per hectare of wheat of 100 farms of a village. Draw more than type Ogive Yield productivity | 40-45 | 45- 50 | 50-55 | 55-60 | 60-65 | 65-70 Number of farms | 4 | 6 | 16 | 20 | 30 | 24	MQP2020–3
06.	Find the mean of the following data: C.I. | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 frequency | 3 | 5 | 9 | 5 | 3	MQP2020–3
07.	The following distribution gives the daily income of 50 workers of a factory. Convert the distribution above to a less than type cumulative frequency distribution and draw its ogive. Daily Income (in Rs) | Number of workers 100 -150 | 15 150-200 | 12 200 -250 | 10 250-300 | 8 300-350 | 5	MQP2020–3
08.	The mode of the following distribution table is 15. Find the mean of this data and then find the median value by using empirical formula relating mean, median and mode. C.I. | Number of workers 1- 5 | 7 5 – 9 | 2 9-13 | 2 13-17 | 8 17-21 | 1	MQP2020–4

09. Find the median of the following data :

Class-interval	*Frequency*
20 — 40	7
40 — 60	15
60 — 80	20
80 — 100	8

OR

Find the mode of the following data :

Class-interval	*Frequency*
1 — 3	6
3 — 5	9
5 — 7	15
7 — 9	9
9 — 11	1

M2020 – 3

10. The following table gives the information of daily income of 50 workers of a factory. Draw a 'less than type ogive' for the given data.

Daily Income	*Number of workers*
Less than 100	0
Less than 120	8
Less than 140	20
Less than 160	34
Less than 180	44
Less than 200	50

M2020 – 3

11. In the cummulative frequency distribution table given below, the number of families having income range of ₹20000 and ₹25000 is:

Monthly Income	**Number of families**
More than ₹ 5000	100
More than ₹ 10,000	85
More than ₹ 15,000	69
More than ₹ 20,000	50
More than ₹ 25,000	37
More than ₹ 30,000	15

A. 35 B. 22 C. 13 D. 19

MQP2021– MCQ

12. The average marks scored by a student in a test of 6 subjects is 18. The sum of the marks scored by him in 5 subjects is 86. Then the marks scored by him in the sixth subject is

A. 20 B. 21 C. 18 D. 22

MQP2021– MCQ

13.	The median and mode of a grouped scores are 26 and 29 respectively then the mean of the score is A. 27.5 B. 28.4 C. 25.8 D. 24.5	
14.	A student scored 65 marks in I language, 50 marks in Science, 55 marks in Social Science and some marks in Mathematics. If the average marks scored by him in all the four subjects is 60, then the marks scored by him in Mathematics is A. 65 B. 60 C. 50 D. 70	MQP2021–MCQ
15.	The empherical relation between the three ‘‘central tendencies’’ is A. 3median = mode + 2mean B. 2mean = mode + 3median C. 2median = 2mode + 3mean D. Mode = 3mean - median	MQP2021–MCQ
16.	In the given frequency distribution table the median class is **Class Interval** | **0-10** | **10-20** | **20-30** | **30-40** | **40-50** **Frequency** | **5** | **8** | **12** | **15** | **20** A. 10-20 B. 20-30 C. 30-40 D. 0-10	MQP2021–MCQ
17.	Calculate the mode for the following frequency distribution table : *Class-interval* | *Frequency* (f_i) 0 — 5 | 8 5 — 10 | 9 10 — 15 | 5 15 — 20 | 3 20 — 25 | 1 | $\Sigma f_i = 26$	S2020 – 3
18.	An insurance policy agent found the following data for distribution of ages of 35 policy holders. Draw a “less than type” (below) of ogive for the given data : *Age (in years)* | *Number of policy holders* Below 20 | 2 Below 25 | 6 Below 30 | 12 Below 35 | 16 Below 40 | 20 Below 45 | 25 Below 50 | 35	S2020 – 3
19.	The value among the observations of most repeated scores of the data is (A) the mean (B) the mode (C) the median (D) the range	J2021–1
20.	The Mean of the following scores is: ***Marks*** | 1 | 3 | 5 | 7 (A) 16 (B) 5 (C) 1.6 (D) 4	J2021–1
21.	The relation among the Mean, Mode and Median is (A) 3 Median = 2 Mean + Mode (B) 3 Mean = 2 Median + Mode (C) Mean = 3 Median + Mode (D) Mode = 3 Mean + 2 Median	J2021–1

22.	The formula to find the mid-point of the class interval is: (A) $\frac{\text{Upper limit} - \text{lower limit}}{2}$ (B) $\frac{\text{Upper limit} \times \text{lower limit}}{3}$ (C) $\frac{\text{Upper limit} + \text{lower limit}}{2}$ (D) $\frac{\text{Upper limit} + \text{lower limit}}{3}$	J2021–1
23.	The abscissa of the point of intersection of the "less than type" and "more than type" of ogives of a grouped data gives its (A) Mean (B) Median (C) Mode (D) Range	S2021–1
24.	The formula used to find the Mean of the grouped data by direct method is (A) $\overline{X} = \frac{\Sigma f_i}{\Sigma f_i x_i}$ (B) $\overline{X} = \frac{f_i x_i}{\Sigma f_i}$ (C) $\overline{X} = \frac{\Sigma f_i x_i}{\Sigma f_i}$ (D) $\overline{X} = l + \left[\frac{f_1 - f_0}{2f_1 - f_0 - f_2}\right] h$	S2021–1
25.	The Median of the scores 10, 6, 8, 11, 15 is (A) 11 (B) 10 (C) 6 (D) 8	S2021–1
26.	Find the median of the scores 6, 4, 2, 10 and 7.	A2022–1
27.	The empirical relationship between mean, median and mode is A) 3 Median = Mode + Mean B) 3 Median = 2 Mode + Mean C) 3 Median = 2 Mode + 2 Mean D) 3 Median = Mode + 2 Mean	MQP2022–MCQ
28.	Find the mean of the following data by "direct method". Class Interval | Frequency 10 - 30 | 2 30 - 50 | 6 50 - 70 | 10 70 - 90 | 2 **OR** Find the mode of scores in the following data. Class Interval | Frequency 1 - 3 | 6 3 - 5 | 9 5 - 7 | 2 7 - 9 | 2 9 - 11 | 1	MQP2022–3

29. Yield of coconuts grown in a village by '15' farmers is as follows. Draw "less than type" ogive.

No. of Coconuts	Cummulative frequency
less than 50	2
less than 75	4
less than 100	9
less than 125	10
less than 150	11
less than 175	13
less than 200	15

MQP2022–3

30. Find the mean for the following grouped data by Direct method :

Class-interval	*Frequency*
10 — 20	2
20 — 30	3
30 — 40	5
40 — 50	7
50 — 60	3

OR

Find the mode for the following grouped data :

Class-interval	*Frequency*
5 — 15	3
15 — 25	4
25 — 35	8
35 — 45	7
45 — 55	3

A2022–3

31.	During a medical check–up up of 50 students of a class, their heights were recorded as follows. Draw "less than type" ogive for the given data : *Height in cm* | *Number of students (Cumulative frequency)* Less than 140 | 5 Less than 145 | 10 Less than 150 | 15 Less than 155 | 25 Less than 160 | 40 Less than 165 | 50	A2022–4
32.	Find the 'mean' for the following grouped data. Class-Interval | Frequency 0-20 | 12 20-40 | 14 40-60 | 8 60-80 | 6 80-100 | 10 OR Find the 'median' for the following grouped data Class-Interval | Frequency 0-10 | 5 10-20 | 8 20-30 | 20 30-40 | 15 40-50 | 7 50-60 | 5	
33.	A life insurance agent found the following data for distribution of age of 100 policy holders. Draw 'less than type' ogive for the given data.	MQP–2023–3

Age (In years)	Number of policy holders (cumulative frequency)
Less than 20	12
Less than 25	25
Less than 30	40
Less than 35	66
Less than 40	84
Less than 45	100

34. Find the mean for the following data :

Class-interval	*Frequency*
1 – 5	4
6 – 10	3
11 – 15	2
16 – 20	1
21 – 25	5

OR

Find the mode for the following data :

Class-interval	*Frequency*
1 – 3	6
3 – 5	9
5 – 7	15
7 – 9	9
9 – 11	1

A2023–3

35. A life insurance agent found the following data for distribution of ages of 100 policy holders. Draw a "Less than type ogive" for the given data :

Age (in years)	*Number of policy holders (cumulative frequency)*
Below 20	2
Below 25	6
Below 30	24
Below 35	45
Below 40	78
Below 45	89
Below 50	100

A2023–3

36. Calculate the mean for the data in the following frequency distribution table. J2023–3

Class-interval	Frequency (f_i)
5 – 15	4
15 – 25	6
25 – 35	5
35 – 45	6
45 – 55	4
	$\sum f_i = 25$

OR

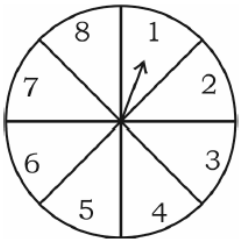
Calculate the mode for the data in the following frequency distribution table:

Class-interval	Frequency
10 – 15	3
15 – 20	3
20 – 25	7
25 – 30	6
30 – 35	6

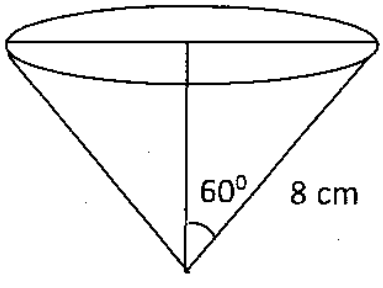
37. The daily income of 50 workers of a factory were recorded as follows. Draw "less than type" ogive for the given data:

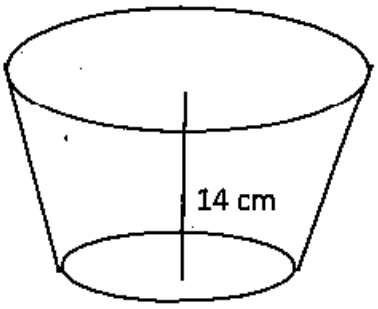
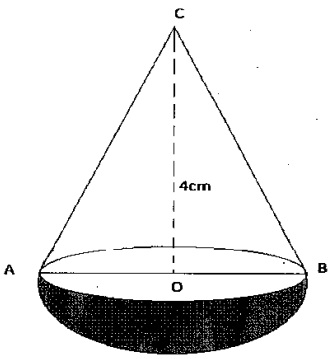
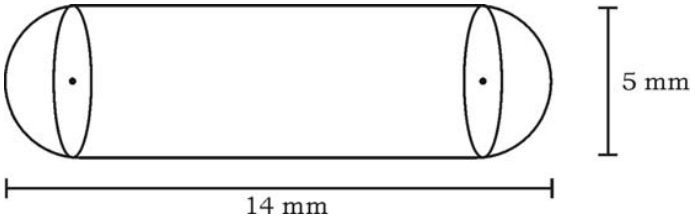
Daily income in Rs.	Number of workers (cumulative frequency)
Less than 100	10
Less than 120	25
Less than 140	35
Less than 160	40
Less than 180	50

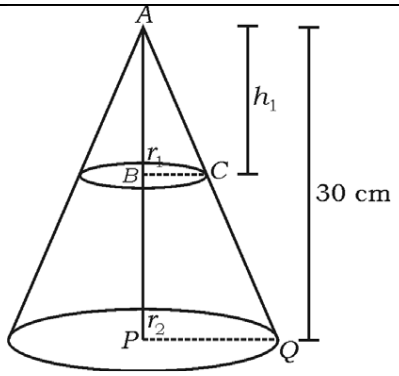
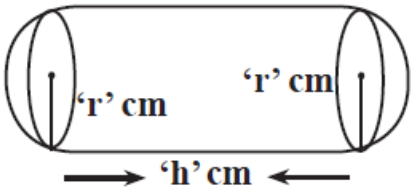
J2023–3

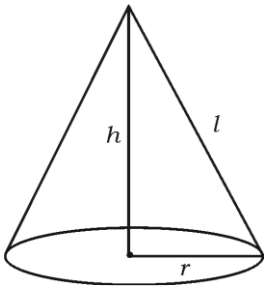
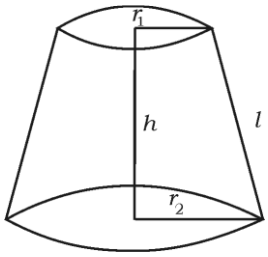
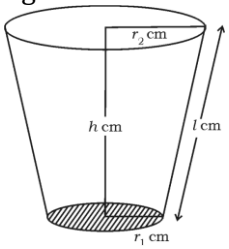
CHAPTER 14 – PROBABILITY		
01.	If P (A) = 0·05 then P ($\overline{A}$) is (A) 0·59 (B) 0·95 (C) 1 (D) 1·05	A2019 MCQ
02.	A cubical die numbered from 1 to 6 are rolled twice. Find the probability of getting the sum of numbers on its faces is 10.	A2019–2
03.	Faces of a cubical die numbered from 1 to 6 is rolled once. The probability of getting an odd number on the top face is	J2019 MCQ
04.	A box contains 90 discs, which are numbered from 1 to 90. If one disc is drawn at random from the box, find the probability that it bears a perfect square number.	J2019 – 2
05.	The probability of an event ` E` is 0.05, then the probability of an event ` Not E` is A) 0.05 B) 0.95 C) $\frac{1}{0.05}$ D) $\frac{1}{0.95}$	MQP2020–MCQ
06.	26 English alphabet cards (Without repeating any alphabet) are put in a box and shuffled well. . If a card is chosen at random then the probability that the card with an Vowel is. A) 3/26 B) 5/26 C) 1/26 D) 21/26	MQP2020–MCQ
07.	If A is an event of a random experiment, such that P(A) : P(A) = 1 ; 2, find the value of P(A).	MQP2020–1
08.	Two cubical dice whose faces are numbered 1 to 6 are rolled simultaneously once. Find the probability that the sum of the two numbers occurring on their top faces is more than 7.	MQP2020–2
09.	A bag contains 3 red balls, 5 white balls and 8 blue balls. One ball is taken out of the bag at random. Find the probability that the ball taken out is (a) a red ball, (b) not a white ball.	M2020 – 3
10.	If $P(A) = \frac{2}{3}$, then $P(\overline{A})$ is (A) $\frac{1}{3}$ (B) 3 (C) 1 (D) $\frac{3}{2}$.	S2020 – MCQ
11.	Letters of English alphabets A B C D E I are marked on the faces of a cubical die. If this die is rolled once, then find the probability of getting a vowel on its top face. **OR** A game of chance consists of rotating an arrow which comes to rest pointing at one of the numbers 1, 2, 3, 4, 5, 6, 7, 8 and these are equally possible outcomes. Find the probability that it will point at an odd number. 	S2020 – 2
12.	If the probability of raining on a particular day is 0.75, then find the probability of not raining on the same day.	MQP–2023–1
13.	There are 6 red, 5 blue and 4 green balls in a box. A ball is drawn at random from the box. What is the probability that the ball drawn is (i) not green (ii) red	MQP–2023–2
14.	For an event '*E*', if *P* (*E*) = 0·75, then *P* (*E*) is (A) 2·5 (B) 0·25 (C) 0·025 (D) 1·25	A2023–MCQ
15.	A box contains cards which are numbered from 9 to 19. If one card is drawn at random from the box, find the probability that it bears a prime number.	A2023–2

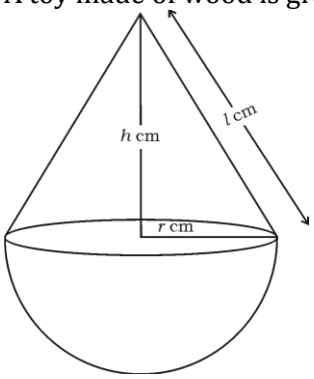
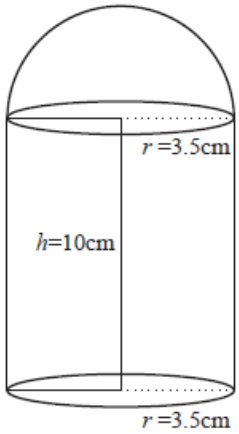
16.	The probability of winning a game is $3/4$. The probability of losing the same game is: (A) ½ (B) ¾ (C) $-1/4$ (D) $1/4$	J2023–MCQ
17.	A box consists of 9 cards which are numbered from 10 to 18. If one card is drawn at random from the box then find the probability of getting a prime number.	J2023–2

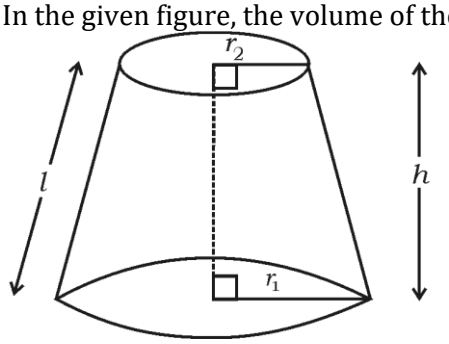
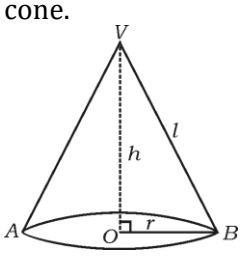
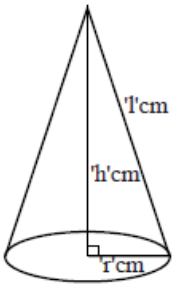
CHAPTER 15 – SURFACE AREA & VOLUME		
01.	Write the formula to calculate the curved surface area of the frustum of a cone.	A2019–1
02.	The radii of two circular ends of a frustum of a cone shaped dustbin are 15 cm and 8 cm. If its depth is 63 cm, find the volume of the dustbin.	A2019–2
03.	The bottom of a right cylindrical shaped vessel made from metallic sheet is closed by a cone shaped vessel as shown in the figure. The radius of the circular base of the cylinder and radius of the circular base of the cone each is equal to 7 cm. If the height of the cylinder is 20 cm and height of cone is 3 cm, calculate the cost of milk to fill completely this vessel at the rate of Rs. 20 per litre. OR A hemispherical vessel of radius 14 cm is fully filled with sand. This sand is poured on a level ground. The heap of sand forms a cone shape of height 7 cm. Calculate the area of ground occupied by the circular base of the heap of the sand.	A2019–4
04.	A metallic sphere of radius 9 cm is melted and recast into the shape of a cylinder of radius 6 cm. Find the height of the cylinder.	J2019 – 2
05.	The faces of two cubes of volume 64 cm^3 each are joined together to form a cuboid. Find the total surface area of the cuboid.	J2019 – 2
06.	A cone is having its base radius 12 cm and height 20 cm. If the top of this cone is cut in to form of a small cone of base radius 3 cm is removed, then the remaining part of the solid cone becomes a frustum. Calculate the volume of the frustum. **OR** A milk tank is in the shape of a cylinder with hemispheres of same radii attached to both ends of it as shown in figure. If the total height of the tank is 6 m and the radius is 1 m, calculate the maximum quantity of milk filled in the tank in litres. (π=22/7)	J2019 – 3
07.	The formula used to find the curved surface area of a cone of radius (r), height (h) and slant height (l) is A) CSA = π rl B) CSA = 2 π (r+l) C) CSA = 2πr(r+h) D) CSA = $\frac{\pi r^2 h}{3}$	MQP2020 –MCQ
08.	If the area of the circular base of a cylinder is 22 cm^2 and its height is 10 cm, then the volume of the cylinder is: (A) 2200 cm^2 (B) 2200 cm^3 (C) 220 cm^3 (D) 220 cm^2 .	M2020 – MCQ
09.	A solid piece of iron is in the form of a cuboid of dimensions 10cm x 5cm x 2cm. Find its volume.	MQP2020 –1
10.	Write the formula to find the volume of the sphere.	MQP2020 –1
11.	A cone of radius 10cm is cut into two parts by a plane through the mid-point of its vertical axis parallel to the base. Find the ratio of the volumes of the smaller cone and frustum of the cone.	MQP2020 –5
12.	Find the diameter of the circular base of right circular cone whose slant height is 8cm and semi vertex angle is 60^o. 	MQP2020 –2
13.	Curved surface area of right circular cylinder is 440cm^2 and the radius of its circular base is 7cm. Find the volume of the cylinder.	MQP2020 –2
14.	A flower vase is in the form of a frustum of cone. The perimeters of its base are 44cm and 8.4π cm. If the depth is 14cm, find how much soil it can hold.	MQP2020 –3

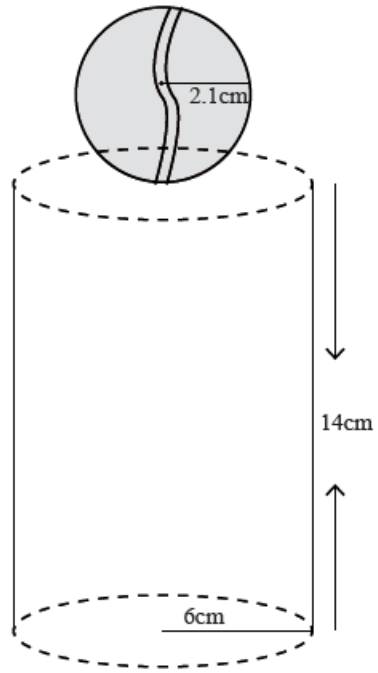
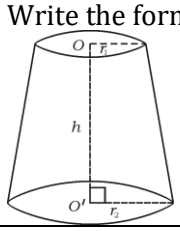
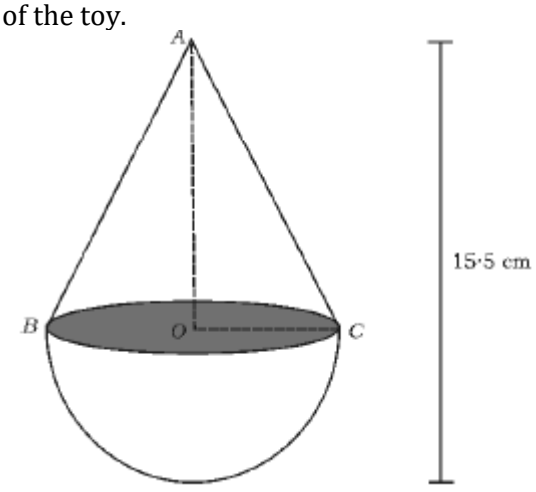
	 OR A toy is in the form of a cone mounted on a hemisphere both are of the same radius. The diameter of the conical portion is 6cm and its height is 4cm. Determine the surface area of the solid. (Take π=3.14) 	
15.	Write the formula to find the total surface area of the cone whose radius is 'r' units and slant height is 'l' units.	M2020 – 1
16.	A container opened from the top is in the form of a frustum of a cone of height 16 cm with radii of its lower and upper ends as 8 cm and 20 cm respectively. Find the cost of the milk which can completely fill the container at the rate of Rs. 20 per litre. [Take π = 3·14]	M2020 – 4
17.	The base radius and height of a right circular cylinder and a right circular cone are equal and if the volume of the cylinder is 360 cm^3 , then the volume of cone is (A) 120 cm^3 (B) 180 cm^3 (C) 90 cm^3 (D) 360 cm^3 .	S2020 – MCQ
18.	The surface area of a sphere of radius 7 cm is (A) 154 cm^2 (B) 616 cm^3 (C) 616 cm^2 (D) 308 cm^2 .	S2020 – MCQ
19.	Write the formula to find the total surface area of a right-circular cone whose circular base radius is '*r*' and slant height is '*l*'.	S2020 – 1
20.	A medicine capsule is in the shape of a cylinder with hemispheres stuck to each of its ends. The length of the entire capsule is 14 mm and the diameter of the capsule is 5 mm. Find its surface area.  **OR** A right circular cone of height 30 cm is cut and removed by a plane parallel to its base from the vertex. If the volume of smaller cone obtained is 1/27 of the volume of the given cone, calculate the height of the remaining part of the cone.	S2020 – 4

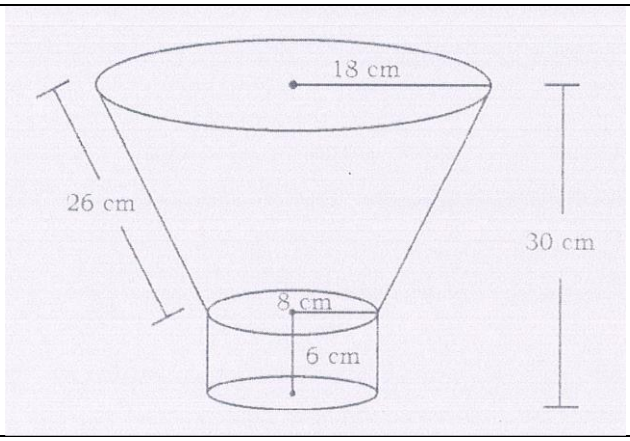
		
21.	The volume and the surface area of a sphere is numerically equal, then the radius of the sphere is A. 3 units B. 2 units C. 2.5 units D. 6 units	MQP2021 –MCQ
22.	A funnel given in the figure is the combination of A. a cylinder and a cone B. a cylinder and a frustum of a cone C. a cone and a hemisphere D. a cylinder and a cuboid	MQP2021 –MCQ
23.	The solid is in the shape of a cylinder with two hemispheres stuck to each of its ends as shown in the figure. The radius of the cylinder and hemispheres are equal to 'r' cm, if the height of the cylinder is 'h' cm. The volume of the solid is:  A. $\pi r^2\left(\frac{4r}{3}+h\right)cm^3$ B. $\pi r^2\left(\frac{2r}{3}+h\right)cm^3$ C. $\frac{\pi r^2}{3}(4r+h)cm^3$ D. $\pi r^2(4r+h)cm^3$	MQP2021 –MCQ
24.	A frustum of a cone shaped Jaggery is melted and remoulded completely to the shape of a sphere. Then the volume of the sphere is A. 3 times the volume of the frustum B. 2 times the volume of the frustum C. half the volume of the frustum D. equal to the volume of the frustum	MQP2021 –MCQ
25.	The height and the radius of the base of a cone are 12cm and 5cm respectively. Then the slant height of the cone is A. 12 cm B. 10 cm C. 13 cm D. 8 cm	MQP2021 –MCQ
26.	The curved surface area of a cylinder of radius 'r' cm and height 'h' cm is A. $2\pi r(r+h)cm^2$ B. $\pi r^2h\ cm^3$ C. $\frac{\pi r^2h}{3}cm^3$ D. $2\pi rh\ cm^2$	MQP2021 –MCQ
27.	The relation between the slant height 'l' height 'h' and the radius of the cone 'r' is A. $l^2=h^2-r^2$ B. $l^2=h^2+r^2$ C. $h^2=l^2+r^2$ D. $l=\sqrt{h^2-r^2}$	MQP2021 –MCQ
28.	The surface area of a sphere is 616 sq. cm. The surface area of its hemisphere is A. 205.6 cm^2 B. 308 cm^2 C. 1232 cm^2 D. 38 cm^2	MQP2021 –MCQ
29.	The perimeter of the base of a right circular cylinder is 44cm and its height is 10cm then its volume is A. 490 π cm^3 B. 440 π cm^3 C. 374 π cm^3 D. 980 π cm^3	MQP2021 –MCQ
30.	Prepare a cone from "model clay". When wet, cut it with a knife parallel to its base, remove the smaller cone obtained. The solid left is a A. Cylinder B. Cone C. Sphere D. Frustum of a cone	MQP2021 –MCQ
31.	A cylinder made of wax is melted and recast completely into a sphere. Then the volume of the sphere is	J2021–1

	(A) two times the volume of the cylinder (B) half the volume of the cylinder (C) 3 times the volume of the cylinder (D) equal to the volume of the cylinder	
32.	The surface area of a sphere is 616 sq.cm. Then the radius of the same sphere is (A) 49 cm (B) 14 cm (C) 21 cm (D) 7 cm	J2021–1
33.	The volume of a cone as shown in the figure is:  (A) $\pi r^2 h$ (B) $\pi r(r+l)$ (C) $\frac{1}{3}\pi r^2 h$ (D) $\pi r l$	J2021–1
34.	The formula to find the total surface area of a right circular based cylindrical vessel of base radius *r* cm and height *h* cm opened at one end is: (A) $(\pi r^2 + 2\pi rh)\ \text{cm}^2$ (B) $2\pi rh\ \text{cm}^2$ (C) $\frac{1}{3}\pi r^2 h\ \text{cm}^3$ (D) $(\pi r^2 + h)\ \text{cm}^2$	J2021–1
35.	To find the curved surface area of a frustum of a cone as shown in the figure the formula used is:  (A) $\frac{1}{3}\pi l(r_1 + r_2)$ (B) $\frac{1}{3}\pi h(r_1^2 + r_2^2 + r_1 r_2)$ (C) $\pi l(r_1 + r_2)$ (D) $\pi l(r_1 - r_2)$	
36.	The total surface area of solid hemisphere is 462 cm^2. If the curved surface area of it is 308 cm^2, then the area of the base of the hemisphere is (A) 308 cm^2 (B) 231 cm^2 (C) 154 cm^2 (D) 1078 cm^2	J2021–1
37.	The total surface area of a frustum of a cone opened at the top as shown in the figure is  (A) $\pi l(r_1 + r_2)\ \text{cm}^2$ (B) $\pi l(r_1 + r_2) + \pi r_1^2 + \pi r_2^2\ \text{cm}^2$ (C) $\pi l(r_1 + r_2) + \pi r_1^2\ \text{cm}^2$ (D) $2\pi(r_1 + r_2)l\ \text{cm}^2$	S2021–MCQ

38.	The slant height of the cone whose radius of the base 8 cm and height 6 cm is: (A) 100 cm (B) 14 cm (C) 44 cm (D) 10 cm	S2021–MCQ
39.	The formula to find the total surface area of a cylinder of base radius *r* cm and height *h* cm is given by (A) $2\pi r(r+h)\ \text{cm}^2$ (B) $\pi r(r+h)\ \text{cm}^2$ (C) $\pi r^2 h\ \text{cm}^3$ (D) $\frac{1}{3}\pi r(r+h)\ \text{cm}^2$	S2021–MCQ
40.	The volume of a hemisphere of radius 9 cm is: (A) 1372 cm³ (B) 343π cm³ (C) 98π cm³ (D) 486π cm³	S2021–MCQ
41.	A toy made of wood is given as shown in the figure. The surface area of the toy is  (A) $2\pi r^2 + \pi rl\ \text{cm}^2$ (B) $4\pi r^2 + \pi rl\ \text{cm}^2$ (C) $3\pi r^2 + \pi r(r+l)\ \text{cm}^2$ (D) $\frac{2}{3}\pi r^3 + \frac{1}{3}\pi r^2 h\ \text{cm}^3$.	S2021–MCQ
42.	A cone is cut by a plane parallel to its base and the small cone that obtained is removed then the remaining part of the cone is A) a frustum of cone B) a frustum of cylinder C) a Sphere D) a right circular cone	MQP2022–MCQ
43.	Write the formula to find the volume of a cone.	MQP2022–1
44.	Find the surface area of a sphere of radius 7cm	MQP2022–1
45.	The slant height of a frustum of a cone is 4cm and the perimeters of its circular ends are 18cm and 16cm, then find the curved surface area of the frustum of the cone. **OR** A Toy is in the form of a hemisphere surmounted on a cylinder of height 10cm as shown in the figure. If the radius of the cylinder is 3.5cm find the volume of the toy.  	MQP2022–3

46.	In the given figure, the volume of the frustum of a cone is  (A) $\pi (r_1 + r_2) l$ (B) $\pi (r_1 - r_2) l$ (C) $\frac{1}{3}\pi h (r_1^2 - r_2^2 - r_1 r_2)$ (D) $\frac{1}{3}\pi h (r_1^2 + r_2^2 + r_1 r_2)$	A2022–MCQ
47.	Surface area of a sphere of radius *'r'* unit is: (A) πr^2 sq.units (B) $2\pi r^2$ sq.units (C) $3\pi r^2$ sq.units (D) $4\pi r^2$ sq.units.	A2022–MCQ
48.	In the given figure, write the formula used to find the curved surface area of the cone.  	A2022–1
49.	The volume of a solid right circular cylinder is 2156 cm^3. If the height of the cylinder is 14 cm, then find its curved surface area.	A2022–3
50.	The total surface area of the solid given in the figure is  (A) A = πrl cm^2 (B) A = 2πrh cm^2 (C) A = πr(r+l) cm^2 (D) A = πr2l cm^2	MQP–2023–MCQ
51.	Write the formula to find the volume of the frustum of a cone, if the radii of its circular bases are 'r1' and 'r2' and its height is 'h'.	MQP–2023–1
52.	The area and perimeter of a rectangular field are 60m^2 and 32m respectively. Find the length and breadth of the field. OR A bus travels 360 km distance with uniform speed. If the speed of the bus had been 10km/h more, it would have taken 3 hours less for the same journey. Find the speed of the bus.	MQP–2023–3
53.	A metal memento has to be prepared by placing a solid sphere on a solid cylinder as shown in the figure. Find quantity of the metal required to prepare this memento, such that the radius of the cylinder is 6cm and its height is 14cm and the radius of the sphere is 2.1cm. And also calculate the cost of painting the surface of the sphere with golden colour at the rate of 10 paise per cm2.	MQP–2023–5

		
54.	The total surface area of a right circular cylinder having radius 'r' and height 'h' is (A) π r (r + h) (B) 2πrh (C) 2πr (r – h) (D) 2πr (r + h)	A2023–MCQ
55.	Write the formula to find the volume of the frustum of a cone given in the figure. 	A2023–1
56.	A wooden solid toy is made by mounting a cone on the circular base of a hemisphere as shown in the figure. If the area of base of the cone is 38·5 cm2 and the total height of the toy is 15·5 cm, then find the total surface area and volume of the toy. 	A2023–5
57.	The formula to find the volume of a solid cylinder having base radius 'r' and height 'h' is: (A) $V=4\pi r^2$ (B) $V=\pi r^2 h$ (C) $V=\pi rl$ (D) $V= 1/3\ \pi r^2 h$	J2023–MCQ
58.	Write the formula to find the surface area of a sphere having radius 'r' units.	J2023–1
59.	A dustbin in the form of a frustum of a cone is mounted on the circular base of a hollow cylinder as shown in the figure, The radii of circular top and bottom of the dustbin and its slant height are 18 cm, S cm and 26 cm respectively, The radius and height of the cylinder are 8 cm and 6 cm respectively, If the total height of the given solid is 30 cm, then find the volume of the dustbin and also the curved surface area of the entire solid.	J2023–5


18 cm
26 cm
30 cm
8 cm
6 cm

THEOREMS		
01.	Prove that “the lengths of tangents drawn from an external point to a circle are equal”.	A2019–3
02.	Prove that “the ratio of the areas of two similar triangles is equal to the square of the ratio of their corresponding sides”.	A2019–4
03.	Prove that “the lengths of tangents drawn from an external point to a circle are equal”.	J2019 – 3
04.	Prove that “In a right triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides”.	J2019 – 4
05.	State and prove the converse of Pythagoras theorem.	MQP2020–5
06.	Prove that the “lengths of tangents drawn from an external point to a circle are equal”.	M2020 – 3
07.	State and prove Pythagoras theorem.	M2020 – 5
08.	Prove that “the lengths of tangents drawn from an external point to a circle are equal”.	S2020 – 3
09.	Prove that “if in two triangles, corresponding angles are equal, then their corresponding sides are in the same ratio (or proportion) and hence the two triangles are similar”.	S2020 – 4
10.	Prove that “the tangents drawn to a circle from an external point are equal.”	MQP2022–3
11.	State and prove basic proportionality theorem (Thales theorem).	MQP2022–5
12.	Prove that “the lengths of tangents drawn from an external point to a circle are equal”.	A2022–3
13.	Prove that “the ratio of the areas of two similar triangles is equal to the square of the ratio of their corresponding sides”.	A2022–5
14.	Prove that "the lengths of tangents drawn from an external point to a circle are equal".	MQP–2023–3
15.	Prove that “The lengths of tangents drawn from an external point to a circle are equal”.	A2023–3
16.	Prove that "the ratio of the areas of two similar triangles is equal to the square of the ratio of their corresponding sides",	J2023–4