REVISION PRACTICE QUESTIONS : ALGEBRA
CLASS: X : MATHEMATICS

1. If the 10th term of an AP is 52 and the 17th term is 20 more than the 13th term, find the AP.

2. If $2x, x + 10, 3x + 2$ are in A.P., find the value of x.

3. Find the value of k for which the quadratic equation $4x^2 - 3kx + 1 = 0$ has two real equal roots.

4. If the sum of first n terms of an A.P. is given by $S_n = 3n^2 + 5n$, find the nth term of the A.P.

5. Solve the quadratic equation $4\sqrt{3}x^2 + 5x - 2\sqrt{3} = 0$ by using quadratic formula.

6. Solve the quadratic equation $9x^2 - 22x + 8 = 0$

7. Solve the quadratic equation : $\dfrac{1}{x+4} - \dfrac{1}{x-7} = \dfrac{11}{30}, (x \neq -4, 7)$

8. Solve the quadratic equation $2x^2 - 5x + 3 = 0$ by using method of completing the square.

9. If the sum of first n terms of an A.P. is given by $S_n = 3n^2 + 5n$, find the nth term of the A.P.

10. Which term of the AP 9, 12, 15, 18,…. will be 39 more than its 36th term?

11. How many terms of the AP : 24, 21, 18, . . . must be taken so that their sum is 78?

12. Find the sum of first 24 terms of the list of numbers whose nth term is given by $a_n = 3 + 2n$

13. 200 logs are stacked in the following manner: 20 logs in the bottom row, 19 in the next row,18 in the row next to it and so on. In how may rows are the 200 logs placed and how many logs are in the top row?

14. In a class test, the sum of Shefali's marks in Mathematics and English is 30. Had she got 2 marks more in Mathematics and 3 marks less in English, the product of their marks would have been 210. Find her marks in the two subjects.

15. An aeroplane left 30 minutes later than it schedule time and in order to reach its destination 1500 km away in time, it had to increase its speed by 250 km/hr from its usual speed. Determine its usual speed.

16. Two water taps together can fill a tank in 9 & 3/8 hours. The tap of larger diameter takes 10 hours less than the smaller one to fill the tank separately. Find the time in which each tap can separately fill the tank.

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REVISION TEST PRACTICE QUESTIONS
CIRCLES & COORDINATE GEOMETRY
CLASS: X : MATHEMATICS

M.M. 30 Marks   **T.T. 1 hr**

SECTION – A(2 marks each)

1. Find the value of k if the points A(8, 1), B(k, –4) and C(2, –5) are collinear.

2. Find the length of the tangent drawn to a circle of radius 3 cm, from a point distant 5 cm from the centre.

3. Find the third vertex of a $\triangle$ABC if two of its vertices are B(–3, 1) and C(0, –2) and its centroid is at the origin.

SECTION – B(3 marks each)

4. If A and B are (– 2, – 2) and (2, – 4), respectively, find the coordinates of P such that $AP = \dfrac{3}{7}$ AB and P lies on the line segment AB.

5. Prove that the parallelogram circumscribing a circle is a rhombus.

6. Prove that the intercept of a tangent between two parallel tangents to a circle subtends a right angle at the center of the circle.

7. A circle is touching the side BC of $\triangle$ABC at P and is touching AB and AC when produced at Q and R respectively. Prove that AQ = ½ (Perimeter of $\triangle$ ABC).

SECTION – C(4 marks each)

8. If A(–5, 7), B(– 4, –5), C(–1, –6) and D(4, 5) are the vertices of a quadrilateral, find the area of the quadrilateral ABCD.

9. Find the point P on the x – axis which is equidistant from the points A(5, 4) and B(–2, 3). Also find the area of $\triangle$PAB.

10. Prove that "The lengths of tangents drawn from an external point to a circle are equal."

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REVISION TEST PRACTICE QUESTIONS
PROBABILITY CLASS: X : MATHEMATICS

M.M. 30 Marks   **T.T. 1 hr**

SECTION – A(2 marks each)

1. An unbiased die is thrown. What is the probability of getting

   (i) an even number (ii) a multiple of 3

2. Find the probability of getting 53 Fridays in a leap year.

3. A bag contains 5 red balls and some blue balls. If the probability of drawing a blue ball is *double* that of a red ball, determine the number of blue balls in the bag.

SECTION – B(3 marks each)

4. Two dice are thrown together. Find the probability that the product of the numbers on the top of the dice is (i) 6 (ii) 12 (iii) 7

5. Five cards—the ten, jack, queen, king and ace of diamonds, are well-shuffled with their face downwards. One card is then picked up at random. (i) What is the probability that the card is the queen?

   (ii) If the queen is drawn and put aside, what is the probability that the second card picked up is (a) an ace? (b) a queen?

6. One card is drawn from a well-shuffled deck of 52 cards. Find the probability of getting

   (i) an ace card   (ii) a red card   (iii) either red or king card

7. A box contains 5 red marbles, 8 white marbles and 4 green marbles. One marble is taken out of the box at random. What is the probability that the marble taken out will be (i) red ? (ii) white ? (iii) not green?

SECTION – C(4 marks each)

8. The king , queen and jack of clubs are removed from a pack of 52 playing cards. One card is selected at random from the remaining cards. Find the probability that the card is

   (i) neither a heart nor a king   (ii) neither an ace nor a king

   (iii) neither a red card nor a queen card   (iv) a black card or an ace.

9. Cards are marked with numbers 4, 5, 6, …….50 are placed in the box and mixed thoroughly. One card is drawn at random from the box. What is the probability of getting

   (i) a two-digit number   (ii) a perfect square number

   (iii) a number divisible by 5. (iv) a number divisible by 2 or 3.

10. A child's game has 8 triangles of which 3 are blue and rest are red, and 10 squares of which 6 are blue and rest are red. One piece is lost at random. Find the probability that it is a (i) triangle (ii) square (iii) square of blue colour (iv) triangle of red colour

REVISION PRACTICE QUESTIONS
CLASS: X : MATHEMATICS
SOME APPLICATIONS OF TRIGONOMETRY

1. The shadow of a tower standing on a level ground is found to be 40 m longer when the Sun's altitude is 30° than when it is 60°. Find the height of the tower.

2. A tree 12m high, is broken by the storm. The top of the tree touches the ground making an angle 60°. At what height from the bottom the tree is broken by the storm.

3. From a point on the ground, the angles of elevation of the bottom and the top of a transmission tower fixed at the top of a 20 m high building are 45° and 60° respectively. Find the height of the tower.

4. A vertical stick 10 cm long casts a shadow 8 cm long. At the same time, a tower casts a shadow 30 m long. Determine the height of the tower.

5. A tower stands vertically on the ground. From a point on the ground, which is 15 m away from the foot of the tower, the angle of elevation of the top of the tower is found to be 60°. Find the height of the tower.

6. The angles of depression of the top and the bottom of an 8 m tall building from the top of a multi-storeyed building are 30° and 45°, respectively. Find the height of the multi-storeyed building and the distance between the two buildings.

7. From a point on a bridge across a river, the angles of depression of the banks on opposite sides of the river are 30° and 45°, respectively. If the bridge is at a height of 3 m from the banks, find the width of the river.

8. A straight highway leads to the foot of a tower. A man standing at the top of the tower observes a car at an angle of depression of 30°, which is approaching the foot of the tower with a uniform speed. Six seconds later, the angle of depression of the car is found to be 60°. Find the time taken by the car to reach the foot of the tower from this point.

9. The angle of elevation of a jet plane from a point A on the ground is 60^0. After a flight of 15 seconds, the angle of elevation changes to 30^0. If the jet plane is flying at a constant height of $1500\sqrt{3}$ m, find the speed of the jet plane.

10. The angle of elevation of cloud from a point 60m above a lake is 30^0 and the angle of depression of the reflection of the cloud in the lake is 60^0. Find the height of the cloud.

REVISION TEST : CLASS: X : MATHEMATICS
AREA RELATED TO CIRCLES & TRIGONOMETRY

**M.M. 30 Marks**   **T.T. 1 hr**

Note: Q. No. 1 to 2 of 2 marks, Q. No. 3 to 6 of 3 marks and
Q. No. 7 to 9 consists of 4 marks

1. Find the area of a quadrant of a circle whose circumference is 22 cm.

2. The length of the minute hand of a clock is 14 cm. Find the area swept by the minute hand in 5 minutes.

3. Find the perimeter of the given figure, where $\overset{\frown}{AED}$ is a semi-circle and ABCD is a rectangle. (Use $\pi = \dfrac{22}{7}$)
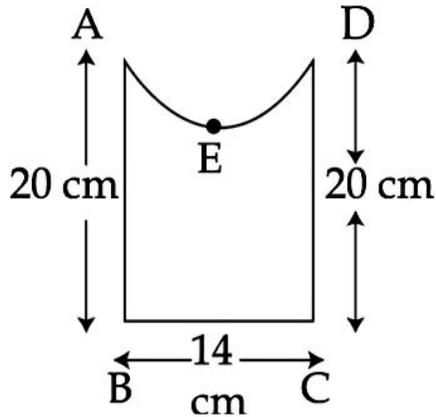
4. A chord of a circle of radius 10 cm subtends a right angle at the centre. Find the area of the corresponding : (i) minor segment (ii) major sector. (Use $\pi = 3.14$)

5. From a point on the ground, the angles of elevation of the bottom and the top of a transmission tower fixed at the top of a 20 m high building are 45° and 60° respectively. Find the height of the tower.

6. A tree 12m high, is broken by the storm. The top of the tree touches the ground making an angle 60°. At what height from the bottom the tree is broken by the storm.

7. Find the area of the shaded region in the below Fig., where ABCD is a square of side 14 cm.
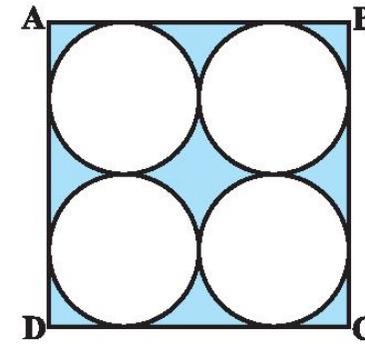
8. In the below left sided Fig, two circular flower beds have been shown on two sides of a square lawn ABCD of side 56 m. If the centre of each circular flower bed is the point of intersection O of the diagonals of the square lawn, find the sum of the areas of the lawn and the flower beds.
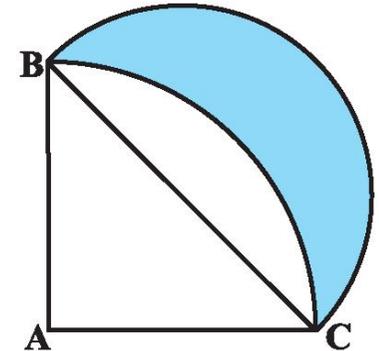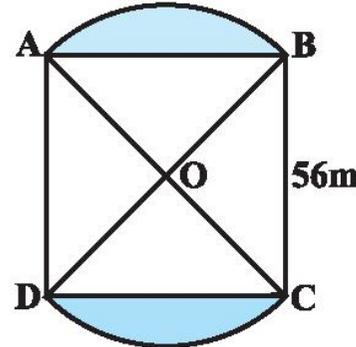
9. In Fig., ABC is a quadrant of a circle of radius 14 cm and a semicircle is drawn with BC as diameter. Find the area of the shaded region.

10. From a point on the ground, the angles of elevation of the bottom and top of a water tank, kept at the top of 20 m high tower, are 45^0 and 60^0 respectively. Find the height of the water tank. Also, find the distance between the observation point on the ground and the base of the building.

REVISION TEST : MENSURATION
CLASS: X : MATHEMATICS

M.M. 30 Marks   **T.T. 1 hr**

SECTION – A(2 marks each)

1. Find the area of a sector of a circle with radius 6 cm if angle of the sector is 60°.
2. Two identical cubes each of volume 64 cm3 are joined together end to end. What is the surface area of the resulting cuboid?
3. A solid metallic hemisphere of radius 8 cm is melted and recasted into a right circular cone of base radius 6 cm. Determine the height of the cone.
4. A heap of rice is in the form of a cone of diameter 9 m and height 3.5 m. How much canvas cloth is required to just cover the heap?
5. A milk container of height 16 cm is made of metal sheet in the form of a frustum of a cone with radii of its lower and upper ends as 8 cm and 20 cm respectively. Find the volume of the milk container.

SECTION – B(3 marks each)

6. A chord of a circle of radius 10 cm subtends a right angle at the centre. Find the area of the corresponding : (i) minor segment (ii) major sector. (Use π = 3.14)
7. In an equilateral triangle of side 24 cm, a circle is inscribed touching its sides. Find the area of the remaining portion of the triangle. Take $\sqrt{3}$ = 1.732
8. A cone of height 24 cm and radius of base 6 cm is made up of modeling clay. A child reshapes it in the form of a sphere. Find the radius of the sphere.
9. A hemispherical tank full of water is emptied by a pipe at the rate of $3\frac{4}{7}$ litres per second. How much time will it take to empty half the tank, if it is 3m in diameter? (Take π = 22/7)

SECTION – C(4 marks each)

10. In Fig., a square OABC is inscribed in a quadrant OPBQ. If OA = 20 cm, find the area of the shaded region. (Use π = 3.14)
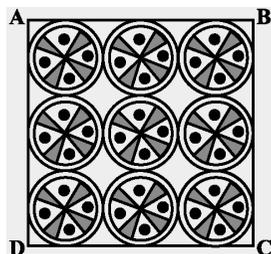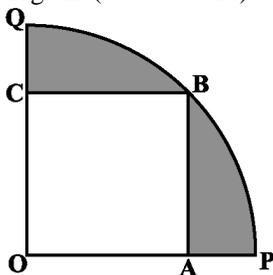
11. On a square handkerchief, nine circular designs each of radius 7 cm are made (see in the above sided Fig.). Find the area of the remaining portion of the handkerchief.
12. A farmer connects a pipe of internal diameter 20 cm from a canal into a cylindrical tank in her field, which is 10 m in diameter and 2 m deep. If water flows through the pipe at the rate of 3 km/h, in how much time will the tank be filled?

REVISION TEST 01: MATHEMATICS
CLASS: X : QUADRATIC EQUATION

M.M. 20   **T.T. 1 hr**

1. Solve the equation: $4\sqrt{3}x^2 + 5x - 2\sqrt{3} = 0$ (2 marks)
2. Solve the equation by using method of completing the square :
   $x^2 - x - 156 = 0$ (3 marks)
3. Solve the equation: $2^{2x} - 3.2^{(x+2)} + 32 = 0$ (3 marks)
4. Solve the equation: $2\left(\dfrac{2x-1}{x+3}\right) - 3\left(\dfrac{x+3}{2x-1}\right) = 5, x \neq -3, \dfrac{1}{2}$ (4 marks)
5. Solve the equation: $\left(\dfrac{x}{x+1}\right)^2 - 5\left(\dfrac{x}{x+1}\right) + 6 = 0, (x \neq -1)$ (4 marks)
6. Show that the equations has real roots, and solve by using the quadratic formula: $p^2x^2 + (p^2 - q^2)x - q^2 = 0$ (4 marks)

REVISION TEST 02: MATHEMATICS
CLASS: X : QUADRATIC EQUATION

M.M. 20   **T.T. 1 hr**

1. Solve the equation: $4\sqrt{6}x^2 - 13x - 2\sqrt{6} = 0$ (2 marks)
2. Solve the equation by using method of completing the square :
   $6x^2 + 7x - 3 = 0$ (3 marks)
3. Solve the equation: $\dfrac{2}{x^2} - \dfrac{5}{x} + 2 = 0$ (3 marks)
4. Solve the equation: $\left(\dfrac{4x-3}{2x+1}\right) - 10\left(\dfrac{2x+1}{4x-3}\right) = 3, \left(x \neq \dfrac{-1}{2}, \dfrac{3}{4}\right)$ (4 marks)
5. Solve the equation by using quadratic formula :
   $4x^2 - 2(a^2 + b^2)x + a^2b^2 = 0$ (4 marks)
6. Find the value of k for which the quadratic equation kx(x – 3) + 9 = 0 has two real equal roots. (4 marks)

REVISION TEST 03: MATHEMATICS
CLASS: X : QUADRATIC EQUATION

M.M. 20 Marks   **T.T. 1 hr**

Note: Q. No. 1 to 3 of 2 marks, Q. No. 4 to 5 of 3 marks, Q. No. 6 to 7 of 4 marks

1. Find the value of k for which the quadratic equation $(k - 12)x^2 + 2(k - 12)x + 2 = 0$ has two real equal roots.

2. Solve the quadratic equation $2x^2 + 5\sqrt{3}x + 6 = 0$ by using quadratic formula.

3. Solve the quadratic equation $a^2b^2x^2 + b^2x - a^2x - 1 = 0$

4. Solve the quadratic equation : $\dfrac{x-1}{x-2} + \dfrac{x-3}{x-4} = 3\dfrac{1}{3} (x \neq 2, 4)$

5. Solve the quadratic equation $4x^2 + 3x + 5 = 0$ by using method of completing the square.

6. A two digit number is such that the product of its digits is 18. When 63 is subtracted from the number, the digits interchange their places. Find the number.

7. In a flight for 3000 km, an aircraft was slowed down due to bad weather. Its average speed for the trip was reduced by 100 km/hr and consequently time of flight increased by one hour. Find the original duration of flight.

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REVISION TEST 04: MATHEMATICS
CLASS: X : QUADRATIC EQUATION

M.M. 20 Marks   **T.T. 1 hr**

Note: Q. No. 1 to 3 of 2 marks, Q. No. 4 to 5 of 3 marks, Q. No. 6 to 7 of 4 marks

1. Find the value of k for which the quadratic equation $k^2x^2 - 2(k - 1)x + 4 = 0$ has two real equal roots.

2. Solve the quadratic equation $4\sqrt{3}x^2 + 5x - 2\sqrt{3} = 0$ by using quadratic formula.

3. Solve the quadratic equation $9x^2 - 22x + 8 = 0$

4. Solve the quadratic equation : $\dfrac{1}{x+4} - \dfrac{1}{x-7} = \dfrac{11}{30}, (x \neq -4, 7)$

5. Solve the quadratic equation $2x^2 - 7x + 3 = 0$ by using method of completing the square.

6. In a class test, the sum of Shefali's marks in Mathematics and English is 30. Had she got 2 marks more in Mathematics and 3 marks less in English, the product of their marks would have been 210. Find her marks in the two subjects.

7. An aeroplane left 30 minutes later than it schedule time and in order to reach its destination 1500 km away in time, it had to increase its speed by 250 km/hr from its usual speed. Determine its usual speed.

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**M.M. 40 Marks**   **T.T. 1 hr**

Note: Q. No. 1 to 4 of 2 marks, Q. No. 5 to 12 of 4 marks

11. To warn ships for underwater rocks, a lighthouse spreads a red coloured light over a sector of angle $80°$ to a distance of 16.5 km. Find the area of the sea over which the ships are warned. . (Use $\pi = 3.14$)

12. Find the area of a quadrant of a circle whose circumference is 22 cm.

13. The length of the minute hand of a clock is 14 cm. Find the area swept by the minute hand in 5 minutes.

14. The radii of two circles are 8 cm and 6 cm respectively. Find the radius of the circle having area equal to the sum of the areas of the two circles.

15. In the below left sided figure, ΔABC is right angled at A. Semicircles are drawn on AB, AC and BC as diameters. It is given that AB = 3cm and AC = 4cm. Find the area of the shaded region.
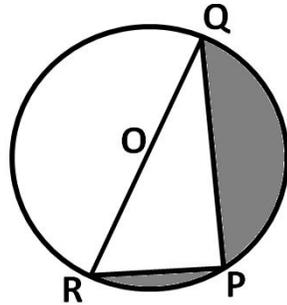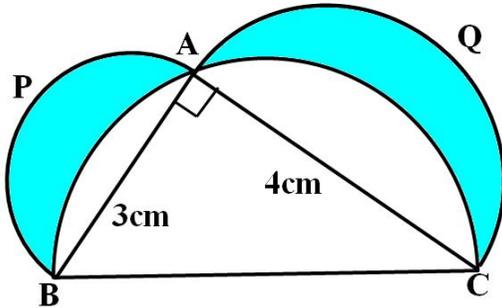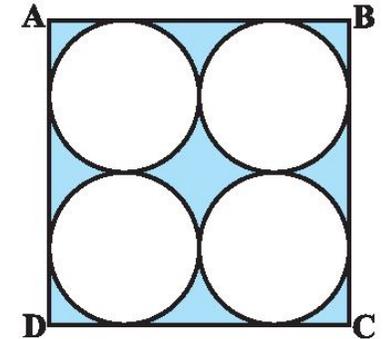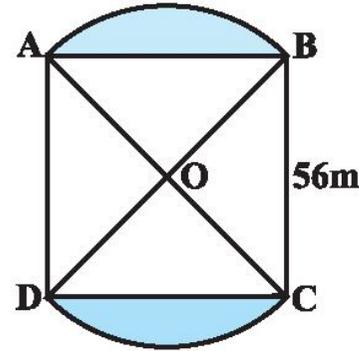

16. Find the area of the shaded region in the above right sided figure, if PQ = 24 cm, PR = 7 cm and O is the centre of the circle.

17. Find the area of the shaded region in below figure, where radii of the two concentric circles with centre O are 7 cm and 14 cm respectively and $\angle AOC = 40^0$.
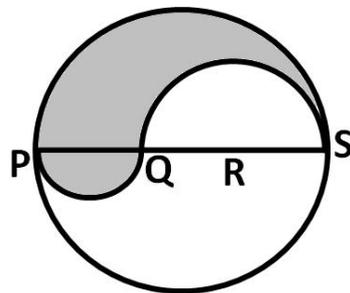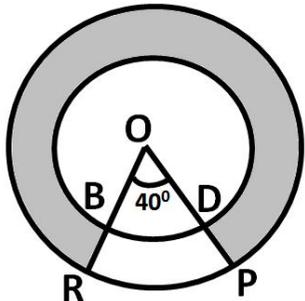

18. PQRS is a diameter of a circle of radius 6 cm. The lengths PQ, QR and RS are equal. Semicircles are drawn on PQ and QS as diameters as shown in above right sided figure. Find the perimeter and area of the shaded region.

19. In the below left sided Fig, two circular flower beds have been shown on two sides of a square lawn ABCD of side 56 m. If the centre of each circular flower bed is the point of intersection O of the diagonals of the square lawn, find the sum of the areas of the lawn and the flower beds.

20. Find the area of the shaded region in the above right sided Fig., where ABCD is a square of side 14 cm.

21. In Fig., ABC is a quadrant of a circle of radius 14 cm and a semicircle is drawn with BC as diameter. Find the area of the shaded region.
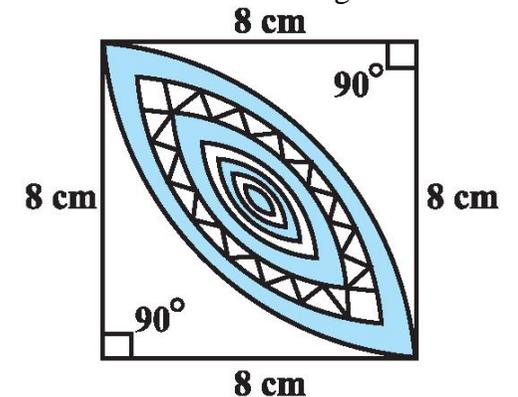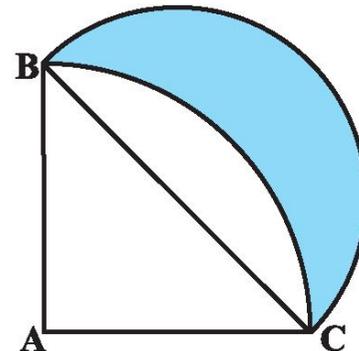
22. Calculate the area of the designed region in the above sided Fig. common between the two quadrants of circles of radius 8 cm each.