

Class 10th Maths Basic Sample Paper 2 Full Syllabus 2026

Time Allowed: 3 hours

Maximum Marks : 80

General Instructions:

Read the following instructions carefully and follow them:

- This question paper contains 38 questions.
- This Question Paper is divided into 5 Sections A, B, C, D and E.
- In Section A, Questions no. 1 – 18 are multiple choice questions (MCQs) and questions no. 19 and 20 are Assertion – Reason based questions of 1 mark each.
- In Section B, Questions no. 21 – 25 are very short answer (VSA) type questions, carrying 02 marks each.
- In Section C, Questions no. 26 – 31 are short answer (SA) type questions, carrying 03 marks each.
- In Section D, Questions no. 32 – 35 are long answer (LA) type questions, carrying 05 marks each.
- In Section E, Questions no. 36 – 38 are case study – based questions carrying 4 marks each with sub – parts of the values of 1, 1 and 2 marks each respectively.
- All Questions are compulsory. However, an internal choice in 2 Questions of Section B, 2 Questions of Section C and 2 Questions of Section D has been provided. An internal choice has been provided in all the 2 marks questions of Section E.
- Draw neat and clean figures wherever required.
- Take $\pi = 22/7$ wherever required if not stated.
- Use of calculators is not allowed.

Section A

1. Prime factorisation of 424 is:

- a) $2^3 \times 53$ b) $2^4 \times 53$ c) $2 \times 53 \times 2$ d) $2 \times 53 \times 4$

2. HCF of $(3^4 \times 2^2 \times 7^3)$ and $(3^2 \times 5 \times 7)$ is:

- a) 567 b) 63 c) 729 d) 630

3. Which of the following equations has 2 as a root?

- a) $x^2 + 3x - 12 = 0$ b) $x^2 - 4x + 5 = 0$ c) $2x^2 - 7x + 6 = 0$ d) $3x^2 - 6x - 2 = 0$

4. The pair of linear equations $x + 2y - 5 = 0$ and $2x - 4y + 6 = 0$:

- a) is consistent with a unique solution b) is consistent with many solutions
c) is inconsistent d) is consistent with two solutions

5. The roots of the equation $x^2 + 3x - 10 = 0$ are:

- a) $-2, -5$ b) $-2, 5$ c) $2, -5$ d) $2, 5$

6. The coordinates of point A, where AB is the diameter of the circle whose centre is $(3, -2)$ and $B(7, 4)$ is:

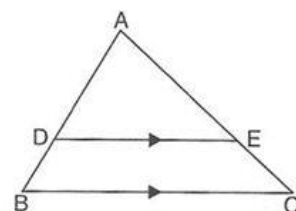
- a) $(1, -8)$ b) $(1, 8)$ c) $(-1, -8)$ d) $(-1, 8)$

7. If $\triangle ABC \sim \triangle DEF$ and $\angle A = 47^\circ$, $\angle E = 83^\circ$, then $\angle C$ is equal:

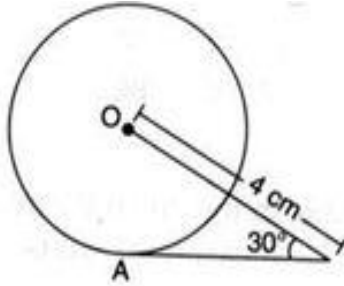
- a) 50° b) 130° c) 47° d) 83°

8. In the given figure, $DE \parallel BC$. $AB = 15$ cm, $BD = 6$ cm, $AC = 25$ cm, then AE is equal to

- a) 15 cm. b) 10 cm.
c) 18 cm. d) 20 cm.



9. AP is a tangent to the circle with centre O such that $OP = 4$ cm and $\angle OPA = 30^\circ$. Then, AP is equal to



- a) $3\sqrt{2}$ cm b) $2\sqrt{2}$ cm c) $2\sqrt{3}$ cm d) 2 cm

10. If $\sin\theta = \frac{a}{b}$ then $\cos\theta = ?$

- a) $\frac{b}{a}$ b) $\frac{a}{\sqrt{b^2-a^2}}$ c) $\frac{\sqrt{b^2-a^2}}{b}$ d) $\frac{b}{\sqrt{b^2-a^2}}$

11. From the top of a hill, the angles of depression of two consecutive km stones due east are found to be 30° and 45° . The height of the hill is

- a) $\frac{1}{2}(\sqrt{3} + 1)$ km b) $\frac{1}{2}(\sqrt{3} - 1)$ km c) $(\sqrt{3} + 1)$ km d) $(\sqrt{3} - 1)$ km

12. If $5 \cot\theta = 3$, then $\frac{5\sin\theta - 3\cos\theta}{4\sin\theta + 3\cos\theta}$ is equal to

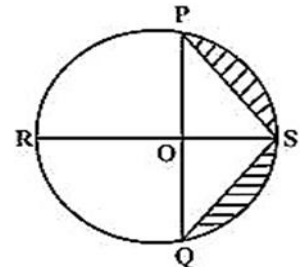
- a) $\frac{16}{26}$ b) $\frac{11}{18}$ c) $\frac{14}{27}$ d) $\frac{16}{29}$

13. Area of a segment of a circle of radius r and central angle 90° is:

- a) $\frac{2\pi r}{4} - \frac{1}{2}r^2$ b) $\frac{\pi r^2}{2} - \frac{1}{2}r^2$ c) $\frac{\pi r^2}{4} - \frac{1}{2}r^2$ d) $\frac{2\pi r}{4} - r^2 \sin 90^\circ$

14. In the given figure PQ and RS are the perpendicular diameters of the circle whose centre is O and radius = 14 cm. the area of the shaded region is

- a) 28 cm^2
b) 35 cm^2
c) 60 cm^2
d) 112 cm^2



15. From a well – shuffled deck of 52 playing cards, a card is drawn at random. What is the probability of getting a red queen?

- a) $\frac{1}{26}$ b) $\frac{1}{2}$ c) $\frac{1}{13}$ d) $\frac{3}{26}$

16. The median of first 8 prime numbers is

- a) 11 b) 13 c) 9 d) 7

17. A circus tent is cylindrical to a height of 3 metres and conical above it. If its diameter is 105 m and the slant height of the conical portion is 53 m, calculate the length of the canvas 5 m wide to make the required tent.

- a) 2096 m b) 1947 m c) 1800 m d) 1996 m

18. $\sum(x_i - \bar{x})$ is equal to

- a) -1 b) 2 c) 0 d) 1

19. **Assertion (A):** The distance of P(a, b) from origin is $a^2 + b^2$.

Reason (R): The distance between two points $A(x_1, y_1)$ and $B(x_2, y_2)$ is $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$.

- a) Both A and R are true and R is the correct explanation of A.
- b) Both A and R are true but R is not the correct explanation of A.
- c) A is true but R is false.
- d) A is false but R is true.

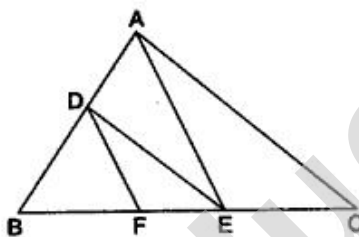
20. **Assertion (A):** The H.C.F. of two numbers is 16 and their product is 3072. Then their L.C.M. = 162

Reason: If a, b are two positive integers, then $\text{H.C.F.} \times \text{L.C.M.} = a \times b$

- a) Both A and R are true and R is the correct explanation of A.
- b) Both A and R are true but R is not the correct explanation of A.
- c) A is true but R is false.
- d) A is false but R is true.

Section B

21. In figure $DE \parallel AC$ and $DF \parallel AE$. Prove that $\frac{BF}{FE} = \frac{BE}{EC}$



OR

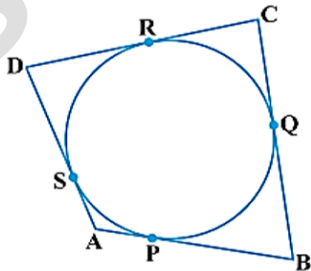
State and prove Basic proportionality theorem.

22. Solve the following pair of equations by substitution method:

$$7x - 15y = 2 \dots (1)$$

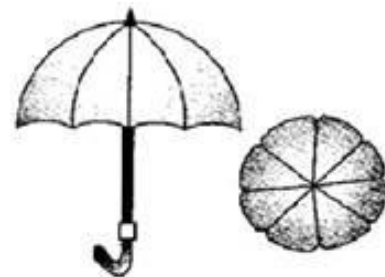
$$x + 2y = 3 \dots (2)$$

23. A quadrilateral ABCD is drawn to circumscribe a circle. Prove that $AB + CD = AD + BC$



24. If $\tan(A + B) = \sqrt{3}$ and $\tan(A - B) = \frac{1}{\sqrt{3}}$; $0^\circ < A + B \leq 90^\circ$; $A > B$, then find A and B.

25. An umbrella has 8 ribs which are equally spaced (see figure). Assuming umbrella to be a flat circle of radius 45 cm, Find the area between the two consecutive ribs of the umbrella.



OR

Find the area of the segment of a circle, if angle of the sector is 90° and the radius of the circle is 21 cm.

Section C

26. Show that $5 - \sqrt{3}$ is irrational.

27. The ratio of incomes of two persons is 9 : 7 and the ratio of their expenditures is 4 : 3. If each of them manages to save ₹ 2000 per month, then find their monthly incomes.

OR

If $217x + 131y = 913$ and $131x + 217y = 827$, then solve the equations for the values of x and y .

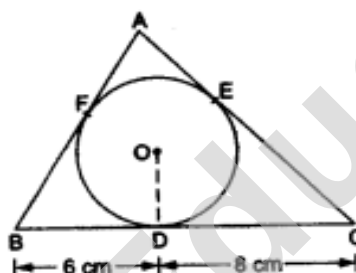
28. If α and β are the zeros of the polynomial $f(x) = 6x^2 + x - 2$, find the value of $\left(\frac{\alpha}{\beta} + \frac{\beta}{\alpha}\right)$

29. Evaluate: $\frac{\sin 30^\circ + \tan 45^\circ - \operatorname{cosec} 60^\circ}{\sec 30^\circ + \cos 60^\circ + \cot 45^\circ}$

OR

If $\sin \theta + \cos \theta = \sqrt{2}$, then evaluate $\tan \theta + \cot \theta$.

30. A triangle ABC is drawn to circumscribe a circle of radius 4 cm such that the segments BD and DC into which BC is divided by the point of contact D are of lengths 6 cm and 8 cm respectively. Find the lengths of the sides AB and AC.

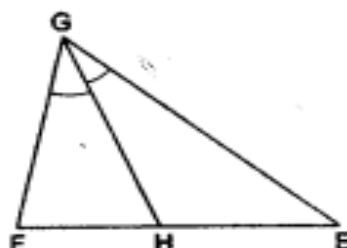
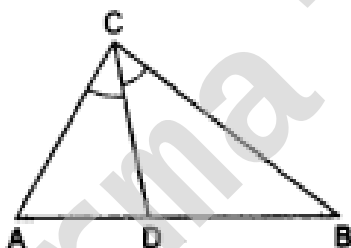


31. One card is drawn from a well – shuffled deck of 52 cards. Find the probability of getting

i. a king of red colour	ii. a face card	iii. a red face card	iv. the jack of hearts
v. a spade	vi. the queen of diamonds		

Section D

32. In the given figure, CD and GH are respectively the bisectors of C and G respectively. If $\triangle ABC \sim \triangle FEG$, prove that:



- i. $\triangle ADC \sim \triangle FHG$
- ii. $\triangle BCD \sim \triangle EGH$
- iii. $\frac{CD}{GH} = \frac{AC}{FG}$

33. Solve for x : $\frac{1}{a+b+x} = \frac{1}{a} + \frac{1}{b} + \frac{1}{x}$; $a \neq b \neq 0, x \neq 0, x \neq -(a+b)$

OR

Determine whether the given quadratic equation have real roots and if so, find the roots

$$\sqrt{3}x^2 + 10x - 8\sqrt{3} = 0$$

34. A solid is in the shape of a cone surmounted on a hemisphere with both their diameters being equal to 7 cm and the height of the cone is equal to its radius. Find the volume of the solid.

OR

From a solid cylinder of height 20 cm and diameter 12 cm, a conical cavity of height 8 cm and radius 6 cm is hallowed out. Find the total surface area of the remaining solid.

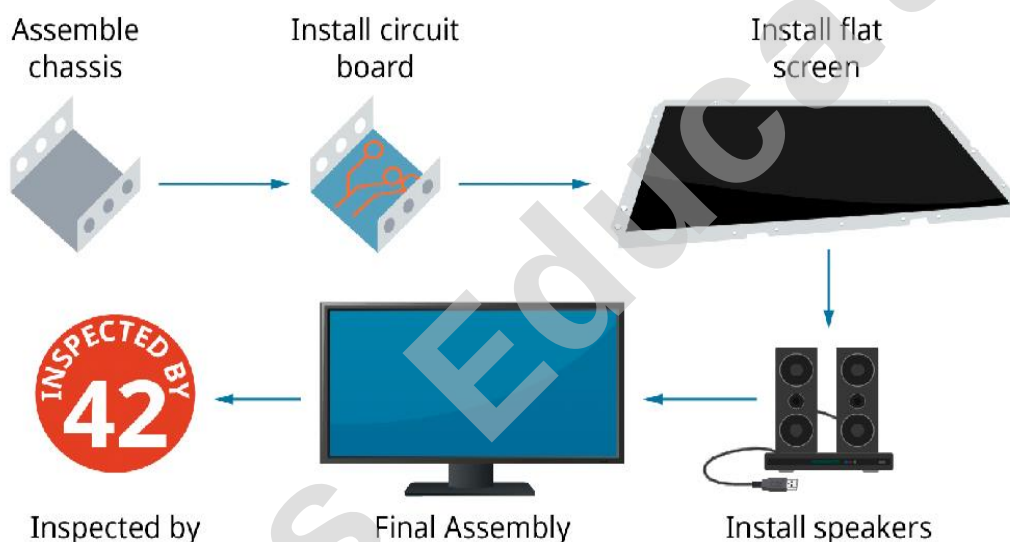
35. The following data gives the distribution of total monthly household expenditure of 200 families of a village. Find the modal monthly expenditure of the families. Also, find the mean monthly expenditure:

Exp.	1000 – 1500	1500 – 2000	2000 – 2500	2500 – 3000	3000 – 3500	3500 – 4000	4000 – 4500	4500 – 5000
Freq	24	40	33	28	30	22	16	7

Section E

36. Read the following text carefully and answer the questions that follow:

Elpis Technology is a laptop manufacturer. The company works for many branded laptop companies and also provides them with spare parts. Elpis Technology produced 6000 units in 3rd year and 7000 units in the 7th year.

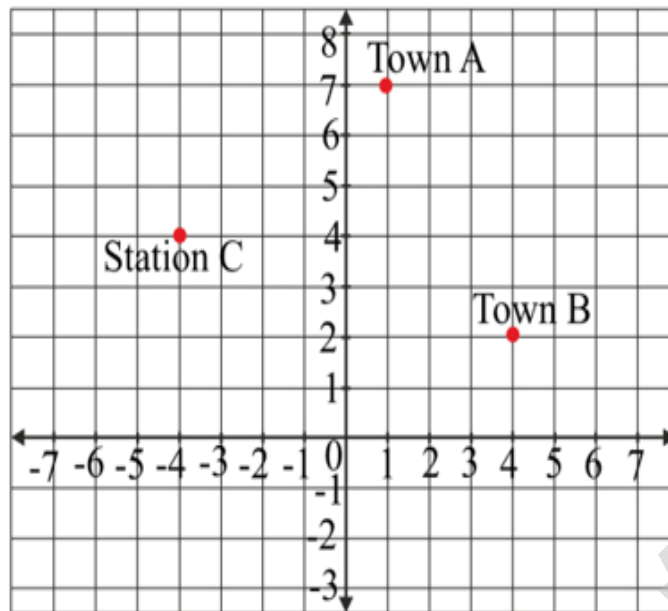


Assuming that production increases uniformly by a fixed number every year, find

- the production in the 1st year, (2)
- the production in the 5th year, (1)
- the total production in 7 years. (1)

37. Read the following text carefully and answer the questions that follow:

Two friends Veena and Arun work in the same office in Delhi. In the Christmas vacations, both decided to go their hometowns represented by Town A and Town B respectively in the figure given below. Town A and Town B are connected by trains from the same station C (in the given figure) in Delhi.



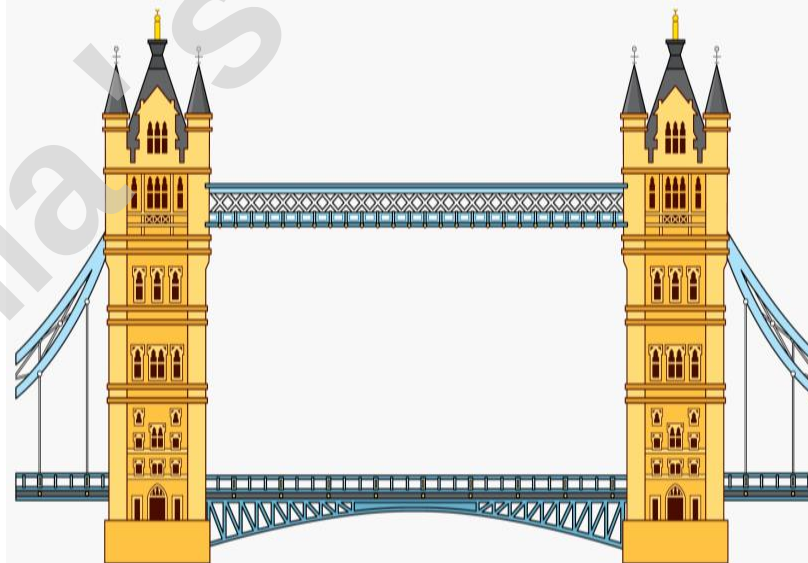
- Who will travel more distance to reach their home? (1)
- Find the location of the station. (1)
- Find in which ratio Y – axis divide Town B and Station. (2)

OR

Find the distance between Town A and Town B. (2)

38. Read the following text carefully and answer the questions that follow:

Tower Bridge is a Grade I listed combined bascule and suspension bridge in London, built between 1886 and 1894, designed by Horace Jones and engineered by John Wolfe Barry. The bridge is 800 feet (240 m) in length and consists of two bridge towers connected at the upper level by two horizontal walkways, and a central pair of bascules that can open to allow shipping. In this bridge, two towers of equal heights are standing opposite each other on either side of the road, which is 80 m wide. During summer holidays, Neeta visited the tower bridge. She stood at some point on the road between these towers. From that point between the towers on the road, the angles of elevation of the top of the towers was 60° and 30° respectively.



- Neeta used some applications of trigonometry she learned in her class to find the height of the towers without actually measuring them.
- What would be the height of the towers she would have calculated? Also
- find the distances of the point from the base of the towers where Neeta was standing while measuring the height.
