MATHS

BOOKS - CBSE COMPLEMENTARY MATERIAL MATHS (HINGLISH)

PRACTICE PAPER- I (WITH SOLUTIONS) CLASS: X Mathematics (Standard)

Section A

1. The LCM of two numbers is 1200. Which of the following cannot be their HCF? (a) 600 (b) 500 (c) 400 (d) 200

A. 4

B. 5

C. 6

D. 3

Answer: A

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2. The median of a frequency distribution is found graphically with the help of

A. histogram

B. frequency curve c

C. frequency polygon

D. ogive

Answer:

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3. If the arithmetic mean of $x,\ x+3,\ x+6,\ x+9,$ and $x+12$ is 10, the $x=$ (a) 1 (b) 2 (c) 6 (d) 4

A. 1

B. 2

C. 6

D. 4

Answer: D

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4. Two different dice are tossed together, Find the probability that the product of the two numbers on the top of the dice is 6.

A. $\frac{1}{3}$

B. $\frac{1}{6}$

C. $\frac{1}{9}$

D. $\frac{2}{3}$

Answer: A

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5. A cylinder, a cone and a hemisphere are of same base and have same height. The ratio of their volumes is

A. $3:1:2$

B. $1:2:3$

C. $3:2:1$

D. $1:3:2$

Answer: A

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6. Two isosceles triangles have equal angles and their areas are in the ratio $16:25$. The ratio of their corresponding heights is $4:5$ (b) $5:4$ (c) $3:2$ (d) $5:7$

A. $4:5$

B. $5:4$

C. $3:2$

D. $5:7$

Answer: D

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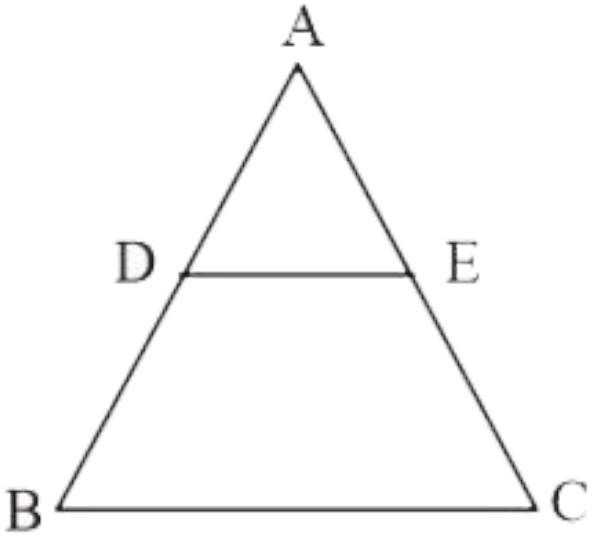
7. In figure $DE \| BC$, and $AD = \frac{1}{2}AB$. IF BC=4.5cm, find DE.



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8. If radii of two concentric circles are 4 cm and 5 cm, then length of each chord of one circle which is tangent to the other circle, is

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9. If diameter of a circle is increased by 40%, then its area increases by (a) 96% (b) 40% (c) 80% (d) 48%

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10. Find the discriminant of the quadratic equation $3\sqrt{3}x^2 + 10x + \sqrt{3} = 0.$

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11. The nth terms of an A.P. $\frac{1}{m}, \frac{m+1}{m}, \frac{2m+1}{m}, \ldots$ is:

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12. If x+a is a factor of $2x^2 + 2ax + 5x + 10$, find the value of a.

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13. What is the point of intersection of the line represented by $3x-2y=6$ and the y-axis?

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14. Find the co-ordinates of the point on y-axis which is nearest to the point $(-2,5)$.

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15. If the ratio of the height of a tower and the length of its shadow is $\sqrt{3}:1$, what is the angle of elevation of the Sun?

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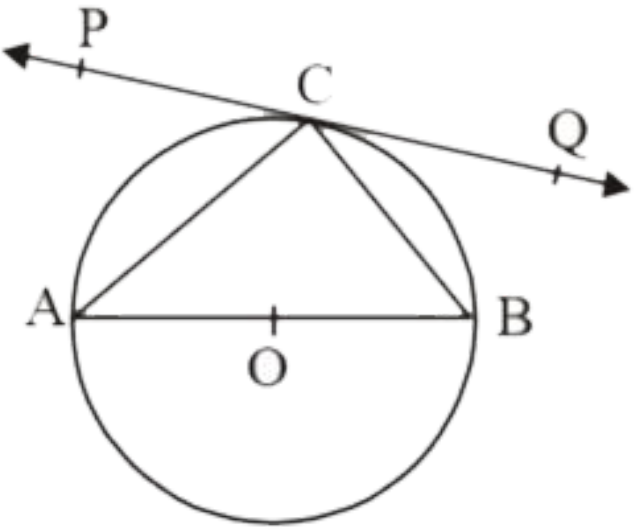
16. In figure PQ is a tangent at a point C to a circle with centre O. If AB is a diameter and $\angle CAB=30^\circ$, find $\angle PCA$



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17. If a quadratic polynomial $f(x)$ is factorizable into linear distinct factors, then what is the total number of real and distinct zeros of $f(x)$?

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18. What is the distance between the points $A(\sin\theta - \cos\theta,\ 0)$ and $B(0, \sin\theta + \cos\theta)$?

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19. Sides of two similar triangles are in the ratio $4:9$. Areas of these triangles are in the ratio. $2:3$ (b) $4:9$ (c) $81:16$ (d) $16:81$

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20. In $\tan A = \frac{5}{12}$ then the value of $(\cos A - \sin A)\cos ecA$ is.....

A. $\frac{2}{3}$

B. $\frac{7}{5}$

C. $\frac{3}{2}$

D. $\frac{5}{8}$

Answer: B

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Section B

1. In a single throw of a pair of different dice, what is the probability of getting

(i) a prime number on each dice

(ii)a total of 9 or 11?

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2. 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 make the tank half-empty, if the tank is 3 m in diameter?

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3. Cards marked with numbers 13, 14, 15, ..., 16 are placed in a box and mixed thoroughly. One card is drawn at random from the box. Find the probability that number on the card drawn is (a) divisible by 5 (b) a number is a perfect square

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4. The length of the minute hand of a clock is 5cm. Find the area swept by the miute hand during the time period $6:05$ am and $6:40$ am.

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5. Solve for x and y:

$\frac{4}{x}+5y=7, \frac{3}{x}+4y=5$

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6. Show that any positive odd integer is of the form $6q+1$ or, $6q+3$ or, $6q+5$, where q is some integer.

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Section C

1. Prove that $\sqrt{2}+\sqrt{3}$ is irrational.

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2. If $x = p\sec\theta + q\tan\theta \& y = p\tan\theta + q\sec\theta$ then prove that $x^2 - y^2 = p^2 - q^2$

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3. A is a point at a distance 13 cm from the centre O of a circle of radius 5 cm. AP and AQ are the tangents to the circle at P and Q. If a tangent BC is drawn at a point R lying on the minor arc PQ to intersect AP at Band AQ at C, find the perimeter of the ΔABC

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4. Without using trigonometric table, the value of

$\cot\theta\tan(90^\circ-\theta)-\sec(90^\circ-\theta)\text{cosec}\theta+\sin^2 65^\circ+\sin^2 25^\circ+\sqrt{3}\tan 5^\circ$

.

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5. If α and β are zeroes of the polynomial $6y^2-7y+2$, find the quadratic polynomial whose zeroes are $\frac{1}{\alpha}$ and $\frac{1}{\beta}$

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6. Find a natural number whose square diminished by 10 is equal to five times of 8 more than the given number.

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7. Prove that the area of the semicircle drawn on the hypotenuse of a right angled triangle is equal to the sum of the areas of the semicircles drawn on the other two sides of the triangle

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8. An AP consists of 45 terms. The sum of the three middle most terms is 546 and the sum of the last three terms is 1050. Find the AP.

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Section D

1. On selling a tea-set 5% loss and a lemon-set at 15% gain, a crockery seller gains Rs. 7. If he sells the tea-set at 5% gain and the lemon-set at 10% gain, he gains Rs. 13. Find the actual price of the tea-set and the lemon-set.

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2. Point P divides the lne segment joning the points A (2,1) and $B(5, -8)$ such that $\frac{AP}{AB} = \frac{1}{3}$. If P lies on the line $2x - y + k = 0,$ find the value of k

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3. Draw an isosceles triangle ABC in which AB = AC = 6 cm and BC = 5 cm. Construct a triangle PQR similar to ΔABC in which PQ = 8 cm. Also justify the construction

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

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5. Water is flowing at the rate of 15 km/hour through a pipe of diameter 14 cm into a cuboidal pond which is 50 m long and 44 m wide. In what time will the level of water in the pond rise by 21 cm ?

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6. If the median of the following frequency distribution is 525, in the table given below, find the value of x and y. if total frequency is 100.

Variable	0–100	100–200	200–300	300–400	400–500	500–600	600–700	700–800	800–900	900–1000	Total
Frequency	2	5	x	12	17	20	y	9	7	4	100

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