MATHS

BOOKS - X BOARD PREVIOUS YEAR PAPER ENGLISH

SAMPLE PAPER 2019

Section A

1. The decimal representation of $\dfrac{11}{2^3 \times 5}$ will

    A. terminate after 1 decimal place

    B. terminate after 2 decimal places

    C. terminate after 3 decimal places

    D. not terminate

Answer: C

2. The LCM of smallest two digit composite number and smallest composite number is

A. 12

B. 4

C. 20

D. 44

Answer: C

3. For which value(s) of ρ will the lines represented by the following pair of linear equations be paralle

$3x - y - 5 = 0$

$6x - 2y - p = 0$

A. all real values except 10

B. 10

C. $5/2$

D. $1/2$

Answer: a

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4. If triangle ABC is right angled at C, then the value of sec (A+B) is

A. 0

B. 1

C. $\dfrac{2}{\sqrt{3}}$

D. Not defined

Answer: d

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5. If $\sin\theta + \cos\theta = \sqrt{2}\cos\theta$, $(\theta \neq 90°)$ then value of $\tan\theta$ is

A. $\sqrt{2} - 1$

B. $\sqrt{2} + 1$

C. $\sqrt{2}$

D. $-\sqrt{2}$

Answer: a

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6. Given that $\sin\alpha = \dfrac{\sqrt{3}}{2}$ and $\cos\beta = 0$, then the value of $\beta - \alpha$ is

A. $0°$

B. $90°$

C. $60°$

D. $30°$

Answer: d

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7. The point which divides the line segment joining the points (8,–9) and (2,3) in ratio 1 : 2 internally lies in the

    A. I quadrant

    B. II quadrant

    C. III quadrant

    D. IV quadrant

Answer: d

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8. The distance of the point P (-3,-4) form the x-axis (in units) is

A. 3

B. -3

C. 4

D. 5

Answer: a

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9. If $A\left(\frac{m}{3}, 5\right)$ is the mid-point of the line segment joining the points Q (− 6, 7) and R (− 2, 3), then the value of m is

A. 12

B. -4

C. 12

D. -6

Answer:

18 A

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

18 B

1. If the first three terms of an A.P are b, c and 2b, then find the ratio of b and c

1. Find the number of natural numbers between 102 and 998 which are divisible by 2 and 5 both.

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22 A

1. Prove that the rectangle circumscribing a circle is a square

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25 A

1. Jayanti throws a pair of dice and records the product of the numbers appearing on the dice. Pihu throws 1 dice and records the squares the

number that appears on it. Who has the better chance of getting the number 36? Justify?

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25 B

1. An integer is chosen between 70 and 100, Find the probability that it is.

(a) a prime number

(b) divisible by 7

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27 A

1. Given that $\sqrt{5}$ is irrational, prove that $2\sqrt{5} - 3$ is an irrational number.

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1. If HCF of 144 and 180 is expressed in the form $13m - 16$. Find the value of m.

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1. Solve the following system of equations :

$$\frac{21}{x} + \frac{47}{y} = 110$$
$$\frac{47}{x} = \frac{21}{y} = 162, \, x, y \neq 0$$

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1. If $\sin\theta + \cos\theta = \sqrt{3},$ then prove that $\tan\theta + \cot\theta = 1$.

32 B

1. Evaluate :

$$\frac{\cos^2(45° + \theta) + \cos^2(45° - \theta)}{\tan(60° + \theta) \times \tan(30° - \theta)} + (\cot 30° + \sin 90°) \times (\tan 60° - \sec 0°$$

35 A

1. Darw a triangle ABC with side BC=6.5cm, $\angle B = 30°$, $\angle A = 105°$. Then construct another triangle whose sides are $\frac{3}{4}$ times the corresponding sides of the triangle ABC

1. Construct a pair of tangents to a circle of radius 3 cm which are inclined to each other at an angle of $60°$

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1. A train covers a distance of 360 km at a uniform speed. Had the speed been 5km/hour more, it would have taken 48 minutes less for the journey. Find the original speed of the train

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1. Solve the following equation: $\dfrac{1}{x} - \dfrac{1}{x-2} 3, x \neq 0, 2$

38 A

1. A petrol tank is in the form of a frustum of a cone of height 20 m with diameters of its lower and upper ends as 20 m and 50 m respectively. Find the cost of petrol which can fill the tank completely at the rate of Rs. 70 per litre. Also find the surface area of the tank

38 B

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

1. HCF of 168 and 126 is

A. 21

B. 42

C. 14

D. 18

Answer: B

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2. Empiricla relationship between the three measures of central tendency is

A. 2 Mean = 3 Median - Mode

Median - Mean

B. 2 Mode = 3

C. Mode = 2 Mean- 3Median

Mode + Mean

D. 3 Median = 2

Answer: A

3. In the given figure, if TP and TQ are tangents to a circle with centre O, so that $\angle POQ = 110°$, then $\angle PTQ$ is

A. $110°$

B. $90°$

C. $80°$

D. 70°

Answer: D

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4. 325 can be expressed as a product of its primes as

A. $5^2 \times 7$

B. $5^2 \times 13$

C. 5×13

D. $2 \times 3^2 \times 5^2$

Answer: B

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5. One card is drawn from a well shuffled deck of 52 cards. The probability that it is black queen is

A. $\dfrac{1}{26}$

B. $\dfrac{1}{13}$

C. $\dfrac{1}{52}$

D. $\dfrac{2}{13}$

Answer: A

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6. The sum of the zeroes of the polynomial $2x^2 - 8x + 6$ is

A. -3

B. 3

C. -4

D. 4

Answer: D

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7. Which of the following is the decimal expansions of a irrational number

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A. 4.561

B. $0.\overline{12}$

C. $5.010010001...$

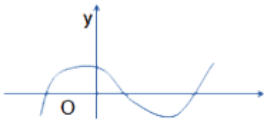D. 6.03

Answer: C

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8. The following figure shows the graph of $y = p(x)$, where $p(x)$ is a polynomial in variable x. The number of zeroes of the polynomial $p(x)$ is

A. 1

B. 2

C. 3

D. 4

Answer: C

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9. The distance of the point $P(3, \ -4)$ from the origin is

A. 7 units

B. 5 units

C. 4 units

D. 3 units

Answer: B

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10. The mid point of the line segment joining the points $(-5, 7)$ and $(-1, 3)$ is

A. $(-3, 7)$

B. $(-3, 5)$

C. $(-1, 5)$

D. $(5, -3)$

Answer: B

Section A Answer The Following

1. The sides of two similar triangles are in the ratio $2:3$, then the areas of these triangles are in the ratio _____.

2. If area of quadrant of a circled is $38.5cm^2$ then find its diameter (use $\pi = \dfrac{22}{7}$)

3. A die it thrown once. What is the probability of getting a prime number?

Section A Answer The Following 16 A

1. ΔPQR is right angled isosceles triangle, right angled at R. Find value of sin P.

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1. If $15 \cot A = 8$, then find the value of $\cos ecA$.

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1. If two coins are tossed simultaneously. Find the probability of getting 2 heads.

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2. Prove that the tangents drawn at the ends of a diameter of a circle are parallel.

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

4. Read the following passage and answer the questions that follows :

A teacher told 10 students to write a polynomial on the black board.

Students wrote

1. $x^2 + 2$
2. $2x + 3$
3. $x^3 + x^2 + 1$
4. $x^3 + 2x^2 + 1$
5. $x^2 - 2x + 1$
6. $x - 3$
7. $x^4 + x^2 + 1$
8. $x^2 + 2x + 1$
9. $2x^3 - x^2$
10. $x^4 - 1$

(i) How many students wrote cubic polynomial

(ii) Divide the polynomial $\left(x^2 + 2x + 1\right)$ by $(x + 1)$.

1. A lot of 25 bulbs contain 5 defective ones. One bulb is drawn at random from the lot. What is the probability that the bulb is good.

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1. Two dice are thrown simultaneously find the probability of the sum of numbers coming up is 8.

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1. Show that $\tan 48° \tan 23° \tan 42° \tan 67° = 1$.

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1. Evaluate $\cos 48° \cos 42° - \sin 48° \sin 42°$

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1. Find the zeroes of the quadratic polynomial $x^2 - 3x - 10$ and verify the relationship between the zeroes and coefficient.

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2. Following figure depicts a park where two opposite sides are parallel and left and right ends are semi-circular in shape. It has a 7m wide track for walking

Two friends Seema and Meena went to the park. Meena said that area of the track is $4066m^2$. Is she right? Explain.
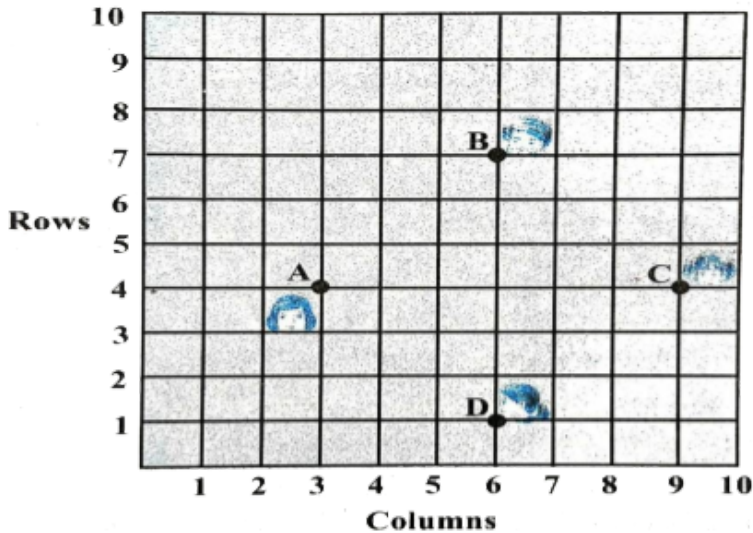
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3. Prove that the length of the tangents drawn from an external point to a circle are equal.

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4. Read the following passage and answer the questions that follows:

In a class room, four students Sita, Gita, Rita and Anita are sitting at $A(3, 4)$, $B(6, 7)$, $C(9, 4)$, $D(6, 1)$ respectively. Then a new student Anjali joins the class

(i) Teacher tells Anjali to sit in the middle of the four students. Find the coordinates of the position where she can sit.

(ii) Calculate the distance between Sita and Anita.

(iii) Which two students are equidistant from Gita.

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5. Solve $2x + 3y = 11$ and $x - 2y = -12$ algebraically and hence find the value of 'm' for which $y = mx + 3$.

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1. Draw a circle of radius 4 cm. From the point 7 cm away from its centre, construct the pair of tangents to the circle.

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1. Draw a line segment of length 8 cm and divides it in the ratio $2 : 3$

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1. Prove that $\dfrac{\cot A - \cos A}{\cot A + \cos A} = \dfrac{\cos ecA - 1}{\cos ecA + 1}$

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1. Prove that: $\dfrac{\tan A + \sin A}{\tan A - \sin A} = \dfrac{\sec A + 1}{\sec A - 1}$

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1. Prove that $5 - \sqrt{3}$ is an irrational number.

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1. An army contingent of 616 members is to march behind an army band of 32 members in a parade. The two groups are to march in the same number of columns. What is the maximum number of columns in which they can march ?

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Section D

1. Find two consecutive positive integers sum of whose squares is 365.

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2. As observed from the top of a 75 m high lighthouse from the sea-level, the angles of depression of two ships are $30o$ and $45o$. If one ship is

exactly behind the other on the same side of the lighthouse, find the distance between the two ship.

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3. The following distribution gives the daily income of 50 workers of a factory.

Daily income	$400 - 420$	$420 - 440$	$440 - 460$	$460 - 480$
Number of workers	12	14	8	6

Convert this distribution to less than type of cumulative frequency distribution and draw its ogive.

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Section D 36 A

1. If the sum of first 14 terms of an A.P. is 1050 and its first term is 10, find the 20th term.

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1. The first term of an A.P. is 5, the last term is 45 and sum is 400. Find the number of terms and the common difference.

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1. `If a line is drawn to one side of a triangle to intersect the other two sides in distinct points, prove that the other two sides are divided in the same ratio.

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1. State and prove the Pythagoras theorem.

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Section D 39 A

1. A copper rod of diameter 1 cm and length 8 cm is drawn in to a wire of length 18 m of uniform thickness. Find the thickness of wire.
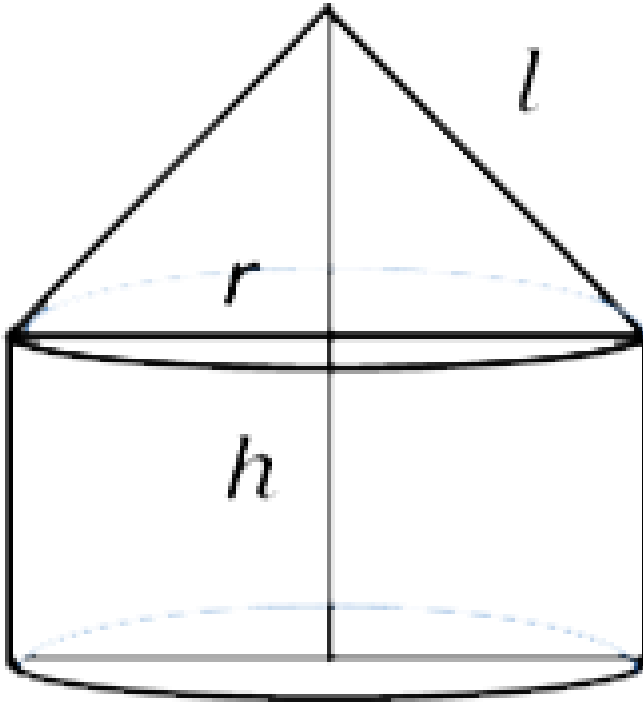
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Section D 39 B

1. A metallic sphere of radius 4.2 cm is melted and recast into the shape of a cylinder of radius 6 cm. Find the height of the cylinder.

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1. The total surface area of the given solid figure is _____.
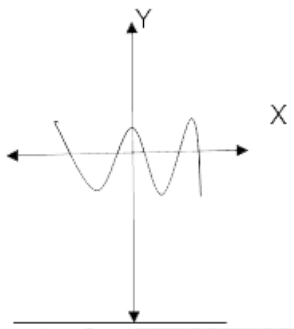

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1. If one root of the equation $(k - 1)x^2 - 10x + 3 = 0$ is the reciprocal of the other, then the value of k is_____ .

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12 B

1. The graph of $y = p(x)$, where $p(x)$ is a polynomial in variable x, is as follows:

The number of zeroes of $p(x)$ is _____

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1. In the figure, ABCDE is a pentagon with $BE || CD$ and $BC || DE$. BC is perpendicular to CD. AB= 5cm, AE=5cm, BE= 7cm, BC= x-y and CD= x+y. If the perimeter of ABCDE is 27cm. find the value of x and y, given x,y, $\neq 0$

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Section A Fill In The Blanks

1. The point which divides the line segment joining the points A(0, 5) and B(5, 0) internally in the ratio $2:3$ is _____

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2. The valiue of $\sin 60^\circ \cos 30^\circ + \sin 30^\circ \cos 60^\circ$ is _____.

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3. Value of $\cos 0°$. $\cos 30°$. $\cos 45°$. $\cos 60°$. $\cos 90°$ is _____.

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1. The pair of lines represented by the questions $2x + y + 3 = 0$ and $4x + ky + 6 = 0$ will be parallel if value of k is _____.
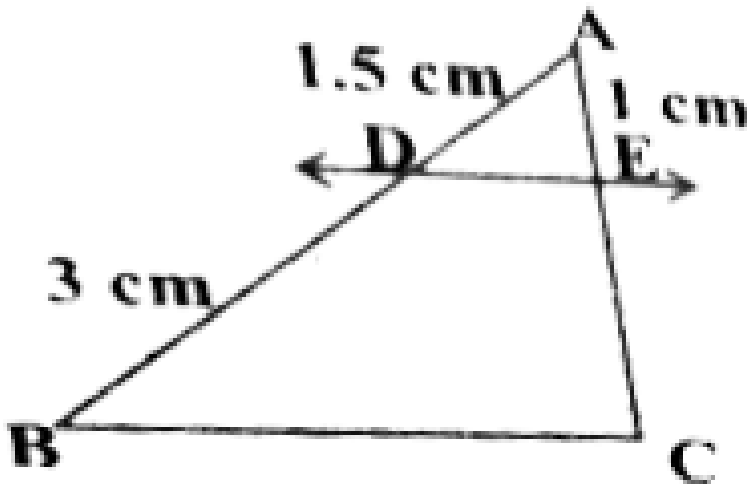
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1. If the quadratic $x^2 - 2x + k = 0$ has equal roots, then value of k is _____.

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1. In the given fig. If $DE\|BC$ Find EC.

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2. Find the common difference of the A.P whose first term is 12 and fifth term is 0.

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1. The perimeters of tow similar triangles ΔABC and ΔPQR are 35cm and 458 cm respectively, then the ratio of the areas of the two triangles is _____.

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2. Fill the two blanks in the sequence 2, ____ , 26, ____ so that the sequence forms an A.P.

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3. A number is chosen at random from the numbers $-5, \, -4, \, -3, \, -2, \, -1, 0, 1, 2, 3, 4, 5$. Then the probability that square of this number is less than or equal to 1 is _____ .
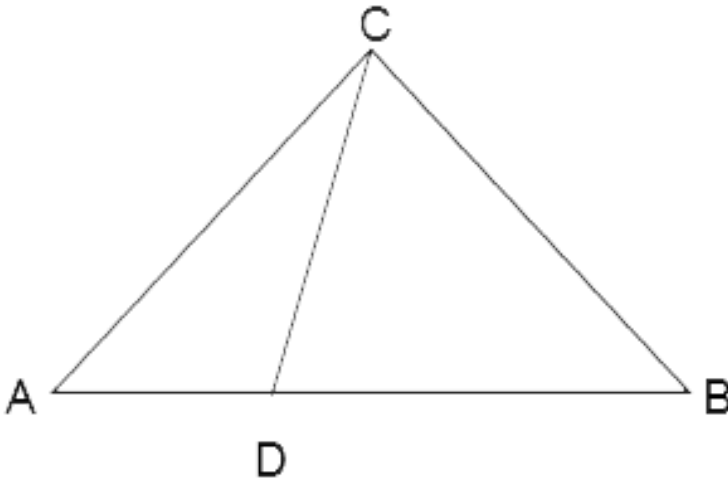
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4. Write one rational and one irrational number lying between 0.25 and 0.32

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5. In the figure, if $\angle ACB = \angle CDA$, $AC = 6cm$ and AD = 3cm , then find the lengt of AB

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6. If the angle between two tangents drawn from an external point 'P' to a circle of radius 'r' and centre O is $60°$, then find the length of OP.
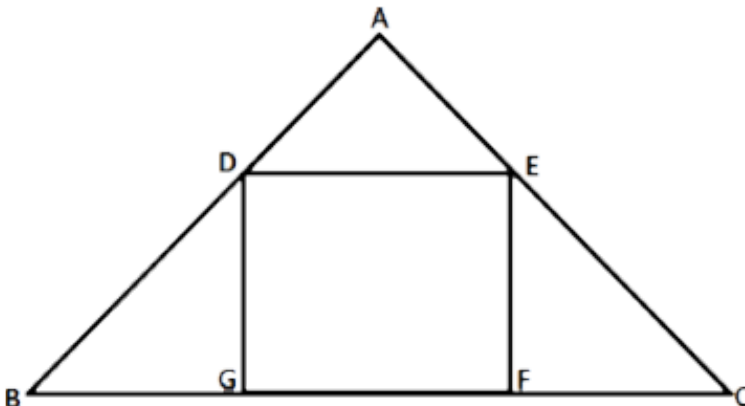
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7. Find the value(s) of k for which the quadratic equation $x^2 + 2\sqrt{2}kx + 18 = 0$ has equal roots.

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8. In the given figure, DEFG is a square and $\angle BAC = 90°$.Show that $FG^2 = BG \times FC$

9. In an equilateral triangle, prove that three times the square of one side is equal to four times the square of one of its altitudes.

10. 'Skysails' is that genre of engineering science that uses extensive utilization of wind energy to move a vessel in the sea water. The 'Skysails' technology allows the towing kite to gain a height of anything between 100 metres – 300 metres.The sailing kite is made in such a way that it can be raised to its proper elevation and then brought back with the help of a 'telescopic mast' that enables the kite to be raised properly and effectively.

Based on the following figure related to sky sailing, answer the questions
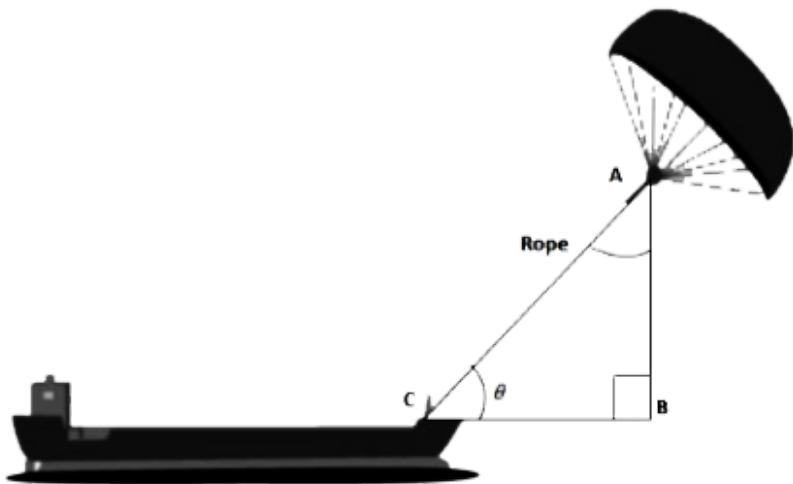
(i) In the given figure, if $\sin\theta = \cos(3\theta - 30°)$, where θ and $3\theta - 30°$ are acuts angle, then find the value of θ.

(ii) What should be the length of the rope of the kite sail in order to pull the ship at the angle θ (calculated above) and be at a vertical height of 200 m?

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11. Isha is 10 years old girl. On the result day, Isha and her father Suresh were very happy as she got first position in the class. While coming back to their home, Isha asked for a treat from her father as a reward for her success. They went to a juice shop and asked for two glasses of juice.

Aisha, a juice seller, was serving juice to her customers in two types of glasses. Both the glasses had inner radius 3cm. The height of both the glasses was 10cm.

ltimg src="https://d10lpgp6xz60nq.cloudfront.net/physics_images/MATH_041_X_SQP width="80%"gt

Second type: A glass with conical raised bottom of height 1.5 cm.

sha insisted to have the juice in first type of glass and her father decided to have the juice in second type of glass. Out of the two, Isha or her father Suresh, who got more quantity of juice to drink and by how much?

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12. The sum of m terms and n terms of an A.P. ae equal. Prove that the sum of (m+n) terms will be zero. Given that $m \neq n$.

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13. Obtian all other zeroes of $\left(x^4 + 4x^3 - 2x^2 - 20x - 15\right)$ if two of its

zeroes are $\because \sqrt{5}$ and $-\sqrt{5}$.

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14. Two friends Seema and Aditya work in the same office at Delhi. In the

Christmas vacations, both decided to go to 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.Based on the given situation, answer the following

questions:

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width="80%"gt

(i) Who will travel more distance, Seema or Aditya, to reach to their

hometown?

(ii) Seema and Aditya planned to meet at a location D situated at a point

D represented by the mid-point of the line joining the points represented

by Town A and Town B. Find the coordinates of the point represented by the point D .

(iii) Find the area of the triangle formed by joining the points represented by A, B and C.

15. Sides of a right triangular field are 25m, 24m and 7m. At the three corners of the field, a cow, a buffalo and a horse are tied separately with ropes of 3.5 m each to graze in the field. Find the area of the field that cannot be grazed by these animals.

16. A TV reporter was given a task to prepare a report on the rainfall of the city Dispur of India in a particular year. After collecting the data, he analyzed the data and prepared a report on the rainfall of the city. Using this report, he drew the following graph for a particular time period of 66 days
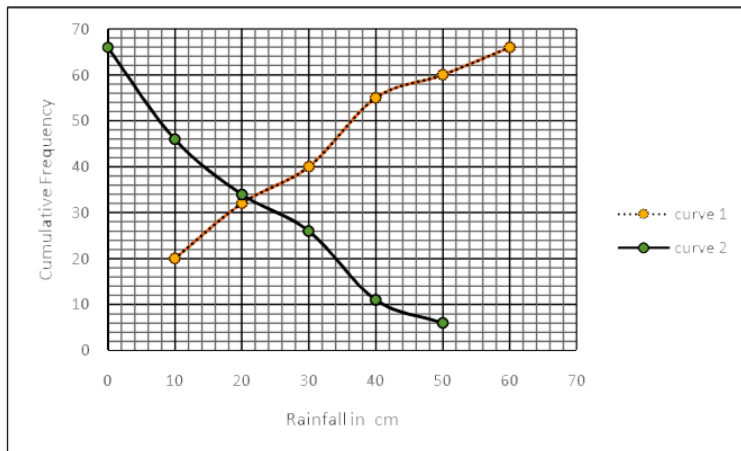
Based on the above graph, answer the following questions

(i) Identify less than type ogive and more than type ogive from the given graph.

(ii) Find the median rainfall of Dispur

(iii) Obtain the Mode of the data if mean rainfall is 23.4cm

17. Prove that if a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, then the other two sides are divided in the same ratio.

18. The angle of elevation of an airplane from a point on the ground is $60°$. After a flight of 30 seconds, the angle of elevation becomes $30°$. If the airplane is flying at a constant height of $3000\sqrt{3}$m, find the speed of the airplane.

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19. Daily wages of 110 workers, obtained in a survey, are tabulated below:

Daily Wages (in Rs.)	100-120	120-140	140-160	160-180	180-200	200-220	220-240
Number of Workers	10	15	20	22	18	12	13

Compute the mean daily wages and modal daily wages of these workers.

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