MATHS

BOOKS - CBSE MODEL PAPER

MATHEMATICS BASIC

Part A Section I

1. Express 156 as the product of primes.

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2. Write a quadratic polynomial, sum of whose zeroes is 2 and product is -8

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3. Given that HCF (96,404) is 4, find the LCM (96,404)

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4. State Fundamental Theorem of Arithmetic.

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5. On comparing the ratios of the coefficients, find out whether the pair of equations $x-2y=0$ and $3x+4y-20=0$ is consistent or inconsistent.

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6. If a and b are co-prime numbers, then find the HCF (a, b)

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7. Find the area of a sector of a circle with radius 6 cm if angle of the sector is 60°

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8. A horse tied to a pole with 28m long rope. Find the perimeter of the field where the horse can graze. (take π = 22/7)

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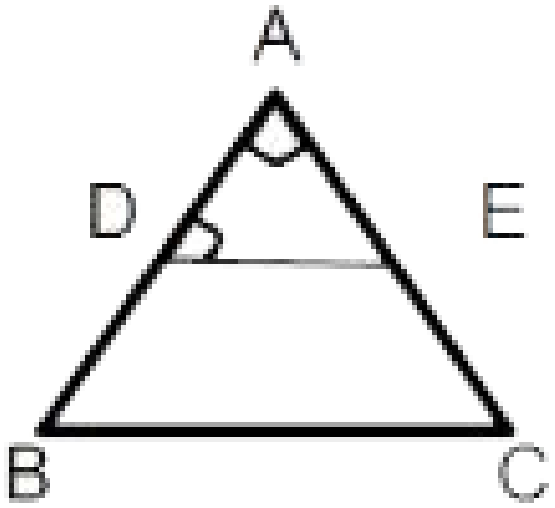
9. In the given fig. DE||BC, $\angle ADE = 70^\circ$ and $\angle BAC = 50^\circ$, then angle $\angle BCA$ =____



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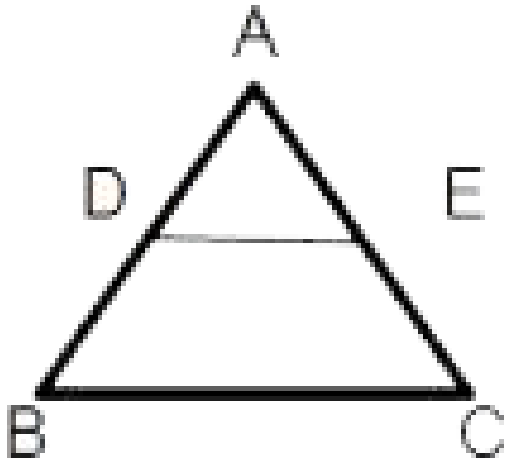
10. In the given figure, AD = 2cm, BD = 3 cm, AE = 3.5 cm and AC = 7 cm. Is DE parallel to BC ?



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11. The cost of fencing a circular field at the rate of Rs.24 per metre is Rs. 5280. Find the radius of the field.

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12. A tree breaks due to storm and the broken part bends so that the top of the tree touches the ground where it makes an angle 30° . The distance between the foot of the tree to the point where the top touches the ground is 8m.

Find the height of the tree from where it is broken.

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13. If the perimeter and the area of a circle are numerically equal, then find the radius of the circle

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14. To divide a line segment BC internally in the ratio 3 : 5, we draw a ray BX such that $\angle$ CBX is an acute angle. What will be the minimum number of points to be located at equal distances, on ray BX?

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15. For what values of p does the pair of equations $4x + py + 8 = 0$ and $2x + 2y + 2 = 0$ has unique solution?

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16. Which one of the following statement is correct ? The system of linear equations, $2x + 3y = 4$ and $4x + 6y = 7$, has

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17. A bag contains 3 red balls and 5 black balls. A ball is drawn at random from the bag. What is the probability that the ball drawn is: red (b) black

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

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19. A tower stands vertically on the ground. From a point on the ground, which is $15m$ 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.

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20. Complete the following statements: (i) Probability of an event E + Probability of the event 'not E' =__. (ii) The probability of an event that cannot happen is___ Such an event is called__ (iii) The probability of an event that is certain to happ

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Part A Section Ii

1. 

Mathematics teacher of a school took her 10th standard students to show Red fort. It was a part of their Educational trip. The teacher had interest in history as well. She narrated the facts of Red fort to students. Then the teacher

said in this monument one can find combination of solid figures. There are 2 pillars which are cylindrical in shape. Also 2 domes at the corners which are hemispherical.7 smaller domes at the centre. Flag hoisting ceremony on Independence Day takes place near these domes.

How much cloth material will be required to cover 2 big domes each of radius 2.5 metres?

A. $75m^2$

B. $78.57cm^2$

C. $87.47m^2$

D. $25.8m62$

Answer: B

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2. 

Mathematics teacher of a school took her 10th standard students to show Red fort. It was a part of their Educational trip. The teacher had

interest in history as well. She narrated the facts of Red fort to students. Then the teacher said in this monument one can find combination of solid figures. There are 2 pillars which are cylindrical in shape. Also 2 domes at the corners which are hemispherical.7 smaller domes at the centre. Flag hoisting ceremony on Independence Day takes place near these domes .Write the formula to find the volume of a cylindrical pillar

A. $\prod r^2h$

B. $\prod rl$

C. $\prod r(l+r)$

D. $2\prod r$

Answer: A

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domes at the corners which are hemispherical.7 smaller domes at the centre. Flag hoisting ceremony on Independence Day takes place near these domes.

Find the lateral surface area of two pillars if height of the pillar is 7m and radius of the base is 1.4m.

A. $112.3cm^2$

B. $123.2m^2$

C. $90m^2$

D. $345.2cm^2$

Answer: B

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4. 

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said in this monument one can find combination of solid figures. There are 2 pillars which are cylindrical in shape. Also 2 domes at the corners which are hemispherical.7 smaller domes at the centre. Flag hoisting ceremony on Independence Day takes place near these domes.

How much is the volume of a hemisphere if the radius of the base is 3.5m?

A. $85.9m^3$

B. $80m^3$

C. $98m^3$

D. $89.83m^3$

Answer: D

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5. 

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interest in history as well. She narrated the facts of Red fort to students. Then the teacher said in this monument one can find combination of solid figures. There are 2 pillars which are cylindrical in shape. Also 2 domes at the corners which are hemispherical.7 smaller domes at the centre. Flag hoisting ceremony on Independence Day takes place near these domes.

What is the ratio of sum of volumes of two hemispheres of radius 1cm each to the volume of a sphere of radius 2 cm?

A. $1:1$

B. $1:8$

C. $8:1$

D. $1:16$

Answer: B

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6. The Class X students of a secondary school in Krishinagar have been allotted a rectangular plot of land for their gardening

activity. Sapling of Gulmohar are planted on the boundary at a distance of 1m from each other. There is a triangular gr

A. (0,1)

B. (1,0)

C. (0,0)

D. (-1, -1)

Answer: C

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7. The Class X students of a secondary school in Krishinagar have been allotted a rectangular plot of land for their gardening activity. Sapling of Gulmohar are planted on the boundary at a distance of 1m from each other. There is a triangular gr

A. (4,6)

B. (6,4)

C. (4,5)

D. (5,4)

Answer: A

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8. The Class X students of a secondary school in Krishinagar have been allotted a rectangular plot of land for their gardening activity. Sapling of Gulmohar are planted on the boundary at a distance of 1m from each other. There is a triangular gr

A. (6,5)

B. (5,6)

C. (6,0)

D. (7,4)

Answer: A

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9. The Class X students of a secondary school in Krishinagar have been allotted a rectangular plot of land for their gardening activity. Sapling of Gulmohar are planted on

the boundary at a distance of 1m from each other. There is a triangular gr

A. (16,0)

B. (0,0)

C. (0,16)

D. (16,1)

Answer: A

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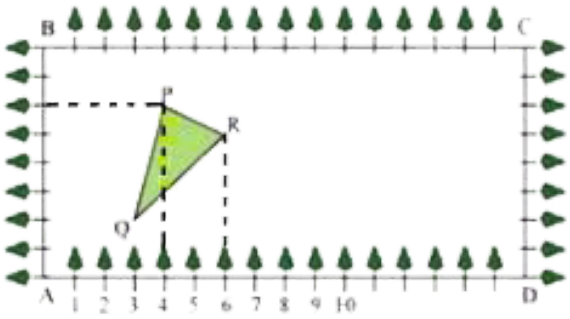
10. Class X students of a secondary school in Krishnagar have been allotted a rectangular plot of a land for gardening activity. Saplings of Gulmohar are planted on the boundary at a distance of 1m from each other. There is a triangular grassy lawn in the plot as shown in the fig. The students are to sow seeds of flowering plants on the remaining area of the plot.



What are the coordinate of P if D is taken as the origin?

A. (12,2)

B. (-12,6)

C. (12,3)

D. (6,10)

Answer: B

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11.

Rahul is studying in X Standard. He is making a kite to fly it on a Sunday. Few questions came to his mind while making the kite. Give answers to his questions by looking at the

figure

Rahul tied the sticks at what angles to each other?

A. 30°

B. 60°

C. 90°

D. 60°

Answer: C

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12.

Rahul is studying in X Standard. He is making a kite to fly it on a Sunday. Few questions came to his mind while making the kite. Give answers to his questions by looking at the figure

Which is the correct similarity criteria

applicable for smaller triangles at the upper part of this kite?

A. RHS

B. SAS

C. SSA

D. AAS

Answer: B

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13.

Rahul is studying in X Standard. He is making a kite to fly it on a Sunday. Few questions came to his mind while making the kite. Give answers to his questions by looking at the figure

Sides of two similar triangles are in the ratio

4:9. Corresponding medians of these triangles are in the ratio,

A. $2:3$

B. $4:9$

C. $81:16$

D. $16:81$

Answer: B

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14.

Rahul is studying in X Standard. He is making a kite to fly it on a Sunday. Few questions came to his mind while making the kite. Give answers to his questions by looking at the figure

In a triangle, if square of one side is equal to

the sum of the squares of the other two sides, then the angle opposite the first side is a right angle. This theorem is called as,

A. Pythagoras theorem

B. Thales theorem

C. Converse of Thales theorem

D. Converse of Pythagoras theorem

Answer: D

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15.

Rahul is studying in X Standard. He is making a kite to fly it on a Sunday. Few questions came to his mind while making the kite. Give answers to his questions by looking at the figure

What is the area of the kite, formed by two perpendicular sticks of length 6 cm and 8 cm?

A. $48cm^2$

B. $14cm^2$

C. $24cm^2$

D. $96cm^2$

Answer: A

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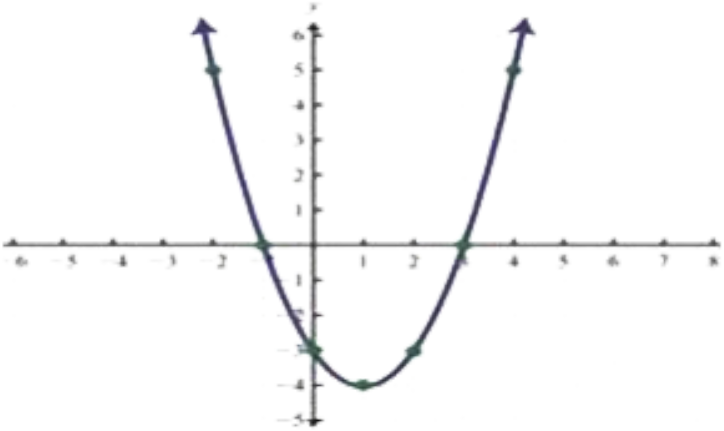
16. Due to heavy storm an electric wire got bent as shown in the figure. It followed a mathematical shape. Answer the following questions below



Name the shape in which the wire is bent

A. Spiral

B. ellipse

C. linear

D. Parabola

Answer: D

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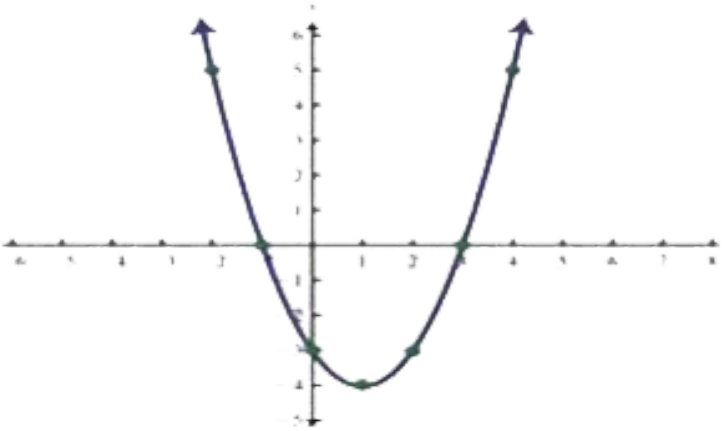
17. Due to heavy storm an electric wire got bent as shown in the figure. It followed a mathematical shape. Answer the following questions below



How many zeroes are there for the polynomial

(shape of the wire)

A. 2

B. 3

C. 1

D. 0

Answer: A

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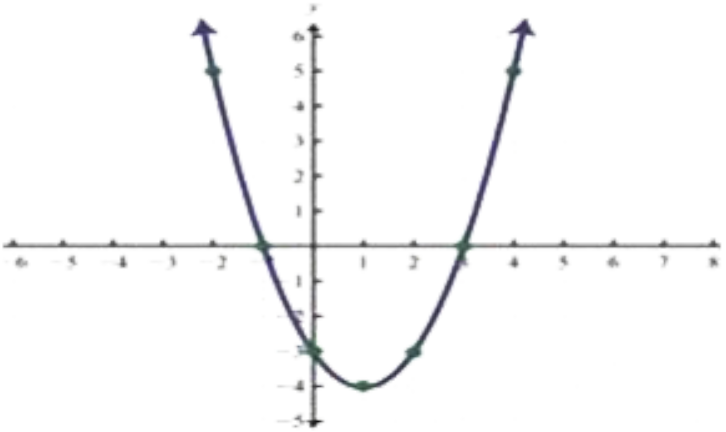
18. Due to heavy storm an electric wire got bent as shown in the figure. It followed a mathematical shape. Answer the following questions below



The zeroes of the polynomial are

A. $-1, 5$

B. $-1, 3$

C. $3, 5$

D. $-4, 2$

Answer: B

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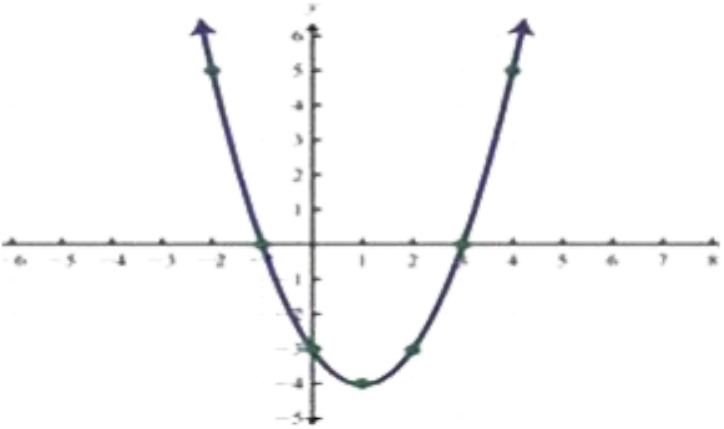
19. Due to heavy storm an electric wire got bent as shown in the figure. It followed a mathematical shape. Answer the following questions below



What will be the expression of the polynomial?

A. $x^2 + 2x - 3$

B. $x^2 - 2x + 3$

C. $x^2 - 2x - 3$

D. $x^2 + 2x + 3$

Answer: C

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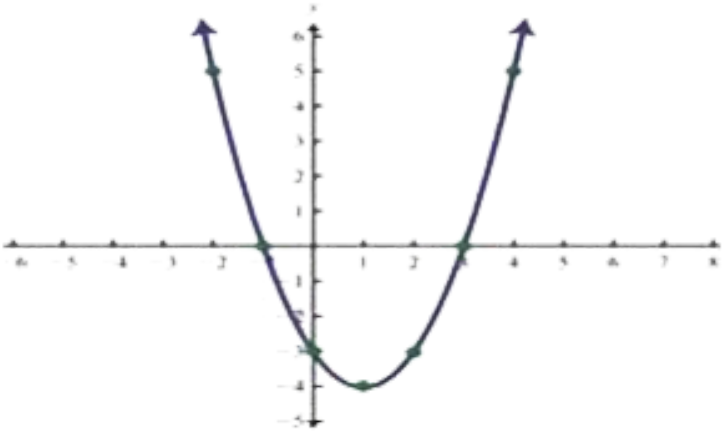
20. Due to heavy storm an electric wire got bent as shown in the figure. It followed a mathematical shape. Answer the following

questions below



What is the value of the polynomial if x = -1?

A. 6

B. -18

C. 18

D. 0

Answer: D

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Part B

1. Find the coordinates of the point which divides the line segment joining the points (4, -3) and (8,5) in the ratio 3:1 internally.

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2. Find a relation between x and y such that the point (x ,y) is equidistant from the points (7, 1) and (3, 5).

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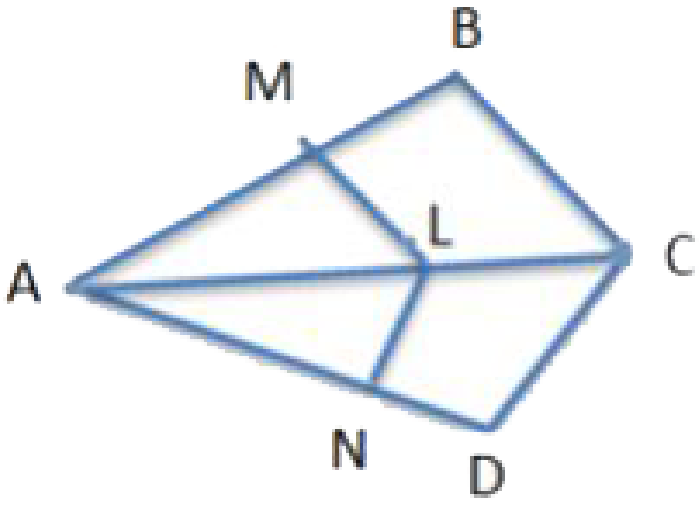
3.



In the fig. if LM || CB and LN || CD, prove that

$$\frac{AM}{AB} = \frac{AN}{AD}$$

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

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5. Draw a line segment of length 7.8 cm and divide it in the ratio 5:8. Measure the two

parts.

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6. Given $15 \cot A = 8$, find $\sin A$ and $\sec A$.

A. $\frac{15}{17}$ and $\frac{17}{8}$

B. $\frac{17}{15}$ and $\frac{17}{8}$

C. $\frac{15}{17}$ and $\frac{8}{17}$

D. can not find from the given information

Answer: A

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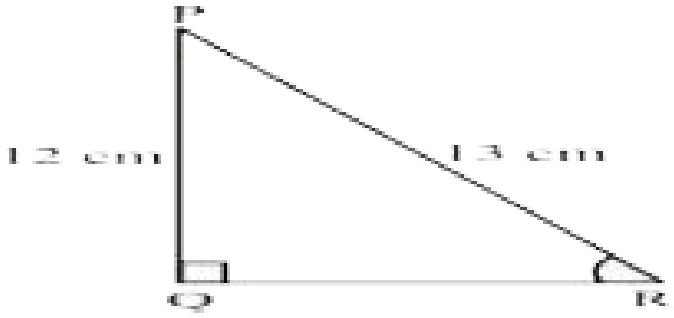
7. Find tan P – cot R



A. $\frac{-119}{60}$

B. $\frac{5}{12}$

C. 0

D. 1

Answer: C

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8. How many terms of the AP: 9, 17, 25, . . . must be taken to give a sum of 636?

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9. Prove that $\sqrt{3}$ is an irrational number

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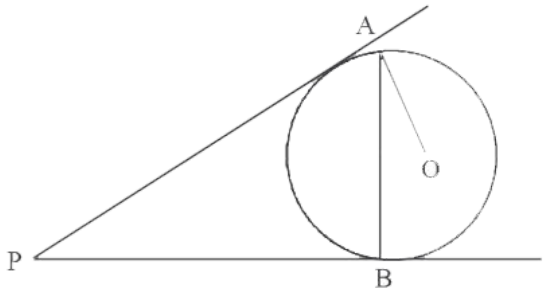
10. Two tangents PA and PB are drawn to a circle with centre O from an external point P. Prove that $\angle APB = 2\angle OAB$



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11. Meena went to a bank to withdraw Rs.2,000. She asked the cashier to give her Rs.50 and

Rs.100 notes only. Meena got 25 notes in all. Find how many notes of Rs.50 and Rs.100 she received.

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12. 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 (i) a two-digit number (ii) a perfect square number (iii) a number divisible by 5.

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13. 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 spade (iii) The queen of diamonds

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14. Metallic spheres of radii 6cm, 8cm and 10cm respectively are melted to form a solid sphere. Find the radius of the resulting sphere.

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15. Prove that $\frac{\sin A - \cos A + 1}{\sin A + \cos A - 1} = \frac{1}{\sec A - \tan A}$

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16. A motor boat whose speed in still water is 18 km/h, takes 1 hour more to go 24 km upstream than to return downstream to the same spot. Find the speed of the stream.

A. 6 km/h

B. 8 km/h

C. 10 km/h

D. 12 km/h

Answer: A

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17. Find two consecutive odd positive integers, sum of whose squares is 290

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

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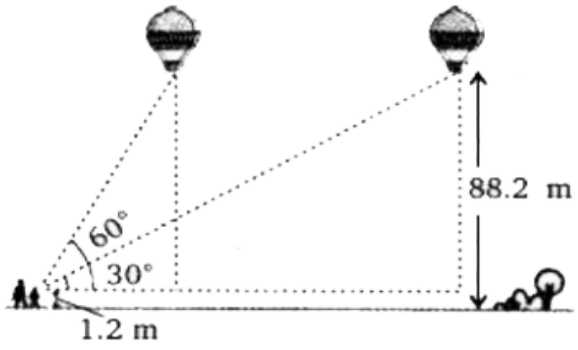
19. A 1.2m tall girl spots a balloon moving with the wind in a horizontal line at a height 88.2 m from the ground. The angle of elevation of the balloon from the eyes of the girl at any instant is 60°.After sometime, the angle of elevation reduces 30°.Find the distance travelled by the balloon during the interval.



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20. The pth, qth and rth terms of an A.P. are a, b and c respectively. Show that $a(q - r) + b(r-p) + c(p - q) = 0$

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21. A survey regarding the heights in (cm) of 51 girls of class X of a school was conducted and the following data was obtained. Find the median height and the mean using the

formulae

Height (in cm)	Number of Girls
Less than 140	4
Less than 145	11
Less than 150	29
Less than 155	40
Less than 160	46
Less than 165	51

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