MATHS

BOOKS - OSWAL PUBLICATION

SAMPLE PAPER 4

Question Bank

1. If one zero of the quadratic polynomial $x^2 - 5x - 6$ is 6 then find the other zero

A. 0

B. -1

C. 1

D. 2

Answer: B

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2. If two positive integers a and b can be expressed as

$a = x^2y^5$ and $b = x^3y^2$, $wherex, y$ are prime numbers, then find LCM of a and b.

A. x^3y^5

B. x^5y^7

C. x^5y^5

D. `x^3y^2

Answer: A

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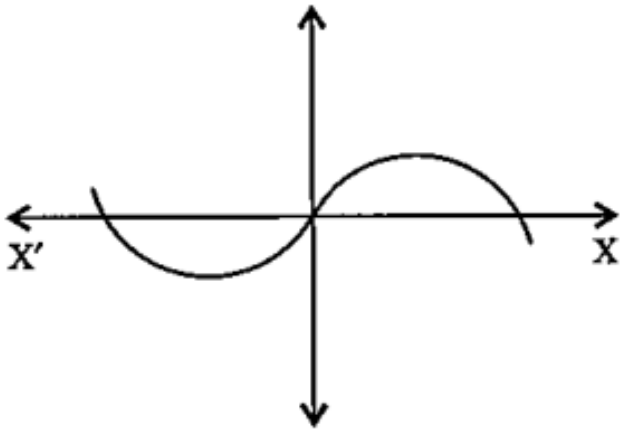
3. What are the number of zeroes/zero of the polynomial y=f(x), of the graph shown below.



A. 3

B. 4

C. 2

D. 1

Answer: A

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4. If the HCF of (336,54)=6, find the LCM (336,54)

A. 306

B. 3224

C. 3024

D. 3500

Answer: C

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5. The circumference of a circle is 22 cm. Find the area of its quadrant.

A. $\frac{77}{8}$

B. $\frac{22}{7}$

C. 78

D. 156

Answer: A

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6. Determine the probability of getting a number which is neither prime nor composite in single throw of a fair dice.

A. $\frac{1}{4}$

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

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

D. $\frac{1}{5}$

Answer: C

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7. A wire is in the shape of a circle of radius 21 cm. It is bent to form a square. The side of the square is : $\left(\pi = \frac{22}{7}\right)$

A. 33 cm

B. 44 cm

C. 66 cm

D. 100 cm

Answer: A

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8. Find the common difference of an A.P. in which $a_{10} - a_8 = 12$.

A. 0

B. 1

C. 2

D. 6

Answer: D

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9. If the difference between the circumference and the radius of a circle is 37 cm, then using $\pi = \frac{22}{7}$, what would be the radius of the circle (in cm)?

A. 3.5 cm

B. 7 cm

C. 14 cm

D. 21 cm

Answer: B

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10. If $P(E) = 0.05$ P(E) = 0.05, what is the probability of not E?

A. 0.05

B. 0.01

C. 0.9

D. 0.95

Answer: D

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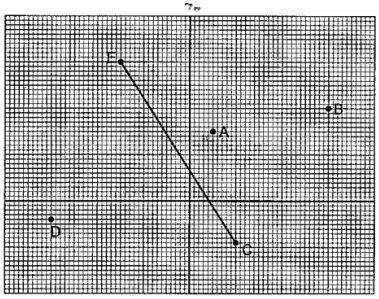
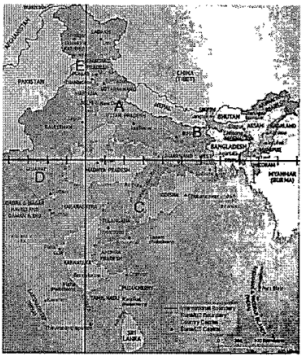
11. For a Math Activity of class X students, teacher show a political map of India on projector screen then ask the student that how many states they have visited in India,

then ask to observe the map carefully and assign them to locate the coordinates of capital to each state. Based on information given in map. Answer the question given below.

Consider 1 block as 1000 km.





Find the distance between mobile communication tower in states Bihar and

Gujrat, if these are located at B(6, 4) and D(-6, -1) is:

A. 1000 km

B. 13000 km

C. 500 km

D. 2000 km

Answer: B

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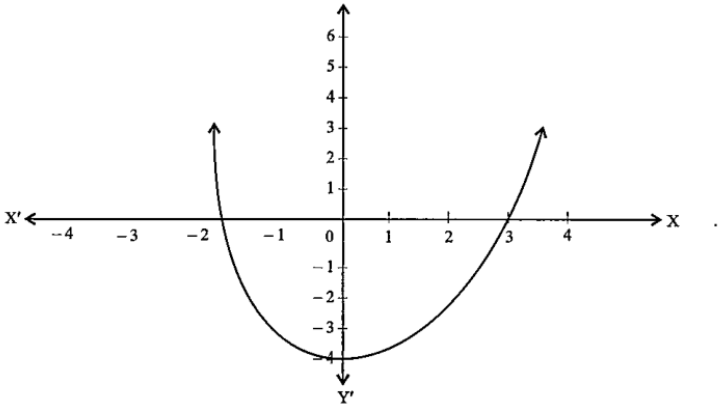
12. On a sudden windy night, the electricity of the whole town got crashed. On the next morning, Rahul went out and found some electric wires are hanging, it reminded him of a mathematical shape, which is shown in the figure.



To which shape this wire bends, resembles?

A. Spiral

B. Circle

C. Hyperbola

D. Parabola

Answer: D

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13. If one of the zeroes of the quadratic polynomial $(k-1)x^2 + kx + 1$ is -3 ,then the value of k is

A. $3/4$

B. $4/3$

C. $3/2$

D. $2/4$

Answer: B

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14. If HCF of 65 and 117 is expressible in the form $65m - 117$, then the value of m is

A. 4

B. 2

C. 1

D. 3

Answer: B

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15. Write whether $\frac{2\sqrt{45}+3\sqrt{20}}{2\sqrt{5}}$ on simplification gives a rational or an irrational

number.

A. Rational number

B. Irrational number

C. Both (a) and (b)

D. None of these

Answer: A

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16. Out of the following, the incorrect statement for a quadratic polynomial is:

A. no real zeroes

B. two equal real zeroes

C. two distinct zeroes

D. three real zeroes

Answer: A

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17. Solve the following pair of linear equations by substitution method: $x + 2y = 2, x - 3y = 7$ find the value of x.

A. 2

B. 1

C. 4

D. 0

Answer: C

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18. If the points A(x, 2), B(-3, -4) and C(7, -5) are collinear then the value of x is ?

A. -63

B. 63

C. -60

D. 60

Answer: A

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19. If the HCF of two numbers is 2 and their LCM is 27, what is the product of the two numbers?

A. 54

B. 27

C. 45

D. 82

Answer: A

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20. The perimeter of the triangle with vertices $(0, 4), (0, 0)$ and $(3, 0)$ is

A. 3

B. 5

C. 10

D. 12

Answer: D

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21. What is the y coordinate of the mid-point of A(-1, 3) and B(1, -1)?

A. 1

B. 2

C. 3

D. 4

Answer: A

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22. The roots of the equation $ax^2 + bx + c = 0$ will be reciprocal of each other if

A. a=c

B. a=b

C. b=c

D. a+c=0

Answer: A

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23. In a right angled triangle ABC, right angled at B, AB=3, BC=x+2 and AC=x+3. Then find the value of x:

A. 4

B. 2

C. 1

D. 3

Answer: B

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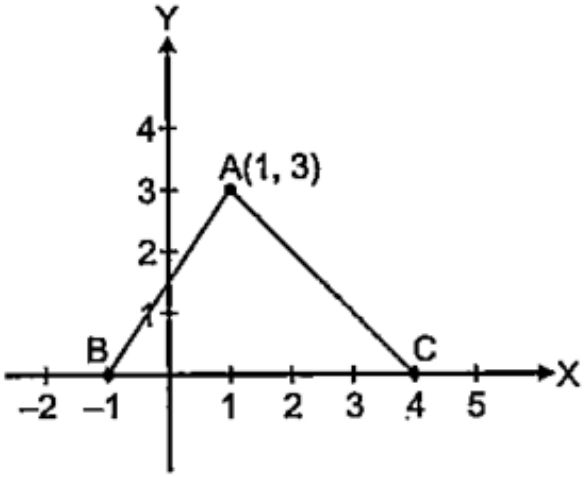
24. The area of the triangle in the given figure (in sq. units) is:



A. 15

B. 10

C. 7.5

D. 2.5

Answer: C

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25. One card is drawn from a well-shuffled deck of 52 cards. What is the probability of getting a king card?

A. $1/13$

B. $1/3$

C. $1/3$

D. $1/2$

Answer: A

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26. If a be any composite number then $\sqrt{a}$ is always:

A. Rational

B. Irrational

C. Both a and B

D. None of these

Answer: C

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27. The probability that number selected at random from the numbers 1,2,3,...,15 is a multiple of 4, is

A. 1/5

B. 1/3

C. 1/4

D. 1/2

Answer: A

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28. If HCF of two numbers is 1 , the number are called relatively _____ or ____

A. Composite

B. relatively prime or co-prime

C. perfect

D. irrational numbers

Answer: B

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29. The area of the circle that can be inscribed in a square of side 6 cm is

A. $2\pi cm^2$

B. $3\pi cm^2$

C. $9\pi cm^2$

D. $4\pi cm^2$

Answer: C

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30. If -4 is a zero of the polynomial $x^2 - x - (2k + 2)$, then find the value of k.

A. 3

B. 9

C. 6

D. -9

Answer: B

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31. If the point C(k, 4) divides the join of A(2, 6) and B(5, 1) in the ratio 2:3 then find the value of k.

A. 16

B. $\frac{28}{5}$

C. $\frac{16}{5}$

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

Answer: C

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32. The distance of the point (-3, 4) from x -axis is

A. 3

B. -3

C. 4

D. 5

Answer: C

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33. Someone is asked to take number from 1 to 100. The probablity that it is a prime, is

A. 1/5

B. 6/25

C. 1/4

D. 13/50

Answer: C

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34. If $3^{x-6} = 9$ and $3^{x+y} = 81$, then value of y is:

A. -4

B. 2

C. 3

D. 4

Answer: A

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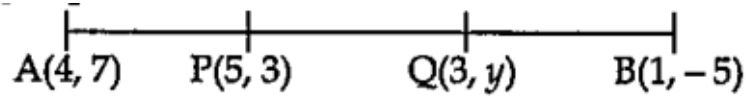
35. In the given figure P(5, -3) and Q(3, y) are the points of trisection of the line segment joining A(4, 7) and B(1, -5). Then y equals:



A. 2

B. 4

C. -4

D. $-\frac{5}{2}$

Answer: C

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36. If θ is an acute angle and $6 + 4\sin\theta = 8$, then the value of θ:

A. 90°

B. 30°

C. 45°

D. 60°

Answer: B

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37. If the coordinates of one end of a diameter of a circle are (2, 3) and the coordinates of its centre are (-2,5), then the coordinates of the other end of the diameter are

A. (-6, 7)

B. (6, -7)

C. (6, 7)

D. (-6, -7)

Answer: A

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38. Graphically x-3=0 represents a line:

A. parallel to x-axis at a distance 3 units from x-axis

B. parallel to y-axis at a distance 3 units from y-axis

C. parallel to x-axis at a distance 3 units from y-axis

D. parallel to y-axis at a distance 3 units from x-axis

Answer: B

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39. The coordinates of the point P dividing the line segment joining the points A(1, 3) and B(4, 6) in the ratio 2:1 is

A. (2, 4)

B. (3, 5)

C. (4, 2)

D. (5, 3)

Answer: B

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40. A pair of linear equations is said to be inconsistent if it has:

A. only one solution

B. no solution

C. infinitely many solutions

D. both a and c

Answer: B

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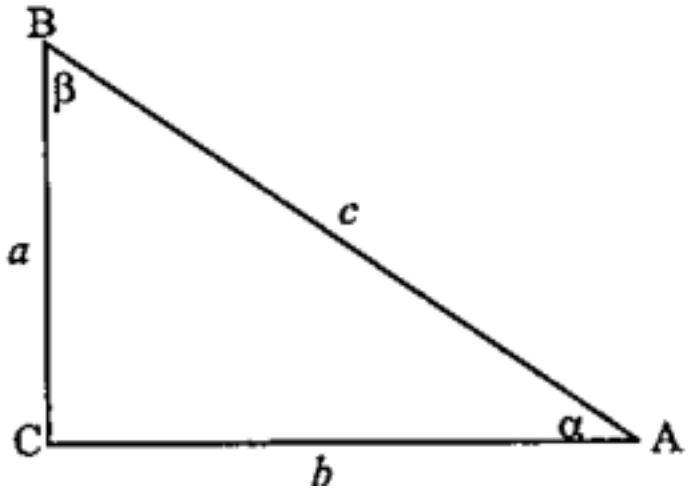
41. Case Study-1: Consider a right triangle, where a and b are its length, and base and c is its hypotenuse as shown below. When we observe and apply the trigonometric functions to make a relationship between angles and sides of the right triangle. We can obtain the results as per the calculations and the table depicted below.



If the right angle of the right triangle ABC is at the point C, then the sine (sin), cosine (cos) and tangent (tan) of the angles α (at the point A) and β (at the point B). It should be noted that sin α cos β are the equal and same goes for sin α and cos β. So, to find sine of the angle, we divided the side that is opposite of that angle and the hypotenuse. To find the

cosine of the angle, we divide the side that makes that angle (adjacent side) by the hypotenuse.

Thus,

$$\sin \alpha = a/c \qquad \sin \beta = b/c$$
$$\cos \alpha = b/c \qquad \cos \beta = a/c$$
$$\tan \alpha = a/b \qquad \tan \beta = b/a$$

Answer the following questions :

If sides a and b of a right triangle are 3 cm and 4 cm, respectively, find the value of cosine of α.

A. 4/5

B. 3/5

C. 4/3

D. 3/4

Answer: A

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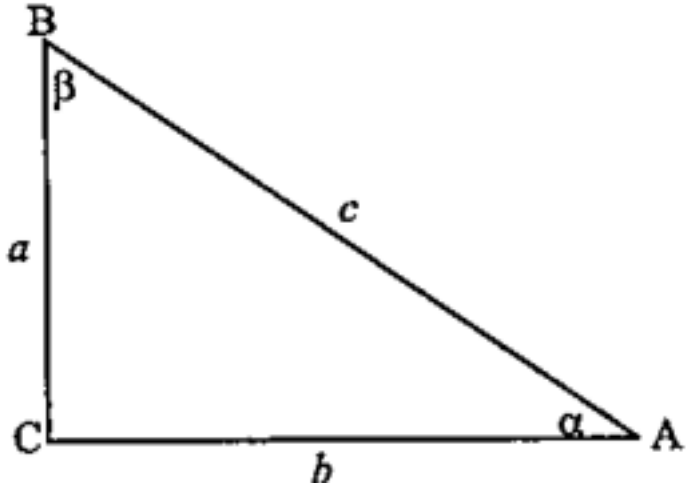
42. Case Study-1: Consider a right triangle, where a and b are its length, and base and c is its hypotenuse as shown below. When we observe and apply the trigonometric functions to make a relationship between angles and sides of the right triangle. We can obtain the

results as per the calculations and the table depicted below.



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$$\sin \alpha = a/c \qquad \sin \beta = b/c$$
$$\cos \alpha = b/c \qquad \cos \beta = a/c$$
$$\tan \alpha = a/b \qquad \tan \beta = b/a$$

Answer the following questions :

Find the tangent of the angle α of a right triangle, if a is 3 and b is 4.

A. 1/4

B. 5/3

C. 4/3

D. 3/4

Answer: D

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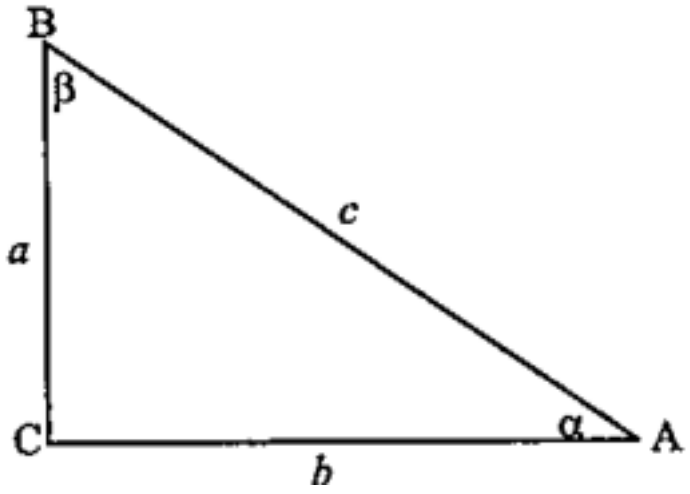
43. Case Study-1: Consider a right triangle, where a and b are its length, and base and c is its hypotenuse as shown below. When we observe and apply the trigonometric functions to make a relationship between angles and

sides of the right triangle. We can obtain the results as per the calculations and the table depicted below.



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for sin α and cos β. So, to find sine of the angle, we divided the side that is opposite of that angle and the hypotenuse. To find the cosine of the angle, we divide the side that makes that angle (adjacent side) by the hypotenuse.

Thus,

$\sin \alpha = a/c$	$\sin \beta = b/c$
$\cos \alpha = b/c$	$\cos \beta = a/c$
$\tan \alpha = a/b$	$\tan \beta = b/a$

Answer the following questions :

Find the value of $\sin \alpha + \sin \beta$.

A. 25/12

B. 5/3

C. 7/5

D. 3/20

Answer: C

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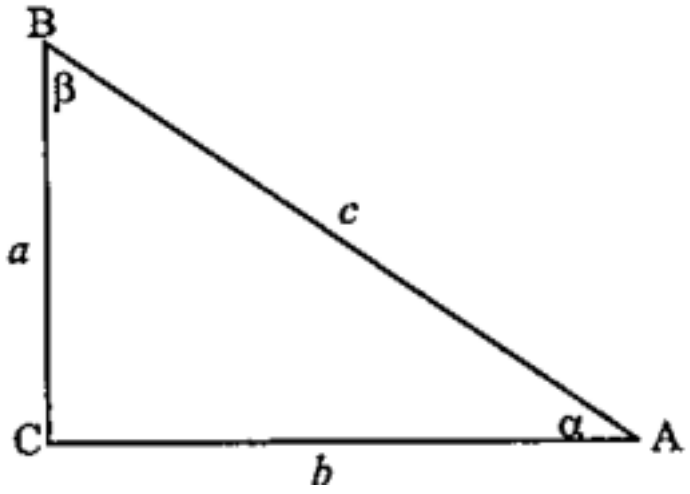
44. Case Study-1: Consider a right triangle, where a and b are its length, and base and c is its hypotenuse as shown below. When we observe and apply the trigonometric functions to make a relationship between angles and

sides of the right triangle. We can obtain the results as per the calculations and the table depicted below.



If the right angle of the right triangle ABC is at the point C, then the sine (sin), cosine (cos) and tangent (tan) of the angles α (at the point A) and β (at the point B). It should be noted that sin α cos β are the equal and same goes

for sin α and cos β. So, to find sine of the angle, we divided the side that is opposite of that angle and the hypotenuse. To find the cosine of the angle, we divide the side that makes that angle (adjacent side) by the hypotenuse.

Thus,

$\sin \alpha = a/c$	$\sin \beta = b/c$
$\cos \alpha = b/c$	$\cos \beta = a/c$
$\tan \alpha = a/b$	$\tan \beta = b/a$

Answer the following questions :

Calculate $\tan \alpha + \tan \beta$.

A. 25/12

B. 12/25

C. 7/12

D. 12/7

Answer: A

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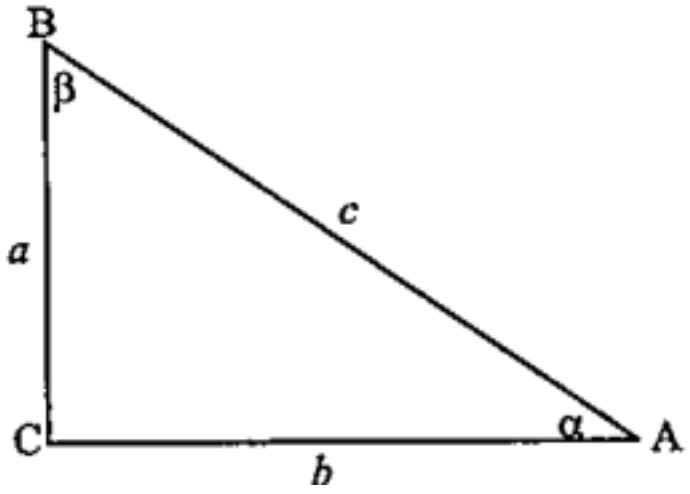
45. Case Study-1: Consider a right triangle, where a and b are its length, and base and c is its hypotenuse as shown below. When we observe and apply the trigonometric functions to make a relationship between angles and

sides of the right triangle. We can obtain the results as per the calculations and the table depicted below.



If the right angle of the right triangle ABC is at the point C, then the sine (sin), cosine (cos) and tangent (tan) of the angles α (at the point A) and β (at the point B). It should be noted that sin α cos β are the equal and same goes

for sin α and cos β. So, to find sine of the angle, we divided the side that is opposite of that angle and the hypotenuse. To find the cosine of the angle, we divide the side that makes that angle (adjacent side) by the hypotenuse.

Thus,

$$\sin \alpha = a/c \qquad \sin \beta = b/c$$
$$\cos \alpha = b/c \qquad \cos \beta = a/c$$
$$\tan \alpha = a/b \qquad \tan \beta = b/a$$

Answer the following questions :

Find the sum of $\cos \alpha + \cos \beta$ of right angled triangle, if the lengths a and b are increased twice of their original values.

A. 5/7

B. 5/6

C. 3/5

D. 7/5

Answer: C

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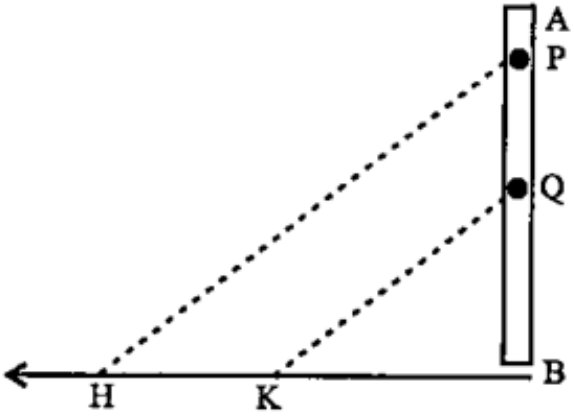
46. Case Study-2: Two spotlight, in a locality are mounted on a vertical pole as shown in the figure.



Here P and Q are the light, mounted on a vertical pole AB as shown. Light beams from P and Q shine to two points on a ground, H and K respectively.

Here, PQ=16 cm, KB=16 cm, PH=35 cm and QK=20 cm.

Answer the following questions:

The height at which spotlight Q is mounted from the ground?

A. 12 cm

B. 14 cm

C. 16 cm

D. 18 cm

Answer: A

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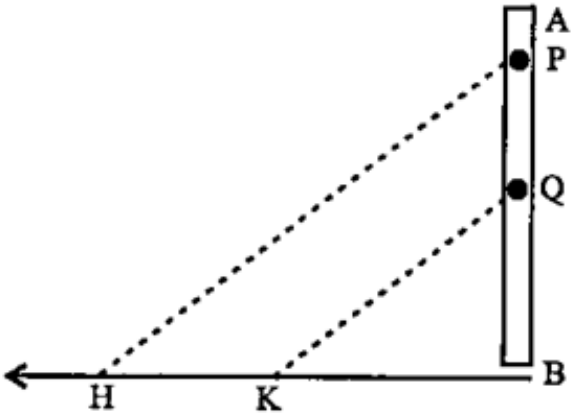
47. Case Study-2: Two spotlight, in a locality are mounted on a vertical pole as shown in the figure.



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Here, PQ=16 cm, KB=16 cm, PH=35 cm and

QK=20 cm.

Answer the following questions:

The height at which spotlight P is mounted on the pole from the ground?

A. 28 cm

B. 29 cm

C. 30 cm

D. 31 cm

Answer: A

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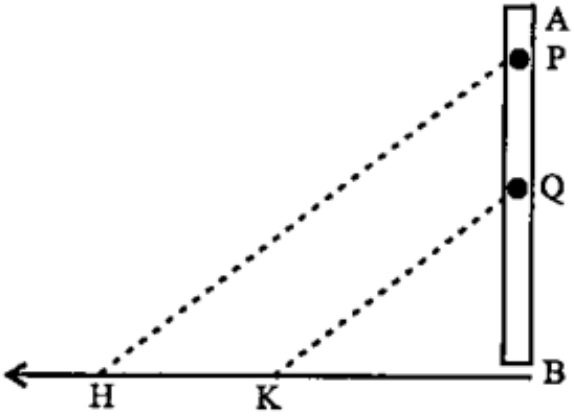
48. Case Study-2: Two spotlight, in a locality are mounted on a vertical pole as shown in the figure.



Here P and Q are the light, mounted on a vertical pole AB as shown. Light beams from P and Q shine to two points on a ground, H and K respectively.

Here, PQ=16 cm, KB=16 cm, PH=35 cm and QK=20 cm.

Answer the following questions:

Calculate the distance on the ground, from the pole where the projection made by the spotlight P.

A. 21 cm

B. 38 cm

C. 18 cm

D. 12 cm

Answer: A

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49. Two spotlights, P and Q are mounted on a vertical pole AB as shown.

Light beams from P and Q shine to two points on the ground, H and K, respectively. Given that PQ = 16m, KB = 16m, PH = 35m and QK = 20m, Find:

HK, the distance between the projections of the light beams.

A. 5 cm

B. 4 cm

C. 2 cm

D. 1 cm

Answer: A

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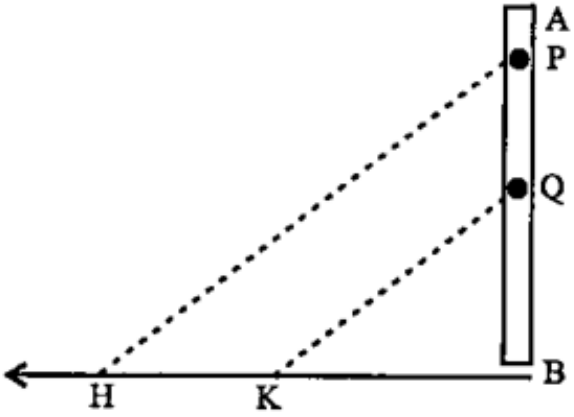
50. Case Study-2: Two spotlight, in a locality are mounted on a vertical pole as shown in the figure.



Here P and Q are the light, mounted on a vertical pole AB as shown. Light beams from P and Q shine to two points on a ground, H and K respectively.

Here, PQ=16 cm, KB=16 cm, PH=35 cm and QK=20 cm.

Answer the following questions:

Are the ΔKBQ and HBP similar, is so by which property?

A. Similar, RHS

B. Similar, SAS

C. Similar, AAA

D. Not similar

Answer: D

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51. If one zero of the quadratic polynomial $x^2 - 5x - 6$ is 6 then find the other zero

A. 0

B. -1

C. 1

D. 2

Answer: B

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52. If two positive integers a and b can be expressed as $a = x^2y^5$ and $b = x^3y^2, wherex, y$ are prime numbers, then find LCM of a and b.

A. x^3y^5

B. x^5y^7

C. x^5y^5

D. `x^3y^2

Answer: A

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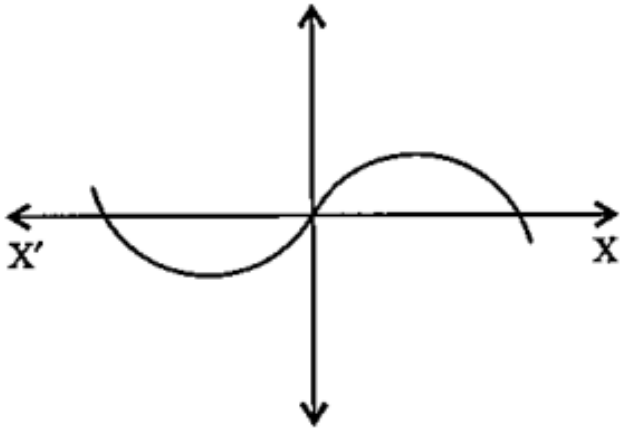
53. What are the number of zeroes/zero of the polynomial y=f(x), of the graph shown below.



A. 3

B. 4

C. 2

D. 1

Answer: A

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54. If the HCF of (336,54)=6, find the LCM (336,54)

A. 306

B. 3224

C. 3024

D. 3500

Answer: C

Watch Video Solution

55. The circumference of a circle is 22 cm. Find the area of its quadrant (in cm^2).

A. $\frac{77}{8}$

B. $\frac{22}{7}$

C. 78

D. 156

Answer: A

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56. Find the proability of getting a number which is neither prime nor composite in a single throw of dice.

A. $\frac{1}{4}$

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

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

D. $\frac{1}{5}$

Answer: C

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57. A wire is in the shape of a circle of radius 21 cm. It is bent to form a square. The side of the square is : $\left(\pi = \frac{22}{7}\right)$

A. 33 cm

B. 44 cm

C. 66 cm

D. 100 cm

Answer: A

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58. Find the common difference of an A.P. in which $a_{10} - a_8 = 12$.

A. 0

B. 1

C. 2

D. 6

Answer: D

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59. If the difference between the circumference and the radius of a circle is 37 cm, then using $\pi = \frac{22}{7}$, what would be the radius of the circle (in cm)?

A. 3.5 cm

B. 7 cm

C. 14 cm

D. 21 cm

Answer: B

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60. If P(E)=0.05, then what will be the probability of P(not E) or $P\left(\overline{E}\right)$?

A. 0.05

B. 0.01

C. 0.9

D. 0.95

Answer: D

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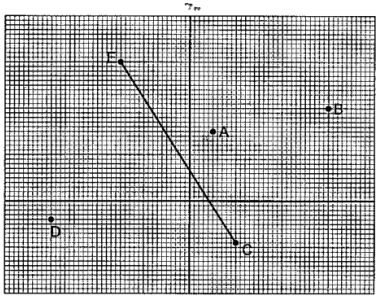
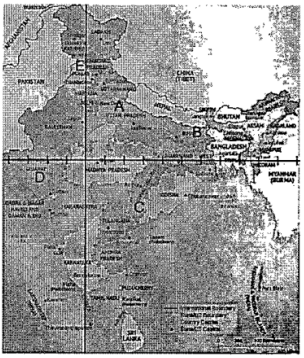
61. For a Math Activity of class X students, teacher show a political map of India on projector screen then ask the student that how many states they have visited in India,

then ask to observe the map carefully and assign them to locate the coordinates of capital to each state. Based on information given in map. Answer the question given below.

Consider 1 block as 1000 km.





Find the distance between mobile communication tower in states Bihar and

Gujrat, if these are located at B(6, 4) and D(-6, -1) is:

A. 1000 km

B. 13000 km

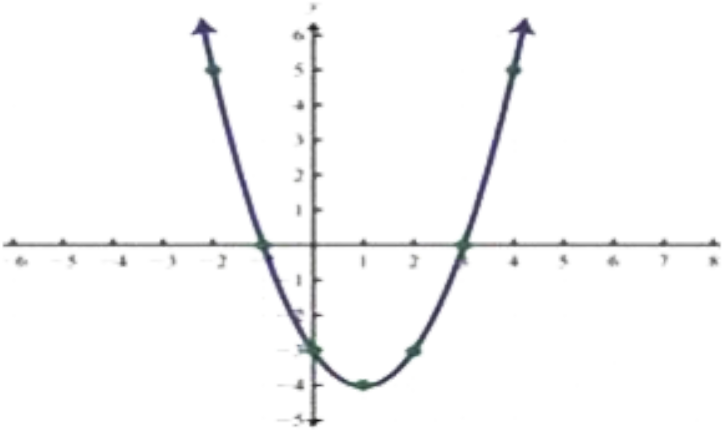
C. 500 km

D. 2000 km

Answer: B

Watch Video Solution

62. 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. Circle

C. Hyperbola

D. Parabola

Answer: D

Watch Video Solution

63. If one of the zeroes of the quadratic polynomial $(k-1)x^2 + kx + 1$ is -3, then find the value of k:

A. $3/4$

B. $4/3$

C. $3/2$

D. $2/4$

Answer: B

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64. If the HCF of 65 and 117 is expressible in the form 65m-117, then the value of 'm' is:

A. 4

B. 2

C. 1

D. 3

Answer: B

Watch Video Solution

65. Write whether $\frac{2\sqrt{45}+3\sqrt{20}}{2\sqrt{5}}$ on simplification gives a rational or an irrational number:

A. Rational number

B. Irrational number

C. Both (a) and (b)

D. None of these

Answer: A

Watch Video Solution

66. Out of the following, the incorrect statement for a quadratic polynomial is:

A. no real zeroes

B. two equal real zeroes

C. two distinct zeroes

D. three real zeroes

Answer: A

Watch Video Solution

67. Solve the following pair of linear equations by substitution method:

$x+2y=2$

$x-3y=7$

A. (2.1)

B. (1,0)

C. (4,-1)

D. (0,4)

Answer: C

Watch Video Solution

68. If the points A(x,2), B(-3, -4) and C(7, -5) are collinear, then the value of x is:

A. -63

B. 63

C. -60

D. 60

Answer: A

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69. If the HCF of two numbers is 2 and their LCM is 27, what is the product of the two numbers?

A. 54

B. 27

C. 45

D. 82

Answer: A

Watch Video Solution

70. The perimeter of a triangle with vertices A(0, 4), B(0, 0) and C(3, 0):

A. 3

B. 5

C. 10

D. 12

Answer: D

Watch Video Solution

71. What are the coordinates of the mid-point of A(-1, 3) and B(1, -1)?

A. (0,1)

B. (0,2)

C. (0,3)

D. (0,4)

Answer: A

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72. If zeroes of the quadratic polynomial $ax^2 + bx + c = 0$ are reciprocal of each other, then:

A. a=c

B. a=b

C. b=c

D. a+c=0

Answer: A

Watch Video Solution

73. In a right angled triangle ABC, right angled at B, AB=3, BC=x+2 and AC=x+3. Then find the value of x:

A. 4

B. 2

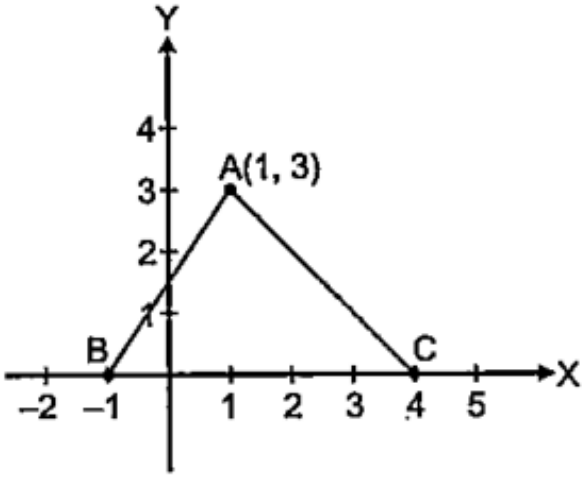
C. 1

D. 3

Answer: B

Watch Video Solution

74. The area of the triangle in the given figure (in sq. units) is:



A. 15

B. 10

C. 7.5

D. 2.5

Answer: C

Watch Video Solution

75. One card is drawn from a well-shuffled deck of 52 cards. What is the probability of getting a king card?

A. $1/13$

B. $1/3$

C. $1/3$

D. $1/2$

Answer: A

Watch Video Solution

76. If a be any composite number then $\sqrt{a}$ is always:

A. Rational

B. Irrational

C. Both a and B

D. None of these

Answer: C

Watch Video Solution

77. What is the probability that a number selected at random from the numbers 3, 4, 5, ..., 9 is a multiple of 4?

A. 1/5

B. 1/3

C. 1/4

D. 1/2

Answer: A

Watch Video Solution

78. IF the HCF of two numbers is 1, then the two numbers are called:

A. Composite

B. relatively prime or co-prime

C. perfect

D. irrational numbers

Answer: B

Watch Video Solution

79. The area of the circle that can be inscribed in a square of side 6 cm is

A. $2\pi cm^2$

B. $3\pi cm^2$

C. $9\pi cm^2$

D. $4\pi cm^2$

Answer: C

Watch Video Solution

80. If -4 is a zero of the polynomial $x^2 - x - (2k + 2)$, then find the value of k.

A. 3

B. 9

C. 6

D. -9

Answer: B

Watch Video Solution

81. If the point C(k, 4) divides the join of points A(2, 6) and B(5, 1) in the ratio 2:3, then the value of k is:

A. 16

B. $\frac{28}{5}$

C. $\frac{16}{5}$

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

Answer: C

Watch Video Solution

82. The distance of the point $(-3, 4)$ from the x-axis is : 3 (b) -3 (c) 4 (d) 5

A. 3

B. -3

C. 4

D. 5

Answer: C

Watch Video Solution

83. Someone is asked to take number from 1 to 100. The probablity that it is a prime, is

A. 1/5

B. 6/25

C. 1/4

D. 13/50

Answer: C

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84. If $3^{x-1} = 9$ and $3^{x+y} = 81$, then value of y is:

A. 1

B. 2

C. 3

D. 4

Answer: A

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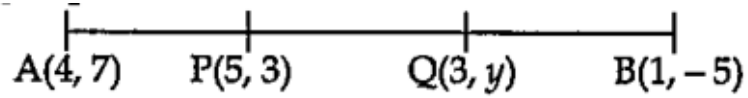
85. In the given figure P(5, -3) and Q(3, y) are the points of trisection of the line segment joining A(4,7) and B(1, -5). Then y equals:



A. 2

B. 4

C. -4

D. $-\frac{5}{2}$

Answer: C

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86. If θ is an acute angle and $6 + 4\sin\theta = 8$, then the value of θ:

A. 90°

B. 30°

C. 45°

D. 60°

Answer: B

Watch Video Solution

87. If the coordinates of one end of a diameter of a circle are (2, 3) and the coordinates of its centre are (-2,5), then the coordinates of the other end of the diameter are

A. (-6, 7)

B. (6, -7)

C. (6, 7)

D. (-6, -7)

Answer: A

Watch Video Solution

88. Graphically x-3=0 represents a line:

A. parallel to x-axis at a distance 3 units from x-axis

B. parallel to y-axis at a distance 3 units from y-axis

C. parallel to x-axis at a distance 3 units from y-axis

D. parallel to y-axis at a distance 3 units from x-axis

Answer: B

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89. The coordinates of the point P dividing the line segment joining the points A(1, 3) and B(4, 6) in the ratio 2 : 1 are:

A. (2, 4)

B. (3, 5)

C. (4, 2)

D. (5, 3)

Answer: B

 Watch Video Solution

90. The pair of linear equations is said to be inconsistent if they have:

A. only one solution

B. no solution

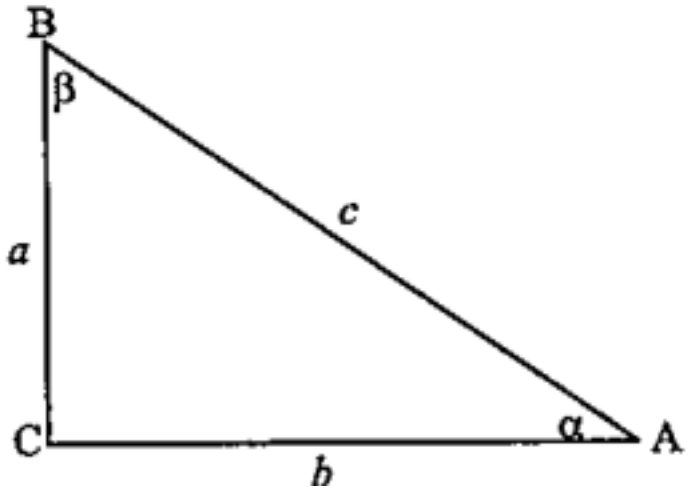
C. infinitely many solutions

D. both a and c

Answer: B

 Watch Video Solution

91. Case Study-1: Consider a right triangle, where a and b are its length, and base and c is its hypotenuse as shown below. When we observe and apply the trigonometric functions to make a relationship between angles and sides of the right triangle. We can obtain the results as per the calculations and the table depicted below.



If the right angle of the right triangle ABC is at the point C, then the sine (sin), cosine (cos) and tangent (tan) of the angles α (at the point A) and β (at the point B). It should be noted that sin α cos β are the equal and same goes for sin α and cos β. So, to find sine of the angle, we divided the side that is opposite of that angle and the hypotenuse. To find the

cosine of the angle, we divide the side that makes that angle (adjacent side) by the hypotenuse.

Thus,

$$\sin \alpha = a/c \qquad \sin \beta = b/c$$
$$\cos \alpha = b/c \qquad \cos \beta = a/c$$
$$\tan \alpha = a/b \qquad \tan \beta = b/a$$

Answer the following questions :

If sides a and b of a right triangle are 3 cm and 4 cm, respectively, find the value of cosine of α.

A. 4/5

B. 3/5

C. 4/3

D. 3/4

Answer: A

Watch Video Solution

92. Case Study-1: Consider a right triangle, where a and b are its length, and base and c is its hypotenuse as shown below. When we observe and apply the trigonometric functions to make a relationship between angles and sides of the right triangle. We can obtain the

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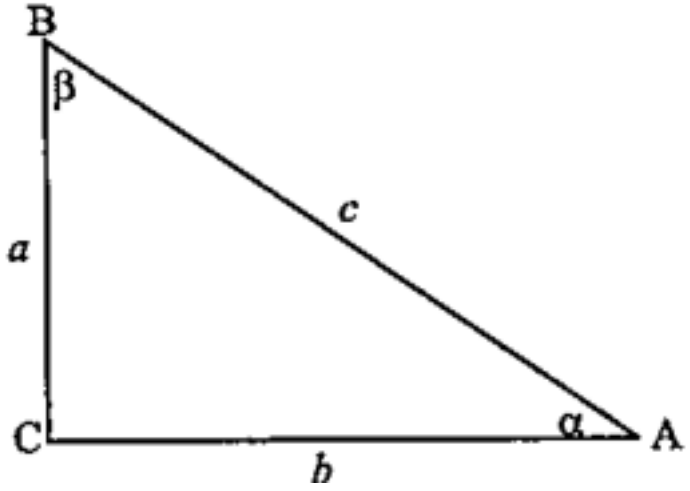

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Thus,

$$\sin \alpha = a/c \qquad \sin \beta = b/c$$
$$\cos \alpha = b/c \qquad \cos \beta = a/c$$
$$\tan \alpha = a/b \qquad \tan \beta = b/a$$

Answer the following questions :

Find the tangent of the angle α of a right triangle, if a is 3 and b is 4.

A. 1/4

B. 5/3

C. 4/3

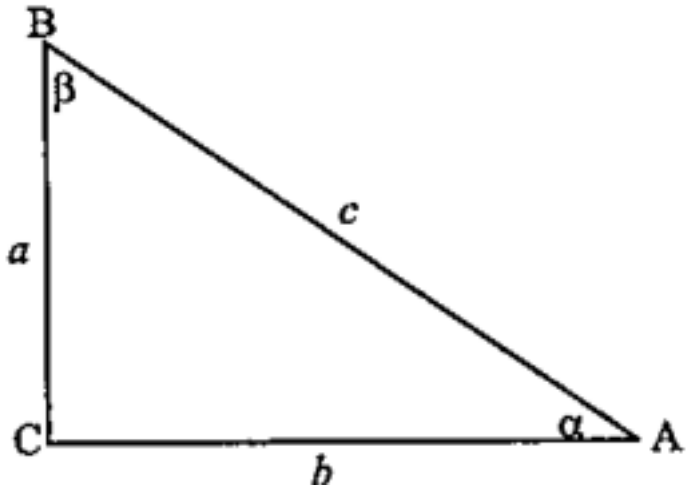
D. 3/4

Answer: D

Watch Video Solution

93. Case Study-1: Consider a right triangle, where a and b are its length, and base and c is its hypotenuse as shown below. When we observe and apply the trigonometric functions to make a relationship between angles and

sides of the right triangle. We can obtain the results as per the calculations and the table depicted below.



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Thus,

$\sin \alpha = a/c$	$\sin \beta = b/c$
$\cos \alpha = b/c$	$\cos \beta = a/c$
$\tan \alpha = a/b$	$\tan \beta = b/a$

Answer the following questions :

Find the value of $\sin \alpha + \sin \beta$.

A. 25/12

B. 5/3

C. 7/5

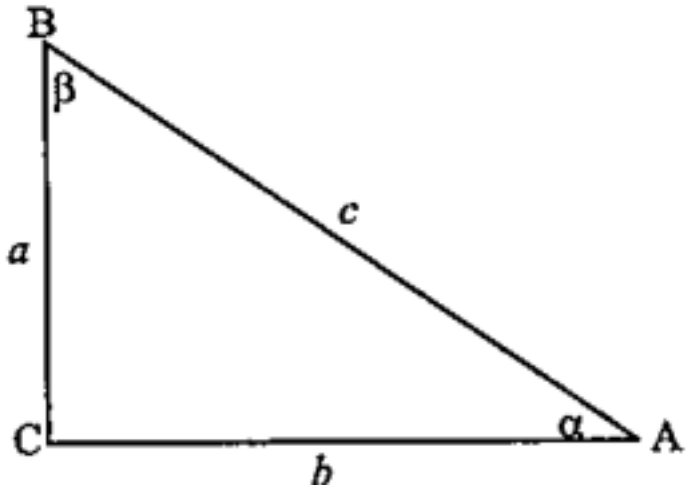
D. 3/20

Answer: C

Watch Video Solution

94. Case Study-1: Consider a right triangle, where a and b are its length, and base and c is its hypotenuse as shown below. When we observe and apply the trigonometric functions to make a relationship between angles and

sides of the right triangle. We can obtain the results as per the calculations and the table depicted below.



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Thus,

$\sin \alpha = a/c$	$\sin \beta = b/c$
$\cos \alpha = b/c$	$\cos \beta = a/c$
$\tan \alpha = a/b$	$\tan \beta = b/a$

Answer the following questions :

Calculate $\tan \alpha + \tan \beta$.

A. 25/12

B. 12/25

C. 7/12

D. 12/7

Answer: A

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95. Case Study-1: Consider a right triangle, where a and b are its length, and base and c is its hypotenuse as shown below. When we observe and apply the trigonometric functions to make a relationship between angles and

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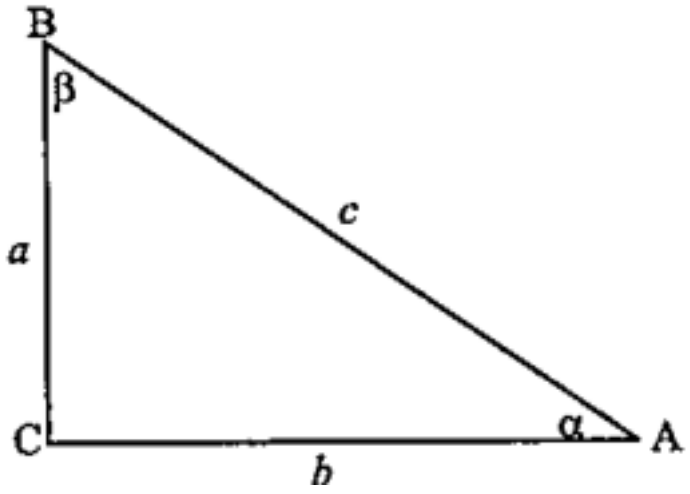

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Thus,

$$\sin \alpha = a/c \qquad \sin \beta = b/c$$
$$\cos \alpha = b/c \qquad \cos \beta = a/c$$
$$\tan \alpha = a/b \qquad \tan \beta = b/a$$

Answer the following questions :

Find the sum of $\cos \alpha + \cos \beta$ of right angled triangle, if the lengths a and b are increased twice of their original values.

A. 5/7

B. 5/6

C. 3/5

D. 7/5

Answer: C

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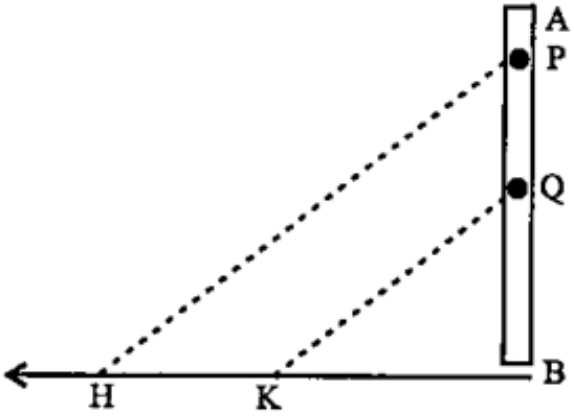
96. Case Study-2: Two spotlight, in a locality are mounted on a vertical pole as shown in the figure.



Here P and Q are the light, mounted on a vertical pole AB as shown. Light beams from P and Q shine to two points on a ground, H and K respectively.

Here, PQ=16 cm, KB=16 cm, PH=35 cm and QK=20 cm.

Answer the following questions:

The height at which spotlight Q is mounted from the ground?

A. 12 cm

B. 14 cm

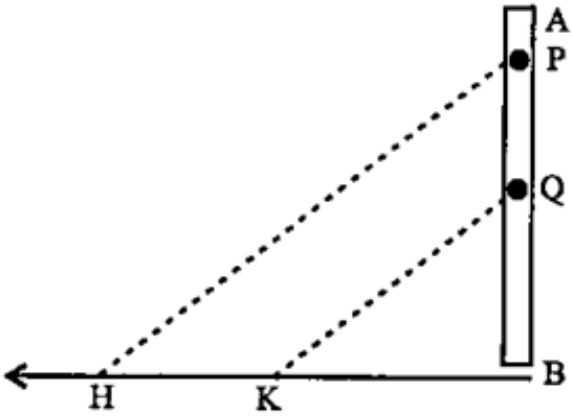
C. 16 cm

D. 18 cm

Answer: A

Watch Video Solution

97. Case Study-2: Two spotlight, in a locality are mounted on a vertical pole as shown in the figure.



Here P and Q are the light, mounted on a vertical pole AB as shown. Light beams from P and Q shine to two points on a ground, H and K respectively.

Here, PQ=16 cm, KB=16 cm, PH=35 cm and

QK=20 cm.

Answer the following questions:

The height at which spotlight P is mounted on the pole from the ground?

A. 28 cm

B. 29 cm

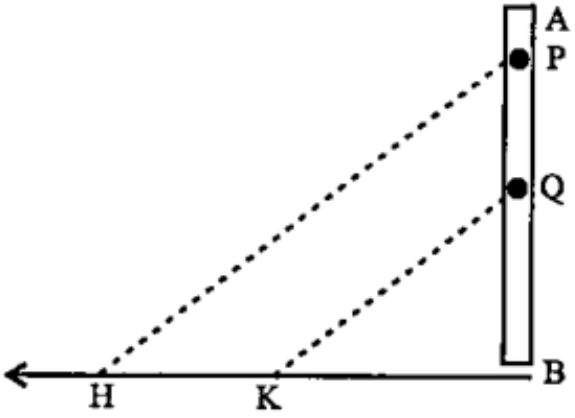
C. 30 cm

D. 31 cm

Answer: A

Watch Video Solution

98. Case Study-2: Two spotlight, in a locality are mounted on a vertical pole as shown in the figure.



Here P and Q are the light, mounted on a vertical pole AB as shown. Light beams from P and Q shine to two points on a ground, H and K respectively.

Here, PQ=16 cm, KB=16 cm, PH=35 cm and QK=20 cm.

Answer the following questions:

Calculate the distance on the ground, from the pole where the projection made by the spotlight P.

A. 21 cm

B. 38 cm

C. 18 cm

D. 12 cm

Answer: A

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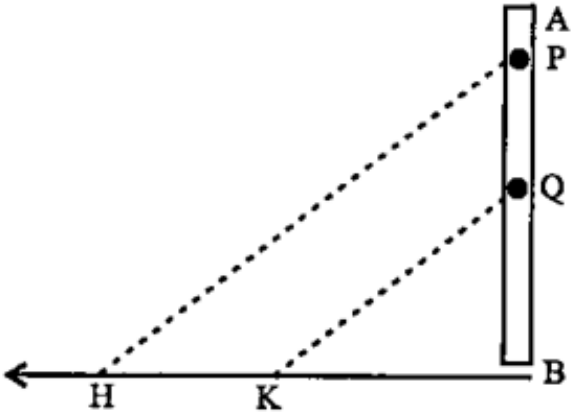
99. Case Study-2: Two spotlight, in a locality are mounted on a vertical pole as shown in the figure.



Here P and Q are the light, mounted on a vertical pole AB as shown. Light beams from P

and Q shine to two points on a ground, H and K respectively.

Here, PQ=16 cm, KB=16 cm, PH=35 cm and QK=20 cm.

Answer the following questions:

Find the distance between the projections of the light beam.

A. 5 cm

B. 4 cm

C. 2 cm

D. 1 cm

Answer: A

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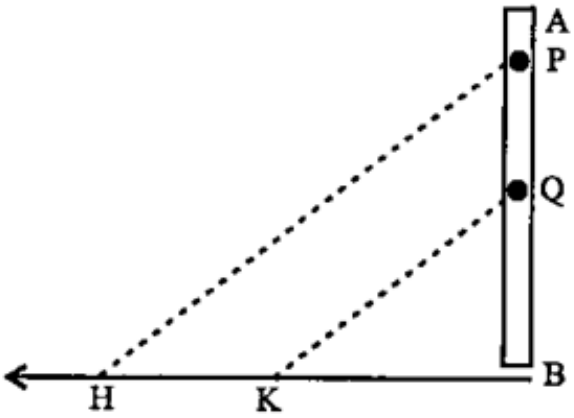
100. Case Study-2: Two spotlight, in a locality are mounted on a vertical pole as shown in the figure.



Here P and Q are the light, mounted on a

vertical pole AB as shown. Light beams from P and Q shine to two points on a ground, H and K respectively.

Here, PQ=16 cm, KB=16 cm, PH=35 cm and QK=20 cm.

Answer the following questions:

Are the ΔKBQ and HBP similar, is so by which property?

A. Similar, RHS

B. Similar, SAS

C. Similar, AAA

D. Not similar

Answer: D

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Section A

1. If α and β are the roots of the equation $x^2 + px + q = 0$, then what is value of $\alpha^2 + \beta^2$?

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2. For which value of k does the pair of equation

$x^2 - y^2 = 0$ and $(x - k)^2 + y^2 = 1$ yield a unique positive solution of x ?

View Text Solution

3. Find how many integers between 200 and 500 are divisible by 8.

View Text Solution

4. Draw a line segment of length 7 cm and divide it internally in the ratio 2:3.

View Text Solution

5. Volume and surface area of a solid hemisphere are numerically equal. What is the diameter of hemisphere?

View Text Solution

6. For the following distribution:

Below	10	20	30	40	50	60
Number of students	3	12	27	57	75	80

Find the modal class

Watch Video Solution

7. The sum of two numbers is 15 and their reciprocals is $\frac{3}{10}$. Find the numbers.

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Section B

1. The marks attained by 40 students in a short assessment is given below where a and b are missing. If the mean of the distribution is 7.2, find a and b.

Marks	5	6	7	8	9
No. of students	6	a	16	13	b

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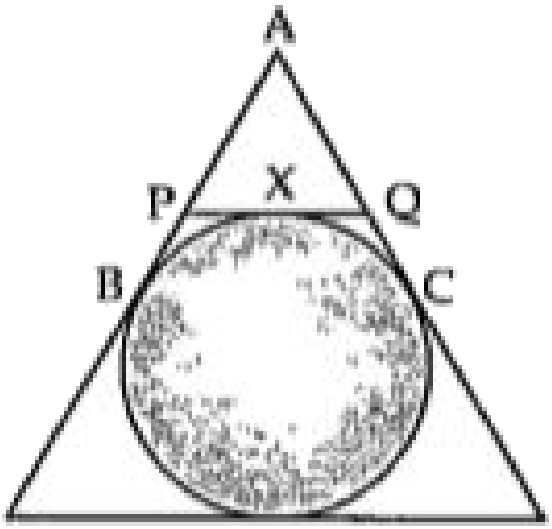
2. If AB, AC, PQ are the tangents is the figure, and AB=5 cm, find the perimeter of ΔAPQ.



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3. The following table provides data about the weekly wages (in Rs) of workers in a factory. Calculate the Mean and the Modal Class.

Class Interval	50 – 55	55 – 60	60 – 65	65 – 70	70 – 75	75 – 80	80 – 85	85 – 90
Weekly wages (₹)	5	20	10	10	9	6	12	8

View Text Solution

4. A kite is flying at a height of 30 m from the ground. The length of the string from the kite to the ground is 60 m. Assuming that there is no slack in the string, then find the angle of elevation of the kite at the ground.

View Text Solution

5. A tower stands vertically on the ground. From a point on the ground which is 25 m away from the foot of the tower, the angle of elevation of the top of the tower is found to be 45°. Then find the height (in meters) of the tower.

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Section C

1. A hemispherical depression is cut out from one face of a cubical block of side 7 cm such that the diameter of the hemisphere is equal to the edge of the cube. Find the surface area of the remaining solid. (Use $\pi = \frac{22}{7}$)

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2. Sushant has a vessel in the shape of an inverted cone that is open at the top. Its height is 11 cm and the radius of the top is 2.5

cm. It is full of water and metallic spherical balls of diameter 0.5 cm are put in the vessel such that $\frac{2}{5}$th of the water flows out. Find the number of balls that were put in the vessel.

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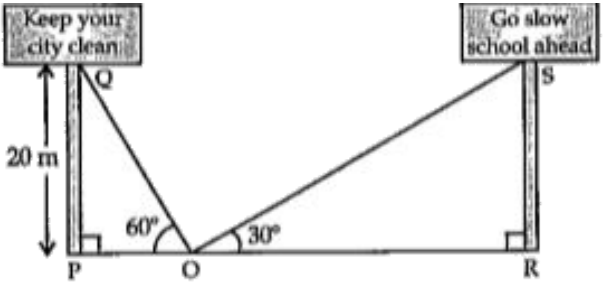
3. Two hoardings are put on two poles of equal heights standing on either side of the road. From a point between them on the road (not the mid point) the angle of elevation of the top of poles are 60° and 30° respectively.

Height of the each pole is 20 m. (Take $\sqrt{3}$=1.73)



Answer the following questions.

Find the length of PO.

Watch Video Solution

4. Two hoardings are put on two poles of equal heights standing on either side of the road. From a point between them on the road

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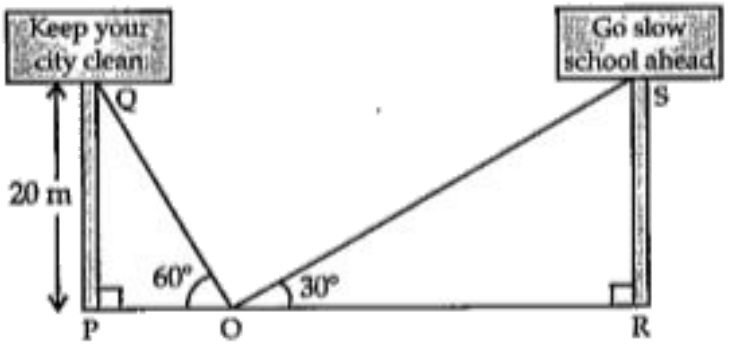

Answer the following questions.

The width of the road.

Watch Video Solution

5. Aadita is celebrating her birthday. She invited her friends. She bought a packet of toffees/candies which contains 120 candies. She arranged the candies such that in the first row there are 3 candies, in second there are 5 candies, in third there are 7 candies and so on.

Find the first term and common difference of A.P.

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6. Aadita is celebrating her birthday. She invited her friends. She bought a packet of toffees/candies. She arranged the candies such that in the first row there are 3 candies, in second there are 5 candies, in third there are 7 candies and so on.

How many candies are placed in the 9^{th} row?

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7. Aadita is celebrating her birthday. She invited her friends. She bought a packet of toffees/candies. She arranged the candies

such that in the first row there are 3 candies, in second there are 5 candies, in third there are 7 candies and so on.

Find the difference in number of candies placed in 7^{th} and 3^{rd} row.

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8. Aadita is celebrating her birthday. She invited her friends. She bought a packet of toffees/candies. She arranged the candies such that in the first row there are 3 candies, in second there are 5 candies, in third there are 7 candies and so on.

Find the number of candies in 12^{th} row.

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