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Class 10

PRITEDUCATION

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10TH MATHS COMPULSORY QUESTIONS

[INCLUDES ALL DISTRICTS H.Y-2022 AND REVS. -1,2,3 PAPERS AND PYQ's]

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Kindly send me your study materials to padasalai.net@gmail.com

Let $A=\{0,1\}, B=\{0,1\}, C=\{0,1\}$ Find $A\times B\times C$

-Let A = {1, 2, 3} and B= {a, b}.Write any two functions from A to B in the form of set of ordered pairs.

Find the G.P. in which the 2^{nd} term is $\sqrt{6}$ and the 6^{th} term is $9\sqrt{6}$

-A metallic sheet in the form of a sector of a circle of radius 21 cm has central angle of 216°. The sector is made into a cone by bringing the bounding radii together. Find the volume of the cone formed.

-Find the diameter **as well as radius** of a sphere whose surface area is 154 m2.

-Find the volume of a cylinder whose height is 2m and base area is 250 m2.

The roots of the equation $x^2 + 6x-4 = 0$ are α, β. Find the quadratic equation whose roots are i) α^2 and β^2 ii) $2/\alpha$ and $2/\beta$ iii) $\alpha^2\beta$ and $\beta^2\alpha$

-the volume of a sphere is numerically equal to its surface area.find its diameter.

A chess board contains 64 equal squares and the area of each square is 6.25cm². A border around the board is 2cm wide. Find the length of the side of the chess board.

-the TSA of cone of radius 7cm is 704 cm2. Find its height.

Find x if g f f(x) = f g g(x). Given f(x) = 3x+1 and g(x) = x+3.

The distance S an object travels under the influence of gravity in time t seconds is given by $S(t)=\frac{1}{2}gt^2+at+b$ where, (g is the acceleration due to gravity), a, b are constants. Verify wheather the function $S(t)$ is one-one or not.

Let $A=\{x\in\mathbb{N}\mid 1<x<4\}$, $B=\{x\in\mathbb{W}\mid 0\le x<2\}$

-verify the distributive property of cartesian product over union and intersection respectively.

-Show that the square of an odd integer is of the form $4q+1$, for some integer q.

-A passenger train takes 1 hr more than an express train to travel a distance of 240 km from Chennai to Virudhachalam. The speed of passenger train is less than that of an express train by 20 km per hour. Find the average speed of both the trains.

Example 7.22 Calculate the weight of a hollow brass sphere if the inner diameter is 14 cm and thickness is 1mm, and whose density is 17.3 g/ cm^3.

Find the sum to n terms of the series 7 + 77 +·777 + ...

Find the equation of a straight line parallel to y axis passing through the point of intersection of the lines 4x + 5y = 13 and x – 8y + 9 = 0

----A capsule is in the shape of a cylinder with two hemisphere stuck to each of its ends. If the length of the entire capsule is 12 mm and the diameter of the capsule is 3 mm, how much medicine it can hold?

If P(A) = 0.37, P(B) = 0.42, P(A∩B) = 0.09, then find P(A∪B)

If the area of the triangle formed by the vertices A(–1, 2) B(k, –2) and (7, 4) taken in order is 22 sq.units. Find the value of k.

----**ARUL** sum **[**chapter:7 example **7.26]**

Two boats are sailing in the sea on either sides of a light house. The angle of elevation of the top of the lighthouse as observed from the boats are 30° and 45° respectively. If the light house is 700m high, find the distance between the two boats. $(\sqrt{3} = 1.732)$

Distance between two ships is 1912.4 m.

If -4 is a root of the equation $x^2 + px - 4 = 0$ and if the equation $x^2 + px + q = 0$ has equal roots, find the values of p and q.

Find the intercepts made by the line 4x - 9y + 36=0 on the coordinate axes

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An industrial metallic bucket is in the shape of the frustum of a right circular cone whose top and bottom diameters are 10 m and 4 m and whose height is 4 m. Find the curved and total surface area of the bucket.

If the polynomial $25x^4 – 10x^3 + ax^2 + bx + 81$ is a perfect square then find the value of a and b.

If the straight lines 12y = –(p+3) x + 12, 12x – 7y = 16 are perpendicular then find 'p'.

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28) Let f{(x, y) | x, y ∈ N and y = 2x}. be a relation on ℕ. Find the domain, co-domain and range. Is this relation a function?

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42) The frustum shaped outer portion of the table lamp has to be painted including the top part. Find the total cost of painting the lamp if the cost of painting 1 sq.cm is Rs.2.

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What will be the probability that a leap year will have 53 Saturdays?

The radius of a sphere increases by 25%. Find the percentage increase in its surface area.

-A triangular shaped glass with vertices at *A*(-5,-4) , *B*(1,6) and *C*(7,-4) has to be painted. If one bucket of paint covers 6 square feet, how many buckets of paint will be required to paint the whole glass, if only one coat of paint is applied.

--In two concentric circles, a chord of length 16 cm of larger circle becomes a tangentto the smaller circle whose radius is 6 cm. Find the radius of the larger circle.

-A line makes positive intercepts on coordinate axes whose sum is 7 and itpasses through (-3, 8) . Find its equation.

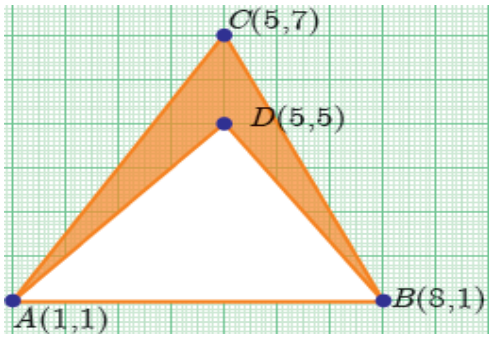
Given that A = {x / x is a prime factor of 42}, B = {x / 0 ≤ x < 2, x∈W}, C = {1,4,5}. Verify that the distributive property of cartesian product over union.

The number of volleyball games that must be scheduled in a league with n teams is given by $G(n) = \frac{n^2 - n}{2}$ where each team plays with every other team exactly once. A league schedules 15 games. How many teams are in the league?

Find the equation of a straight line through the intersection of lines $5x - 6y = 2$, $3x + 2y = 10$ and perpendicular to the line $4x - 7y + 13 = 0$

Find the quadratic equation whose roots are $3 + \sqrt{7}$ and $3 - \sqrt{7}$.

Prove that $\frac{\sec\theta}{\sin\theta} - \frac{\sin\theta}{\cos\theta} = \cot\theta$



Find the area of the shaded region

Example 6.33 From a window (h metres high above the ground) of a house in a street, the angles of elevation and depression of the top and the foot of another house on the opposite side of the street are θ_1 and θ_2 respectively. Show that the height of the opposite house is $h\left(1 + \frac{\cot\theta_2}{\cot\theta_1}\right)$.

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Two dice are rolled together Find the probability of getting a doublet?

Find LCM : $x^3 - 27$, $(x-3)^2$, $x^2 - 9$

Two ships are sailing in the sea on either side of the lighthouse. The angles of depression of two ships as observed from the top of the lighthouse are $60°$ and $45°$ respectively. If the distance between the ships is $200\left(\frac{\sqrt{3}+1}{\sqrt{3}}\right)$ metres, find the height of the lighthouse.

State Ceva's theorem.

-Find the zeros of the quadratic expression $X^2+2x-143$

-If the 4th and 7th term of a GP are 54 and 1458 respectively. Find the geometric progression.

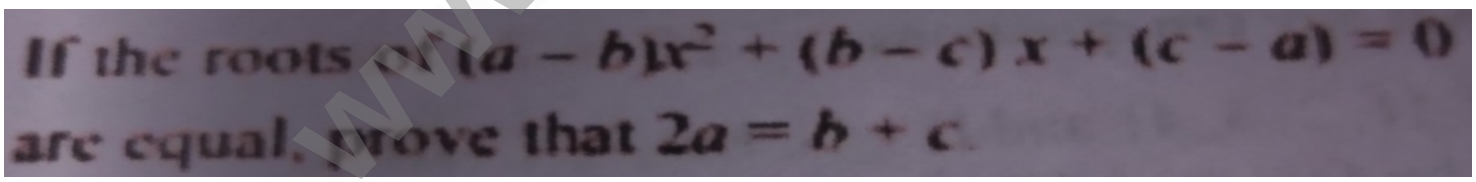
-Find the number of spherical lead shots, each of diameter 6cm that can be made from a solid cuboids of lead having dimensions 24cm x 22cm x 12cm.

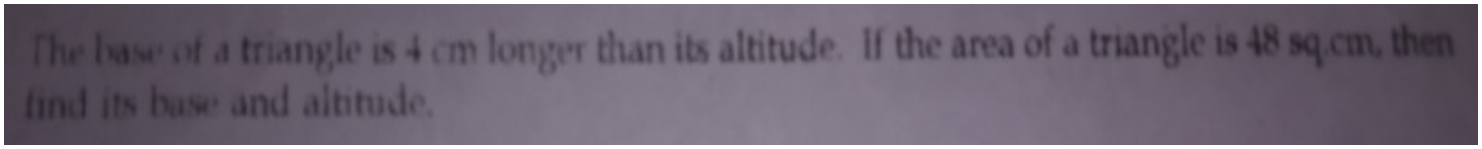
Find the image of the point $(3,8)$ with respect to the line $x+3y=7$ assuming the line to be a plane mirror.

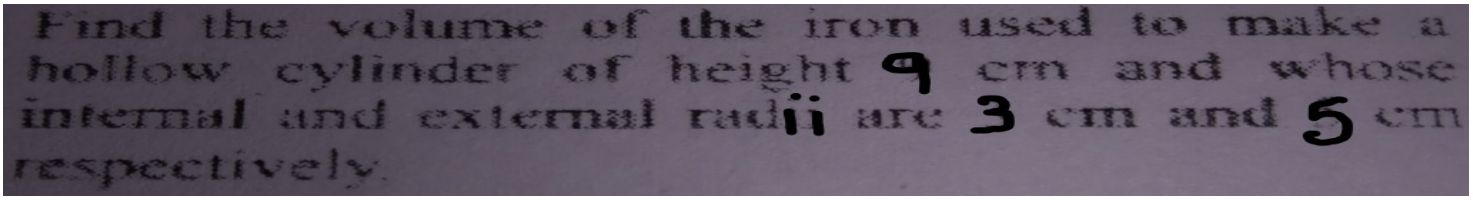
Solve the following quadratic equations by completing the square method

(ii) $\frac{5x+7}{x-1} = 3x+2$

-A coin is tossed thrice.what is the proability of getting exactly one head?







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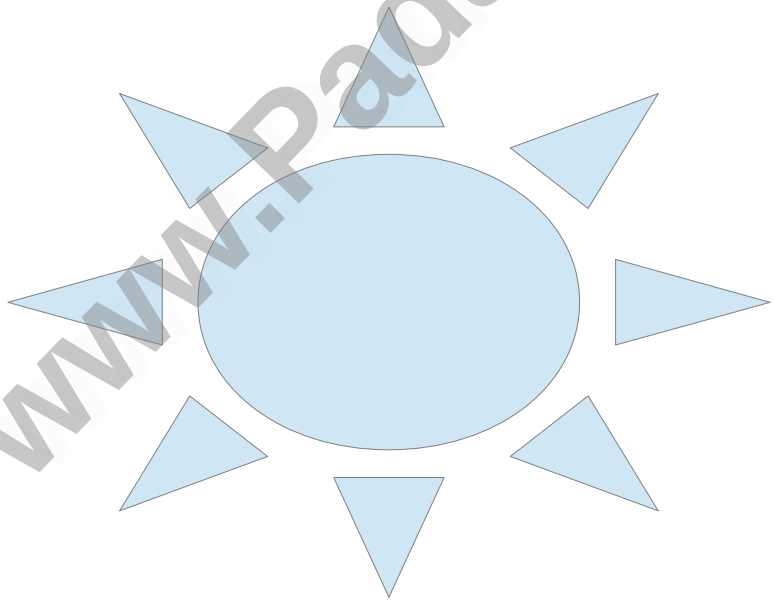
The heights of two right circular cones are in the ratio 1 : 2 and the perimeters of their bases are in the ratio 3 : 4. Find the ratio of their volumes.

If the equation $(1+m^2)x^2+2mcx+c^2-a^2=0$ has equal roots, then prove that $c^2=a^2(1+m^2)$.

Find the value of x, in $x^2-4x-12$.

A cat is located at the point $(-6,-4)$ in xy plane. A bottle of milk is kept at $(5,11)$. The cat wish to consume the milk travelling through shortest possible distance. Find the equation of the path it needs to take its milk.

If $P=\frac{x}{x+y}, Q=\frac{y}{x+y}$, then find $\frac{1}{P^2-Q^2}$



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