MATHS

BOOKS - FULL MARKS MATHS (TAMIL ENGLISH)

SAMPLE PAPER - 6 (UNSOLVED)

Part I

1. $n(R) = \{(x, x^2) \mid x$ is a prime number less than 13$\}$ is

A. {2,3,5,7}

B. {2,3,5,7,11}

C. {4,9,25,49,121}

D. [1,4, 9,49,121}

Answer: A

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2. If $g = \{(1, 1), (2, 3), (3, 5), (4, 7)\}$ is a function given by $g(x) = \alpha x + \beta$ then the values of α and β are

A. $(-1, 2)$

B. $(2, -1)$

C. $(-1, -2)$

D. $(1, 2)$

Answer: C

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3. The sum of the exponents of the prime factors in the prime factorization of 1729 is :

A. 1

B. 2

C. 3

D. 4

Answer: C

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4. The next term of the sequences $\frac{3}{16}, \frac{1}{8}, \frac{1}{12}, \frac{1}{18}, \ldots$

A. $\frac{1}{24}$

B. $\frac{1}{27}$

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

D. $\frac{1}{81}$

Answer: D

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5. If (x-6) is the HCF of $x^2 - 2x - 24$ and $x^2 - kx - 6$ then the value of k is.

A. 3

B. 5

C. 6

D. 8

Answer: B

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6. The solution of $(2x - 1)^2 = 9$ is equal to ..... ,

A. -1

B. 2

C. $-1, 2$

D. None of these

Answer: D

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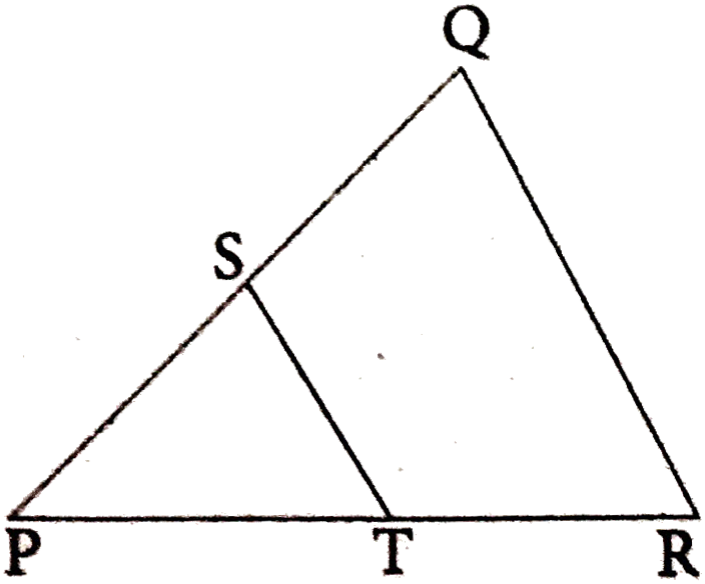
7. In a given figure, ST||QR, PS=2 cm and QS=3 cm. Then the ratio of the area of $\triangle PQR$ to the area of $\triangle PST$ is ___.



A. $25:4$

B. $25:7$

C. $25:11$

D. $25:13$

Answer: A

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8. The slope of the line joining (12,3) (4,a) is $\frac{1}{8}$. The value of 'a' is .....

A. 1

B. 4

C. -5

D. 2

Answer: B

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9. If $\sin\theta + \cos\theta = a$ and $\sec\theta + \cos ec\theta = b$, then the value of $b\left(a^2 - 1\right)$ is equal to

A. 2a

B. 3a

C. 0

D. 2 ab

Answer: D

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10. The curved surface area of a right circular cone of height 15 cm and base diameter 16 cm is

A. $60\pi cm^2$

B. $68\pi cm^2$

C. $120\pi cm^2$

D. $136\pi cm^2$

Answer: C

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11. The sum of all deviations of the data from its mean is

A. always positive

B. always negative

C. zero

D. non-zero integer

Answer: A

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12. If $\begin{pmatrix} x+y & x-y \\ 7 & 6 \end{pmatrix} = \begin{pmatrix} 10 & 2 \\ 7 & z \end{pmatrix}$ then x, y z are .....

A. 4,6,6

B. 6,6,4

C. 6,4,6

D. 4,4,6

Answer: B

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13. If the n^{th} term of a sequence is 100n + 10 the sequence is .....

A. an A.P

B. a G.P

C. a constant sequence

D. neither A.P nor G.P

Answer: A

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14. Probability of getting 3 heads and 3 tails in tossing a coin 3 times is .....

A. $\frac{1}{8}$

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

C. $\frac{3}{8}$

D. $\frac{1}{2}$

Answer: B

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Part Ii

1. Let

$A = \{X \in W \mid x < 2\}, B = \{x \in N \mid 1 < x \leq 4\} m$ and $C = \{3, 5\}$.

verify that

$(A \cup B) \times C = (A \times C) \cup (B \times C)$

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2. Find k, if $f(k) = 2k - 1$ and $fof(k) = 5$.

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3. Find the sum of the following

$6 + 13 + 20 + \ldots + 97$

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4. Rakha has 15 square colour papers of sizes 10cm, 11cm, 12cm... 24 cm. How much area can be decorated with these colour papers?

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5. Simplify

$$\frac{x+2}{4y} \div \frac{x^2-x-6}{12y^2}$$

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6. Solve $\frac{x}{x-1} + \frac{x+1}{x} = 2\frac{1}{2}$

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7. Construct a 3×3 matrix whose elements are given by

$a_{ij} = |i - 2j|$

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8. The length of the tangent to a circle from a point P, which is 25 cm away from the centre is 24 cm. What is the radius of the circle ?

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

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10. Prove that $1 + \frac{\cot^2\theta}{1+\cos ec\theta} = \cos ec\theta$

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11. Find the standard deviation of first 21 natural numbers.

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12. How many litres of water will a hemispherical tank hold whose diameter is 4.2 m ?

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13. A two digit number is formed with the digits , 2,5,9 (repetition is allowed) . Find the probability that the number is divisible by 2.

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14. Solve $\sqrt{x+5} = 2x + 3$ using formula method .

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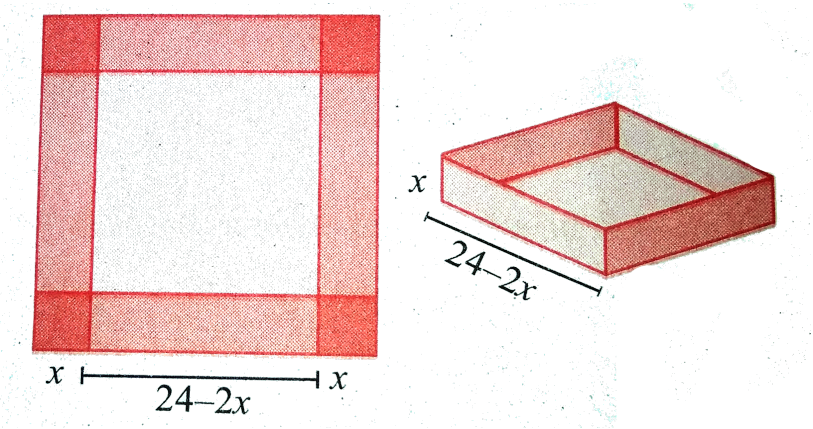
Part Iii

1. An open box is to be made from a square piece of material, 24 cm on a side, by cutting equal squares from the corners and turning up the sides as shown in figure. Express volume V of the box as a function of x.



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2. Find the greatest number consisting of 6 digits which is exactly divisible by 24, 15, 36?

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3. Solve $7y - 18 = 17$

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4. The sum of the digits of a three-digit number is 11. If the digits are revesed, the new number is 46 more than five times the former number. If the hundreds digit plus twice the tens digit is equal to the units digits, then find the original three digit number?

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5. Find the square root of the expression $\frac{4x^2}{y^2} + \frac{20x}{y} + 13 - \frac{30y}{x} + \frac{9y^2}{x^2} - \frac{2x}{y} + 5 - \frac{3y}{x}$.

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6. If α, β are the roots of $7x^2 + ax + 2 = 0$ and if $\beta - \alpha = \frac{-13}{7}$. find the value of a.

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7. Solve $7z + 15 = 3z - 13$

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8. A quadrilateral has vertices at $A(-4, -2), B(5, -1), C(6, 5)$ and $D(-7, 6)$. Show that the mid-point of its sides form a parallelogram.

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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.

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10. A shuttle cock used for playing badminton has the shape of a frustum of a cone is mounted on a hemisphere. The diameters of the frustum are 5 cm and 2 cm. The height of the entire shuttle cock is 7 cm. Find its external surface area.

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11. Two dice are thrown simultaneously. The probability of getting a doublet is _____.

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12. Given $f(x) = x - 2, g(x) = 3x + 5, h(x) = 2x - 3$ verfiy that (goh) of = go (hof).

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13. A 20m deep well with distance 7m is dug and the earth from digging is evenly spread out to form a platform 22 m by 14 m. Find the height of the platform.

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14. Solve $3y - (y + 2) = 4$

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Part Iv

1. Construct a triangle similasr to a given triangle PQR with its sides equal to $\frac{7}{3}$ of the corresponding sides of the triangle PQR (scale factor $\frac{7}{3}$)).

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2. Draw the graph of $y = x^2 - 5x + 6$ and hence solve $x^2 - 5x - 14 = 0$.

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3. Solve $2x^2 + x - 6 = 0$

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