MATHS

BOOKS - OSWAAL PUBLICATION

MATHS (KANNADA ENGLISH)

SSLC KARNATAKA TOPPERS' ANSWERS

MARCH 2018 Class-X

SECTION-A (Choose the correct alternative)

1. Sum of all the first 'n' terms of even natural number is

A. $n(n+1)$

B. $n(n+2)$

C. n^2

D. $2n^2$

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2. A boy has 3 shirts and 2 coats. How many different pairs, a shirt and a coat can he dress up with ?

A. 3

B. 18

C. 6

D. 5

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3. In a random experiment, if the occurrence of one event prevents the occurrence of other event, it is

A. A complementary event

B. a certain event

C. not mutually exclusive event

D. mutually exclusive event

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4. If the polynomial $p(x) = x^2 - x + 1$ is divided by $(x - 2)$ then the remainder is

A. 2

B. 3

C. 0

D. 1

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5. The distance between the co-rodinates of a point (p, q) from the origin is

A. $p^2 - q^2$

B. $\sqrt{p^2 - q^2}$

C. $\sqrt{p^2 + q^2}$

D. $q^2 - p^2$

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6. The equation of line having slope 3 and y-intercept 5 is

A. $3y = 5x + 3$

B. $5y = 3x + 5$

C. $y = 3x - 5$

D. $y = 3x + 5$

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7. The surface area of a sphere of radius 7 cm is

A. $88cm^2$

B. $616cm^2$

C. $661cm^2$

D. $308cm^2$

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SECTION-B (Answer the following)

1. Find the HCF of 14 and 21.

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2. The average runs scored by a batsman in 15 cricket matches is 60 and standard deviation of the runs is 15. Find the coefficient of variation of the runs scored by him.

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3. Write the degree of the polynomial $f(x) = x^2 - 3x^3 + 2$.

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4. What are congruent circles?

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5. If $\sin\theta = \frac{5}{13}$ then write the value of cosec θ.

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6. Write the formula used to find the total surface area of a right circular cylinder.

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SECTION-C

1. If $U = \{0, 1, 2, 3, 4\}$ and $A = \{1, 4\}, B = \{1, 3\}$

show that $(A \cup B)^l = A^l \cap B^l$.

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2. Find the sum of the series $3 + 7 + 11 + \ldots\ldots$ to 10 terms.

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3. At constant pressure certain quantity of water at $24^\circ C$ is heated. It was observed that the rise of temperature was found to be $4^\circ C$

per minute. Calculate the time required to rise the temperature of water to $100^{\circ}C$ at sea level by using formula.

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4. Prove that $2+\sqrt{5}$ is an irrational number.

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5. If ${}^{n}P_{4}=20({}^{n}P_{2})$ then find the value of n.

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6. A dice numbered 1 to 6 on its faces is rolled once. Find the probability of getting either an even number or multiple of '3' on its top face.

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7. What are like surds and unlike surds?

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8. Rationalise the denominator and simplify:

$$\frac{\sqrt{5}+\sqrt{3}}{\sqrt{5}-\sqrt{3}}$$

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9. find the quotient and the remainder when

$f(x) = 2x^3 - 3x^2 + 5x - 7$ is divided by g(x)

= x-3 using synthetic division

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10. Find the zeros of the polynomial $p(x) = x^2 - 15x + 50.$

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11. Solve the equation $x^2 - 12x + 27 = 0$ by using formula.

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12. Draw a chord of length 6 cm in a circle of radius 5 cm. Measure and write the distance of the chord from the centre of the circle.

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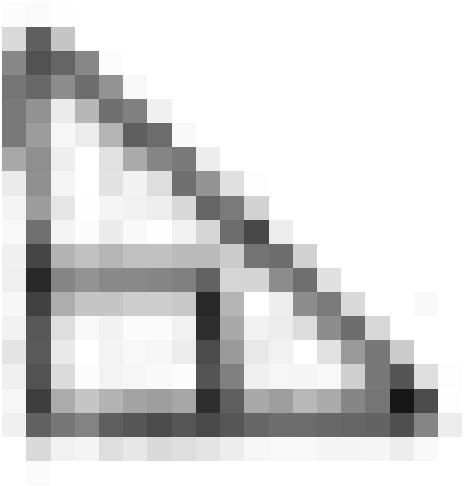
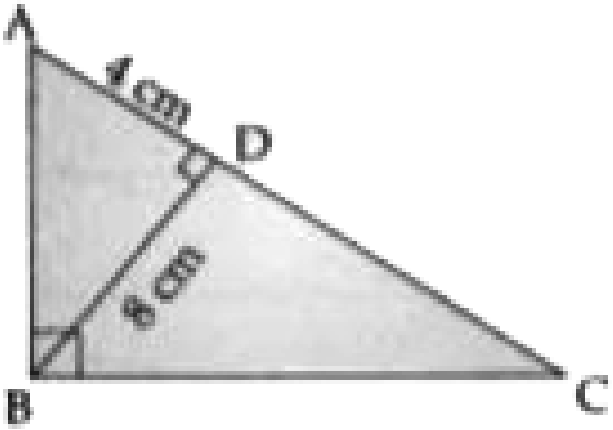


13. In

ABC, $\angle ABC = 90^\circ$, $BD \perp AC$. If BD = 8 cm ,

AD = 4 cm, find CD and AB.



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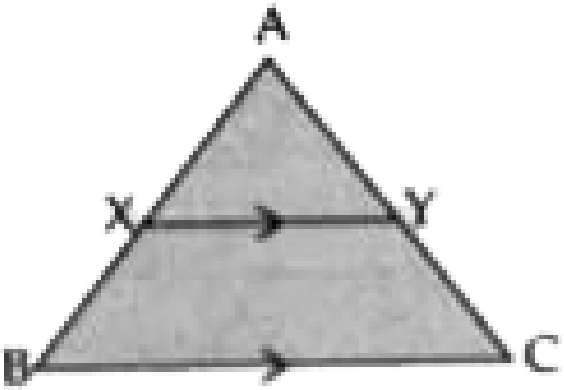
14. In ΔABC, XY || BC and $XY = \frac{1}{2}BC$. If the area of $\Delta AXY = 10cm^2$, find the area of

trapezium XYCB.



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15. Show that, cot theta.costheta +sin theta = cosec theta

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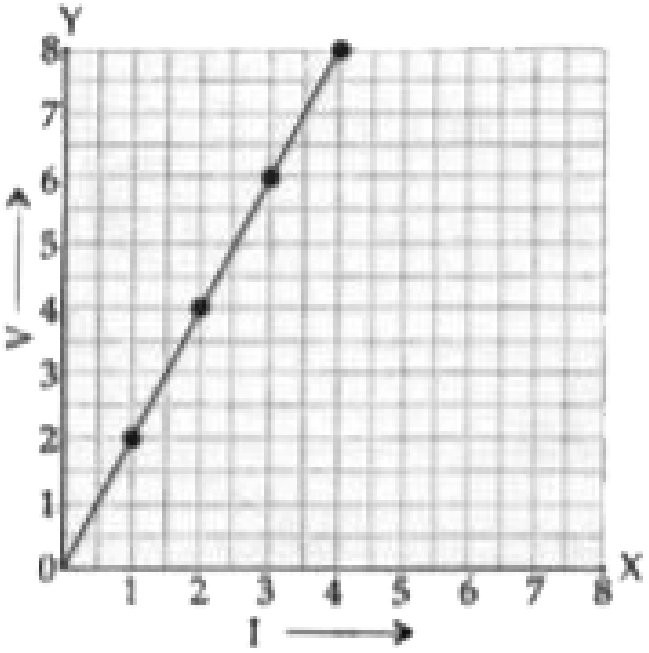
16. A student while conducting an experiment on Ohm's law, plotted the graph according to the given data. Find the slope of the line obtained.

X-axis I	1	2	3	4
Y-axis V	2	4	6	8



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17. Draw the plan for the information given below:

(Scale 20 m = 1 cm)

	Metre To C	
To D 50	140 100	40 to B
To E 30	60 40	
	From A	

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18. Out of 8 different bicycle companies, a student likes to choose bicycle from three

companies. Find out in how many ways he can choose the companies to buy bicycle.

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SECTION-D

1. In a Geometric progression the sum of first three terms is 14 and the sum of next three terms of it is 112. Find the Geometric progression.

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2. If 'a' is the Arithmetic mean of b and c, 'b' is the Geometric mean of c and a, then prove that 'c' is the Harmonic mean of a and b.

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3. Marks scored by 30 students of 10th standard in unit test of mathematics is given below. Find the variance of the scores:

Marks (x)	4	8	10	12	16
No. of students (f)	13	6	4	3	4

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4. If p and q are the roots of the equation $x^2 - 3x + 2 = 0$, find the value of $\frac{1}{q} - \frac{1}{q}$.

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5. A dealer sells an article for Rs. 16 and loses as much per cent as the cost price of the article. Find the cost price of the article.

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6. Prove that, "If two circles touch each other externally, their centres and the point of contact are collinear".

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7. If $7\sin^2\theta + 3\cos^2\theta = 4$ and $'\theta'$ is acute show that $\cot\theta = \sqrt{3}$.

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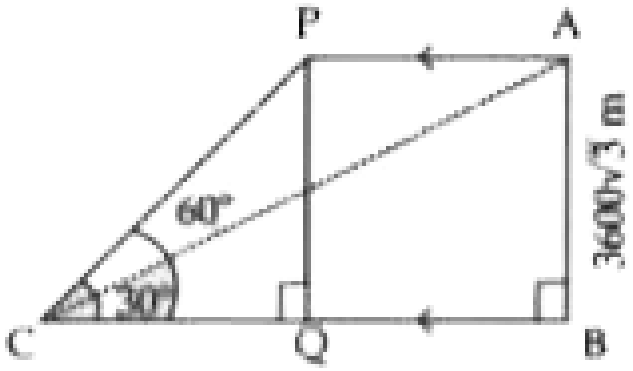
8. The angle of elevation of an aircraft from a point on horizontal ground is found to be 30° . The angle of elevation of same aircraft after 24 seconds which is moving horizontally to the ground is found to be 60°. If the height of the aircraft from the ground is 3600 $\sqrt{3}$ metres, find the velocity of the aircraft.



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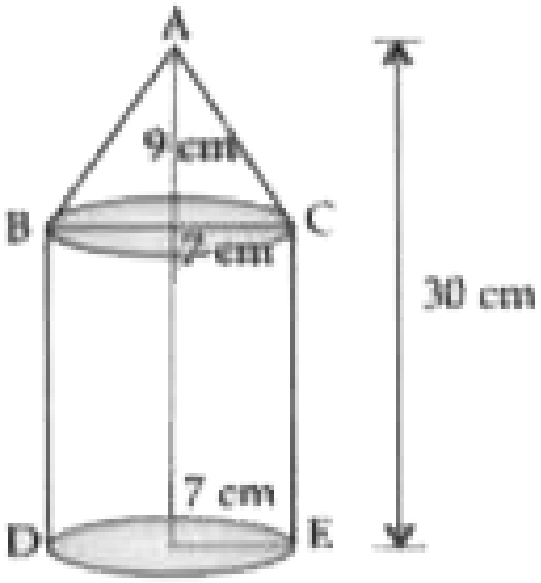
9. A solid is in the form of cone mounted on a right cylinder, both having same radii as shown in the figure. The radius of the base and height of the cone are 7 cm and 9 cm respectively. If the total height of the solid is

30 cm, find the volume of the solid.



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10. The slant height of a frustum of a cone is 4cm and the perimeters (circumference) of its

circular ends are 18cm and 6cm . Find the curved surface area of the frustum.

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SECTION-E

1. Solve the equation $x^2 - x - 2 = 0$ graphically.

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2. State and prove Basic proportionality theorem

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3. A vertical tree is broken by the wind at a height of 6 metre from its foot and its top touches the ground at a distance of 8 metre from the foot of the tree. Calculate the distance between the top of the tree before

breaking and the point at which tip of the tree touches the ground, after it breaks.

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4. In ΔABC, AD is drawn perpendicular to BC. If $BD:CD=3:1$, then prove that $BC^2=2\left(AB^2-AC^2\right)$.

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