MATHS

BOOKS - CAMBRIDGE MATHS (KANNADA ENGLISH)

PRACTICE QUESTION PAPER

Questions

1. $x = 2^4 \times 3^2, y = 2^2 \times 3^2 \times 5, Z = 2^6 \times 3,$

then H.C.F. of x, y, z is

A. $2^2 x 3^2 x 5$

B. $2^6 x 3^2$

C. $2^2 x 3$

D. $2^2 x 3^2$

Answer:

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2. $\sqrt{\frac{1+\sin\theta}{1-\sin\theta}}$ is equal to _____

A. Tan $\theta + \sec\theta$

B. $\text{Tan}\,\theta - \sec\theta$

C. $\dfrac{1}{\tan\theta} + \dfrac{1}{\sec\theta}$

D. $\dfrac{1}{\tan\theta} - \dfrac{1}{\sec\theta}$

Answer:

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3. PA and PB are the two tangents drawn to a circle centered at o. from an external point P . If $\lfloor AOB = 150^\circ$ then $\lfloor APB$ is

A. 20°

B. 30°

C. 50°

D. 100°

Answer:

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4. The formula to find the curved surface area of a sphere is

A. πr^2

B. $2\pi r^2$

C. $4\pi r^2$

D. $3\pi r^2$

Answer:

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5. (3x + 2) (5x - 3) and (4x + 7) are the three consecutive terms of an A.P. then the value of x is

A. 1

B. 3

C. 5

D. 7

Answer:

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6. If $\Delta ABC \sim \Delta DEF$, BC = 3cm, EF = 4cm, and Area of $\Delta ABC = 54cm^2$, then Area of ΔDEF is

A. $96cm^2$

B. $86cm^2$

C. $76cm^2$

D. $66\ cm^2$

Answer:

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7. Which among the following is not an example of a random experiment.

A. Tossing a coin

B. Throwing a die

C. Drawing a card from a well shufled pack of card

D. Determining the boiling point of water .

Answer:

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8. Find the remainder using remainder theorem, when $2x^2 + 3x^2 + x + 1$ is divided by x + $\frac{1}{2}$

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9. If the sum of first n even natural number is 240. find the value of n.

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10. The sum of n natural numbers is 325 . Find n.

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11. If every square similar to every Rectangle ? Why ?

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12. Find the HCF of 105 and 1515 by prime factorization method.

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13. If $\sin\theta - \frac{4}{5}$ and $\cos\theta = \frac{3}{5}$ find the value of $\sin^2\theta + \cos^2\theta$

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14. Find the value of

$4\sin^2 60 + 3\tan^2 30 - 8\sin 45.\cos 45$

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15. Find the vaolume of the hemisphere of radius 21 cm.

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16. Prove that $\sqrt{2}+\sqrt{3}$ is an irrational number.

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17. Prove that the area of the euilateral traingle described on the side of a square is half the area of the equilatiral triangle described on it's square .

OR

In ΔABC D,E, F are the midpoints of te sides

BC, AC and AB respectively. Find the rations of the areas of ΔDEF ΔABC

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18. Mention the following with respect to the cubic polynomial $ax^3 + bx^2 + cx + d$

(a) Sum of the zeroes

(b) Sum of the product of the zeroes, taken two at a time .

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19. Draw a circle of radius 4 cm and construct a pair of langents to the circle which are inclined to each other at an angle of 45°

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20. If α and β are the zeroes of the polynomial f(x) = $3x^2 + 5x + 7$ then find the value of $\frac{1}{\alpha^2} + \frac{1}{\beta^2}$.

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21. Find the maximum valume of a cone that can be carved out of a solid hemisphere of radius 21 cm .

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22. A fraction becomes $\frac{8}{11}$ if 3 is added to both the numerator and the denominator also if 3 is substracted from the numerator and the denominator it becomes $\frac{2}{5}$. Find the fraction .

OR

10 years hence the age of x will be 2 times that

of age of y 10 years ago the age of x was six times that of age of y . what are their present ages ?

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23. Find two consecutive positive integers , sum of whose squares is 365.

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24. Prove that the tangent at any point of a circle is perpendicular to the radius through the point of contact.

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25. Solve graphically : $5x+y=7$ and $2x-2y=2$

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26. The sum of first n terms of an arithmetic progression is 210 and sum of its first (n-1) is 171 . If the first 3 then write the arithmetic progression.

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27. The sum of the first three terms of an A.P is 33 . If the product of the first terms and third term exceeds the 2nd term by 29 then find the A.P .

The pth qth and rth term of an A.P . Are a b and c respectively . Prove that a (q-r)+ b(r-P)+c(p-q)=0

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28. The angle of elevation of the top of an unfinished verticle building on a ground at a point which is 100 m from the base of the building is 45° . How much height the building must be raised so that its angle of

elevation from the same point be 60°. (Take $\sqrt{3} = 1.73$)

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29. A cone of radius 10 cm is cut into two parts by a plane through the mid-point of its vertical axis parallel to the base . Find the ratio of the volumes of the smaller cone and frustum of the cone.

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Mcqs

1. The pair of linear equations $3a+4b=k$, $9a+12b=6$ have infinitely many solutions when,

A. $k=-2$

B. $k=3$

C. $k=2$

D. $k=-3$

Answer:

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2. $n^2 - 1$ is divisible by 8, if n is

A. Prime numbers

B. Odd integer

C. Even integer

D. Natural number

Answer:

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3. $\sqrt{1+\tan^2\theta}$ = _____, where $0 < \theta < 90^\circ$

A. $\sec\theta$

B. $\cos ec\theta$

C. $\cos\theta$

D. $\sin\theta$

Answer:

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4. If Q divides the line A(3,5) and B(7,9) internally in the ratio 2:3 , then the co-ordinates of Q are .

A. $\left(\frac{33}{5}, \frac{23}{5}\right)$

B. $\left(-\frac{23}{5}, \frac{33}{5}\right)$

C. $\left(\frac{23}{5}, \frac{33}{5}\right)$

D. $\left(-\frac{33}{5}, \frac{23}{5}\right)$

Answer:

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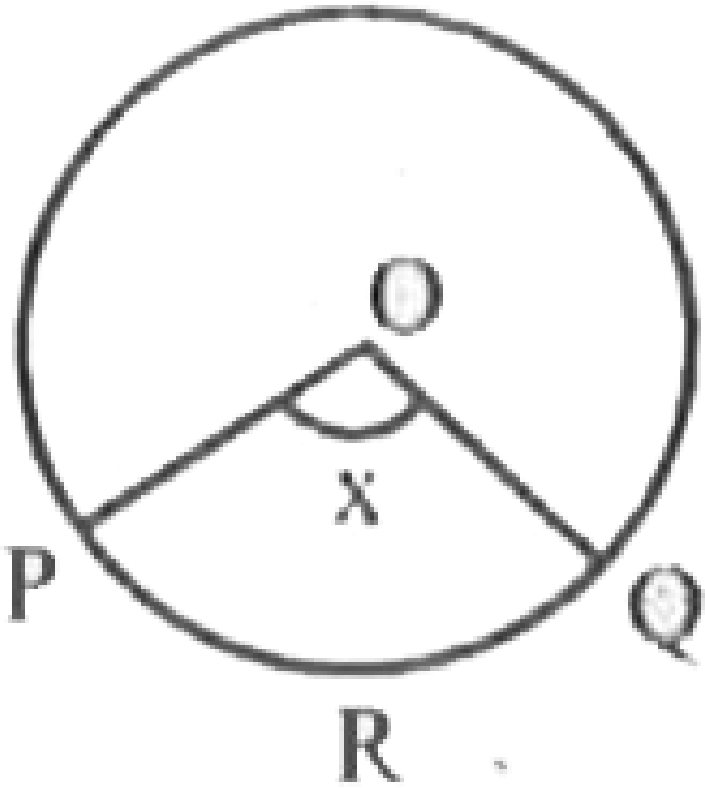

5.

If Area of the sector OPRQ $= \frac{5}{18}$ of Area of circle. Then the value of x .

A. 25°

B. 50°

C. 75°

D. 100°

Answer:

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6. If 1+2 + 3+.....n terms = 28 , then n is equal to

A. 28

B. 7

C. 8

D. 56

Answer:

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7. If we express sec A in terms of sin A, then sec A is equal to

A. $\frac{1}{\sqrt{1-\sin^2 A}}$

B. $\frac{1}{\sqrt{1+\sin^2 A}}$

C. $\frac{1}{\sqrt{1-\sin A}}$

D. $\frac{1}{\sqrt{1+\sin A}}$

Answer:

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8. If the n^{th} term of an arithmetic progression $a_n = 24 - 3n$, then it's 2^{nd} term is

A. 18

B. 15

C. 0

D. 2

Answer:

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9. The lines represented by 2x+3y-9 =0 and 4x+6y-18=0 are

A. Intersecting lines

B. $\perp^{\text{lar}}$ lines

C. parallel line

D. coincident

Answer:

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10. A straigth line which passess through two points on a circle is

A. a chord

B. a sectant

C. a tangent

D. radius

Answer:

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11. If the area of circle is 49π sq. units then it's perimeter is

A. 7π units

B. 9π units

C. 14π units

D. 49π units

Answer:

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12. "The product of two consecutive positive integers is 30". This can be expressed algebraically as.

A. $x(x+2)=30$

B. $x(x-2)=30$

C. $x(x-3)=30$

D. $x(x+1)=30$

Answer:

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13. If a and b are any two positive integers then HCF (a,b) $\times$ LCM (a,b) is equal to

A. a+b

B. a-b

C. $a \times b$

D. $a \div b$

Answer:

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14. $\cos 48^\circ - \sin 42^\circ = ?$

A. 0

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

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

D. 1

Answer:

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15. If $P(A) = 0.05$ the $P\left(\overline{A}\right)$ is

A. 0.59

B. 0.95

C. 1

D. 1.05

Answer:

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Answer The Following Question

1. If the product of zeroes of polynomial f(y) $= ay^3 - 6y^2 + 11y - 6$ is 4 then find the value of 'a'.

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2. What is the value of C, if $ax^2 + bx + c = 0$ has equal roots ?

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3. Find the second term if sum of the 'n' tem of an AP is $2n^2 + 1$.

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4. State converse of Pythagoras Theorem.

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5. What is the $\frac{p}{q}(p, q \in z, q \neq 0)$ form of $0.5\bar{7}$?

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6. If $\sin\theta = \frac{1}{3}$, then find the value of $\left(2\cot^2\theta + 2\right)$

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7. In $\sin(A+B)=\frac{\sqrt{3}}{2}$ and cos (A-B)=1, $0<A+B<90^{\circ}, A \geq B$.

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8. The surface area of a sphere is same as the C.S.A of a right circular cylinder whose height and diameter are 4 cm each. Find the radius of the sphere.

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9. Prove that if x and y are odd positive integers , then $x^2 + y^2$ is even but not divisible by 4.

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10. Solve : $100x + 200y = 700$

$200x + 100y = 800$

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11. Find the roots of the quadratic equation $3x^2 - 2\sqrt{6}x + 2 = 0$ by formula method.

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12. Find the value of x in which the points (1,-1) (x,1) and (4,5) are collinear.

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13. ABC is a right angle triangle having $\angle B = 90^\circ$. If BD=DC, show that $AC^2 = 4AD^2 - 3AB^2$

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14. Prove that ara of the equilateral triangle described on the sides of square is half the area of the equilateral triangle described on its diagonal.

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15. A box contains 90 dices which are numbered from 1 to 90. If one dise is drawn at random from the box, find the probability that it bears

i) two digit number

ii) a perfect square number.

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16. Draw a pair of tangents to a circle of radius 5 cm which are inclined to each other at an

angle of 60°.

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17. Prove that $\frac{\tan\theta + \sin\theta}{\tan\theta - \sin\theta} = \frac{\sec\theta + 1}{\sec\theta - 1}$

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18. Asha is 5 times as old as her daughter Usha, 5 years later Asha will be 3 times as old as her daughter Usha. Find the present ages of Asha and Usha.

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19. The sum of 2 digits of a 2 digits number is 12 the number obtained by interchangeing the digits exceeds by the given number by 18. Find the number.

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20. Find the other two zeroes of the polynomial $y^4 + y^3 - 9y^2 - 3y + 18$ if the

zeroes are $\sqrt{3}$ and $-\sqrt{3}$

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21. Solve for x . $\frac{1}{a+b+x} = \left(\frac{1}{a} + \frac{1}{b} + \frac{1}{x}\right)$

(Where $a \neq 0, b \neq 0, x \neq 0, x \neq -(a+b)$

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22. The diagonal of a rectangular filed is 60 meters more than the shorter side. If the

longer side is 30 meters more than the shorter side, find the side of the field.

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23. If the points (7,-2) , (5,1) and (3,5) are collinear. Find the value of k.

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24. Find the area of Rhombus if its vertices are (3,0) (4,5) (-1,4) and (-2,-1) taken in order.

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25. Prove the tangents drawn from an external point to a circle are equal.

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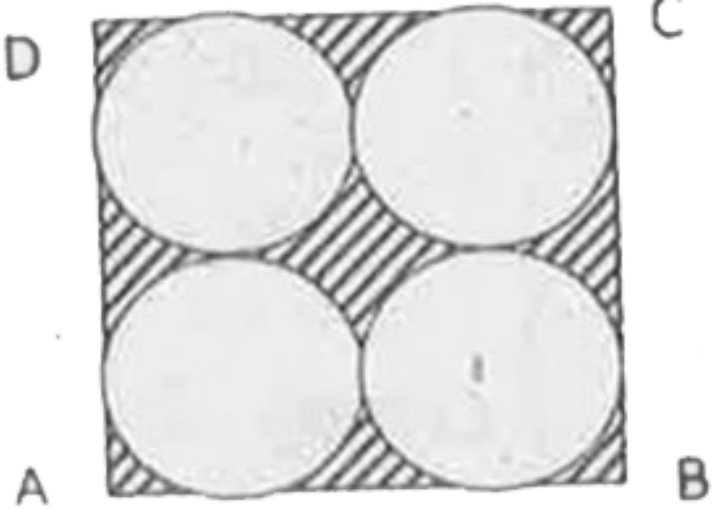
26. Find the area of the shaded region in the figure, where ABCD is a square of side 14 cm



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27. The distribution below gives the weights of 30 students of a class. Find the median weight of the students.

Weight (in kg)	40-45	45-50	50-55	55-60	60-65	65-70	70-75
No. of students	2	3	8	6	6	3	2

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28. Solve graphically :

$2x - y = 2$ and $4x - y = 4$

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29. If the sum of first 7 terms of an A.P is 49 and that of 17 terms is 289, find the sum of first n terms.

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30. The sum of the third and seventh terms of an AP is 6 and their product is 8 find the sum of first sixteen terms of the A.P.

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31. A person, walking 20 mts from a point towards a flagpost along a horizontal passing through its base, observes that its angle of elevation changes from 30° to 45° Find the height of the flagpost.

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32. In a right angled triangle , square on the hypotenuse is equal to sum of the squares on the other sides. Prove the statement.

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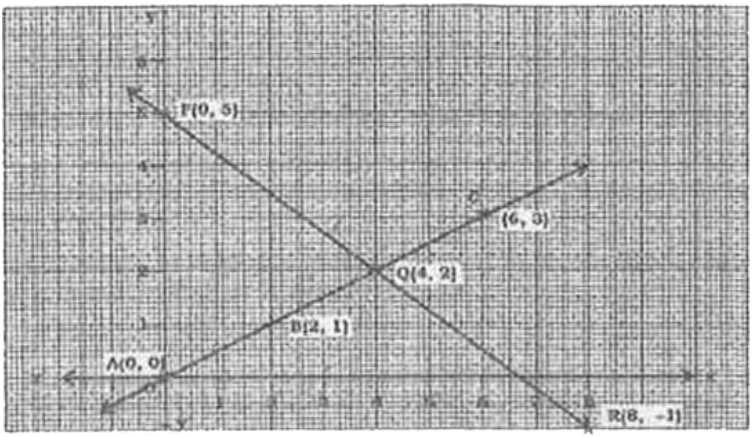
Answer The Following Questions

1. The given graph represents a pair of linear equations in two variables : write how many

solutions these pair of equations have



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2. 17 = 6×2+5 is compared with Euclid's Division lemma a = bq +r then which number is representing the remainder

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3. Find the zeroes of the polynomial P (x) = $x^2 - 3$

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4. Write the degree of the polynomial P (x) = $2x^3 - x^2 + 5$

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5. Find the value of the discriminant of the quadratic equation $2x^2 - 4x + 3 = 0$

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6. Write the foumula to calculate the curved surface area of the frustum of a cone .

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7. Find the sum of first twenty terms of Arithmetic series 2 +7+12 + $\cdots$ using suitable formula.

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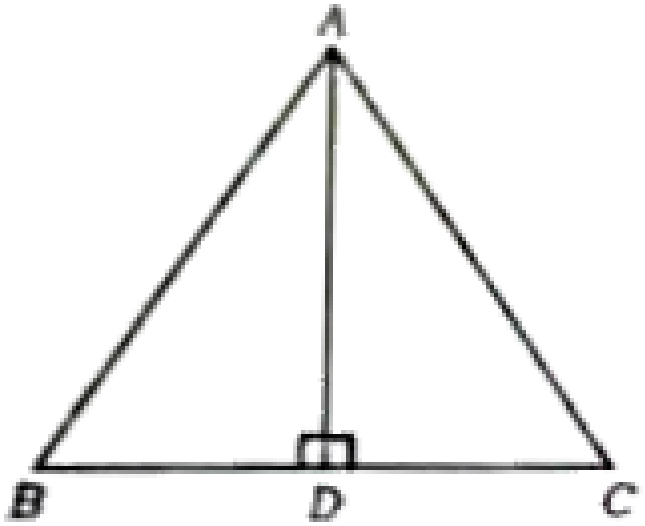
8. In Δ ABC , AD $\perp$ BC and $AD^2 = BD \times CD$. Prove that $AB^2 + AC^2 = (BD + CD)^2$



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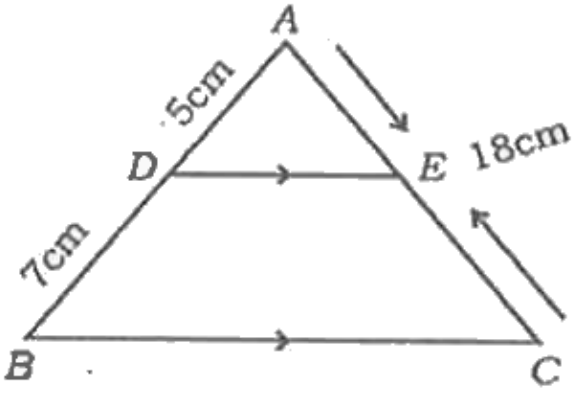
9. In Δ ABC , DE $||$ BC . If AD= 5 cm , BD = 7 cm and AC = 18 cm , find the length of AE.



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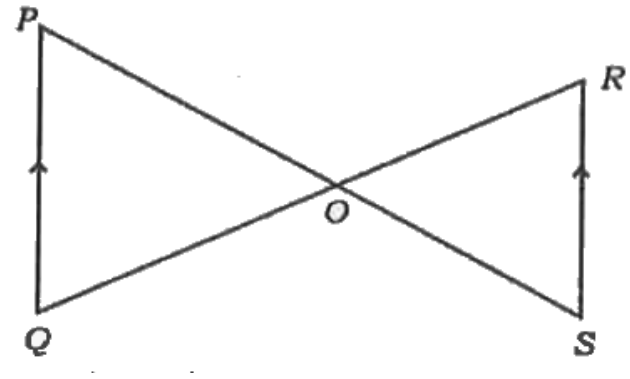
10. In the given figure PQ || RS , prove that $\Delta POQ \sim \Delta SOR$.



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11. Solve the following pair of linear equations by any suitable method.

$x+y = 5$ $2x-3y=5$

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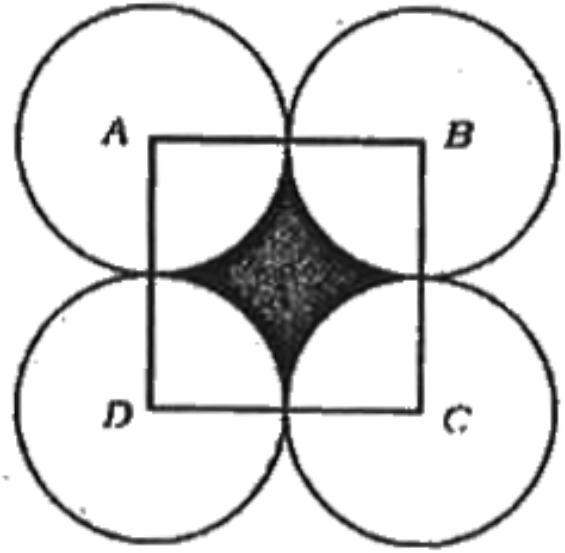
12. In the figure , ABCD is a square of side 14 cm. A, B, C and D are the centres of four congruent circle such that each circle touches

externally two of the remaining three circles .

Find the area of the shaded reginon.



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13. Draw a circle of radius 4 cm and construct a pair of tangents such that the angle between then is 60°.

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14. Find the co - ordinates of points which divides the line segment joining the points A $(4, -3)$ and B (8,5) in the ratio $3:1$ internally .

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15. Prove that $3 + \sqrt{5}$ is an irrational number.

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16. Solve $2x^2$-5x+3 = 0 by using formula.

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17. The length of a rectangular field is 3 time its breadth . If the area of the field is 147 sq.m,

find its length and breadth.

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18. If $\sin\theta = \frac{12}{13}$ find the values of $\cos\theta$ and $\tan\theta$. (2)

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19. If $\sqrt{3}\tan\theta = 1$ and θ is acute, find the value of $\sin 3\theta + \cos 2\theta$

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20. Prove that $\left(\frac{1+\cos\theta}{1-\cos\theta}\right) = (\text{cosec}\theta + \cot\theta)^2$

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21. A cubical die numbered from 1 to 6 are rolled twice . Find the probability of getting the sum of numbers on its faces is 10 .

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22. The radii of two circular ends of a frustum of a cone shaped dustbin are 15 cm and 18 cm . If its depth is 63 cm find the volume of the dustbin

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23. Prove that "the lengths of tangents drawn from an external points to a circle are equal ".

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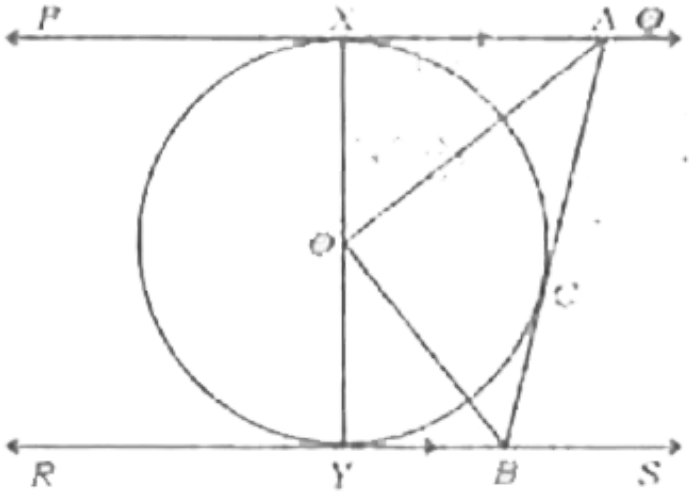
24. In the given figure PQ & RS are two parallel tangents to a circle o and another tangent AB with point of contact C intersecting PQ at A and RS at B. Prove that $\angle AOB = 90^\circ$



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25. Calculate the median of the following frequency distribution tabel :

Class – interval	*Frequency* (f_i)
1 – 4	6
4 – 7	30
7 – 10	40
10 – 13	16
13 – 16	4
16 – 19	4

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26. Calculate the mode for the following frequency distribution table

C - I	Frequency (f_i)
10-25	2
25-40	3
40-55	7
55-70	6
70-85	6
85-100	6
	$\Sigma f_i = 30$

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27. The seventh term of an arithmetic progression is four times itss second term and

twelth term is 2 more than three times of its fourth term. Find the progression.

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28. A line segment is divided into four parts forming an arithmetic progression . The sum of the lengths of 3 rd and 4 th parts is three times the sum of the lengths of first two part. If the length of fourth part is s14 cm, find the total length of the line segment.

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29. The vertices of a ΔABC are A(-3,2) . B (-1,-4) and C(5,2) . If M and N are the mid-points of AB and AC res.ly. Show that 2MN = BC.

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30. The vertices of a ΔABC are A(-5,-1) B(3.-5) , C-(5.2).Show that the area of the ΔABC is four times the area of the triangle formed by joining the mid-points of the sides of the triangle ABC.

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31. Find the sol.n of the following pair of linear by the graphical method.

$2x + y = 6$

$2x - y = 2$

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32. The angle of elevation of the top of a tower from two points at a distance of 4m and 9 m

from the base of the tower and in the same straight line with it are complementary. Prove that the height of the tower is 6m.

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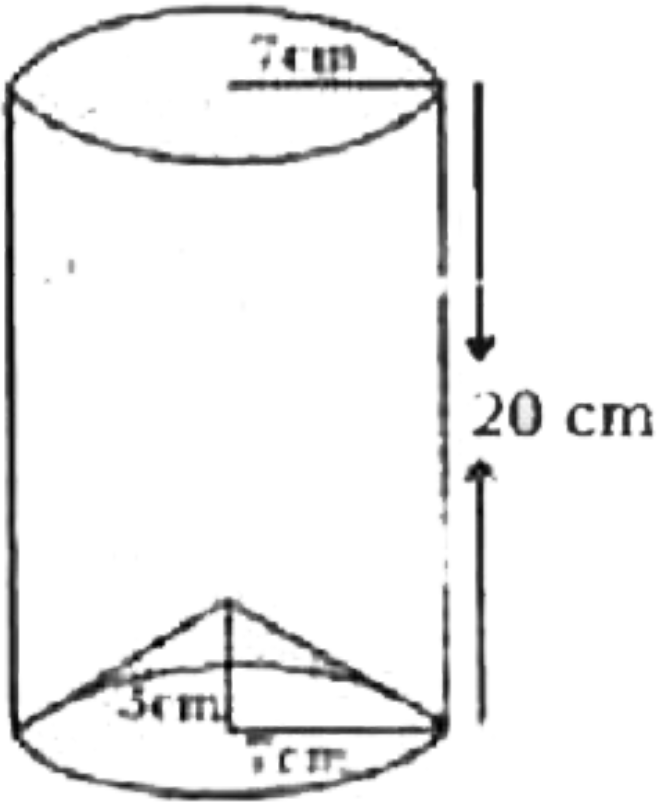
33. The bottom of a light cylindrical shaped vessel made from metallic sheet is closed by a cone shaped vessel as shown in the figure. The radius of the circular base of the cylinder and radius of the circular base of the cone each is equal to 7 cm . If the height of the cylinder is

20 cm & height of the cone is 3 cm, calculate the cost of milk of fill completely this vessel at the rate of Rs. 20/liter.



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34. A hemispherical vessel of radius 14 cm is filled fiuld with sand. This sand is poured on a ground. The heap of sand forms a conc shape of height 7 cm . Calculate the area of ground occupied by the circular base of the heap of the sand.

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