SENIOR FOUR HOLIDAY REVISION QUATIONS, MAY 2020.

MATHEMATICS

FACTS ABOUT SUCCESS:

1. Push yourself, because no one else is going to do it for you.
2. Sometimes later becomes never. Do it now
3. Great things never come from comfort zones
4. Dream it. Wish it. Do it.
5. Success doesn't just find you. You have to go out and get it.
6. Dream bigger. Do bigger
7. Don't stop when you're tired. Stop when you're done
8. Don't wait for opportunity. Create it
9. Dream it. Believe it. Built it
10. The harder you work for something, the greater you'll feel when you achieve it.
11. The key to success is to focus on goals, not obstacles
12. Put first things first.
13. Wake up with determination. God to bed with satisfaction.
14. You cannot climb the ladder of success when your hands are in the pockets.

SENIOR FOUR REVISION QUESTIONS 2020.

1. Without using logarithm tables or calculators evaluate
$$\left(\frac{125}{343}\right)^{-2/3}$$
2. On a map of area 75km^2 is represented by 12cm^2. Determine the scale of the map in form of 1 : n
3. Use the prime factors of 2744 to evaluate $\sqrt[3]{2744}$
4. In the table below, y varies partly as x and partly as the inverse of the square of x

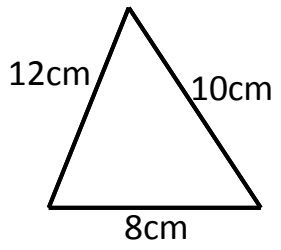
x	2	4	0.5
y	4	6.25	P

Find the equation connecting x and y and hence the value of P.

5. The point R(10,7) is reflected in the line y = x to give point S. Given that M is the midpoint of RS, find the coordinates of M.
6. A translation T maps A(-2,3) onto Á (-6, 10) find the image of B́ of B(5,4) under the translation T.
7. Without using tables or calculators, find the value of
$$3\ log_{10}^{5} + 5\ log_{10}^{2} - \tfrac{1}{2}log_{10}^{16}$$
8. Express $\dfrac{\sqrt{5}}{\sqrt{5}-1} + \dfrac{\sqrt{5}}{\sqrt{5}+1}$

In a form in which the denominator is a rational number.

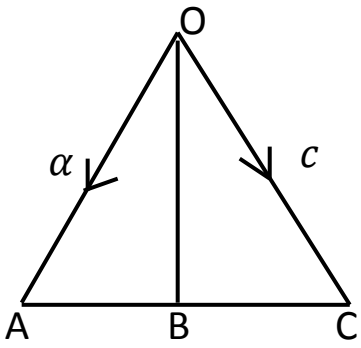
9. If Cosx = -0.634 for $90^o < x < 270$. Find the two possible values of x.
10. If P = $\begin{pmatrix} 3 & 2 \\ 2 & 4 \end{pmatrix}$ and Q = $\begin{pmatrix} 10 & -6 \\ 12 & 4 \end{pmatrix}$. Find the matrix R when R = 3P - $\frac{1}{2}$Q
11. Find the area of a triangle



12. The sum of the interior angles of a regular polygon is 1620^o. Find
(i). the number of sides of the polygon

(ii). The size of each exterior angle of the polygon.

13. Consider $\triangle$ OAC and $\overrightarrow{OA} = \underset{\sim}{\alpha}$, $\overrightarrow{OB} = \underset{\sim}{b}$, $\overrightarrow{OC} = \underset{\sim}{c}$. AB: BC = 2:3

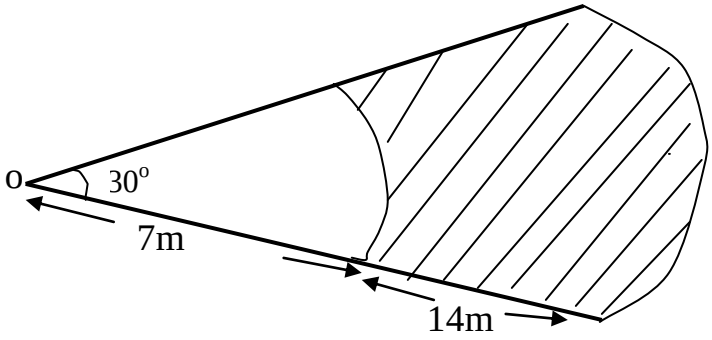


Find;

(i) $\overrightarrow{BC}$

(ii) $\overrightarrow{AB}$

14. The figure below shows a flower bed bounded by concentric arcs using the information given in the figure. Calculate the area of shaded part.



15. Solve the inequalities and express the answer in the form of a solution set. $X + 5 \leq 4x + 2 \leq 3x + 6$

16. The line passing through the points (5,P and (2,3) is parallel to the line 2y + x = 2. Determine the value of P.

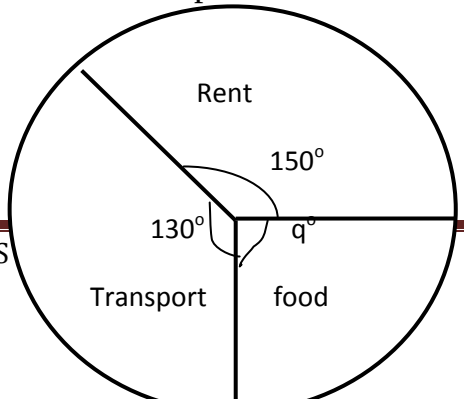
17. The points (2,6), (4,10), (7,d) all lie on the same straight line. Find the value of d.

18. A bag contains 3 black balls, 4 green balls and 5 yellow balls. How many black balls must be added to the bag so that the probability of drawing a black ball is $\frac{1}{2}$.

19. Simply $\sqrt{96} - \sqrt{54} + \sqrt{24}$

20. Given $P^{-1} = \begin{pmatrix} 5 & -2 \\ -7 & 3 \end{pmatrix}$ determine the matrix P

21. The pie chart below represents Ssali monthly expenditure.



(a) find the value of q in degrees

(b) If Ssali spends shs 36,000 more on rent than on transport, calculate his monthly income.

22. Under a transformation whose matrix is $\begin{pmatrix} 3 & x \\ 2 & x-1 \end{pmatrix}$ an object of area 4.5cm^2 is mapped on an image with area 54m^2. Find the value of x.

23. A line y = 2x+3 is translated using the column vector $\begin{pmatrix} 3 \\ -2 \end{pmatrix}$ to form its image . Find the equation of image line.

24. For two sets A and B, n(ε) = 21. n(A' n B) = n(AuB)' = K-2, n(AnB) = K and n(AnB') = K+1, find the value of K.

25. If two lines have equations y-1 = x and 2y+x=5 respectively. Determine the point of intersection of the lines.

26. Solve for x in the equation $\frac{x+1}{3} - \frac{8-x}{2} = \frac{x}{6}$

27. Given that y is inversely proportional to x^2 and x is 2 when y is 8, find the value of y when x is 0.5

28. Make R the subject of the equation

$$P = \sqrt{\frac{4A}{M+3R}}$$

29. Solve for y in the equation log(y-5) + log(y) = 3log2 + $\frac{1}{2}$log9

30. Factorise the following completely

(i). $3y^4 - 243$

(ii). $x^3 + 8$

(iii). $32m^3t - 4t$

(iv). $6x^2 - 19xy + 10y^2$

(v). $4m^2+64$

(vi). $48\alpha^3b^2 - 27\alpha b^4$

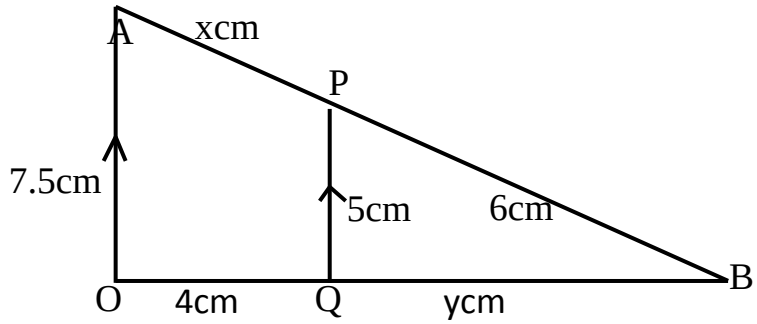
31. Express $3.1\dot{2}\dot{4}$ as a rational number in the simplest form.

32. A two digit number is written at random using the numeral 1, 3 and 4 without repeating any numerical.

33. Given that $x^2-y^2 = 31$ and x-y = 2, determine the values of x and y.

34. Given that $\cos\theta = {}^{4}/_{5}$ and $\sin\beta = {}^{5}/_{13}$ and that the 2 angles are acute. Find without using tables or calculators the value of $\sin\theta + \cos\beta$.
35. Given that A(x,7) and B(5,4) and that $|\overrightarrow{AB}| = 5$ units. Find the possible values of x.
36. Determine the equation of the line parallel to $3x+2y = 8$ which passes through (-1,2)
37. Two similar beakers hold $125cm^3$ and 1 litre respectively. The smaller is 12.5cm high. Find the height of the larger one.

38. Given the figure below and that OA is parallel to QP. Find the length marked x and y.



39. Show that the image of (1,0) under the rotation of $+30^o$ about the origin is $\left(\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$ and find the image of (0,1) under the same rotation.
40. If $a*b = \frac{(a-b)}{2}$ and $r \wedge s = \frac{r+s}{5}$. Find the value of x such that $(3*1) \wedge x = 4$
41. Given $\varepsilon = \{ x : -3 \leq x \leq 3 \}$, $A = \{ -2, 0, 2 \}$ and $B = \{ 0, 1, 2, 3 \}$. Find the elements of the following sets
    (a). $n(A \cap B)'$ (b). $n(A \cup B)'$
42. Without using tables or calculators, find the values of the following ratios
    (a). $\cos 780^o$ (b). $\sin 390^o$
43. A television set has a cash price of 2,000,000. It can be bought on hire purchase by a deposit of 10% and 24 monthly instalments of 90,000/=. Calculate the total hire purchase cost.
44. A straight line passes through the points A(5,t) and B(t,6). It is perpendicular to the line whose equation is $4y - 3x = 12$. Find the value of t.
45. Three warning bells ring at intervals of 12, 42 and 54 seconds. Given that they all started ringing together at 2.30pm, at what time to the nearest minute will they again ring together.

46. Given that g(x) = px +q, g(3) = 5
g(-1) = 1. Find the values of p and q

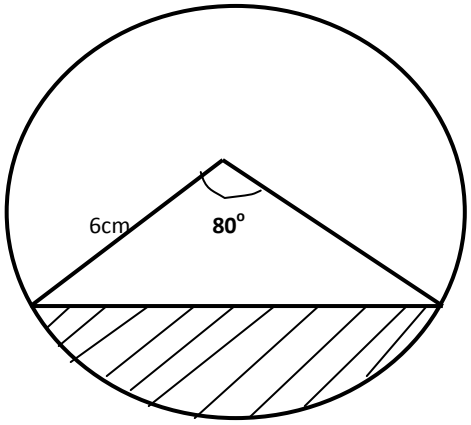
47. Express $\frac{2\sqrt{5}}{3\sqrt{5} + \sqrt{2}}$ in the form a + b$\sqrt{c}$ and c are rational numbers .
Hence state the values of a, b and c.

48. Solve the inequality $\frac{1}{5}(x-6) \leq \frac{1}{2}x$

49. Under an enlargement of centre (2,1) the image of P(1,-1) is P^{1} (4,5). Determine the scale factor of the enlargement.

50. If M: N: P = 4:9:10, find the values of M and N when P = 80

51. In the figure below, O is the centre of the circle of radius 6cm.
$\angle AOB = 80^{o}$



52. Make r the subject of the formular $A = P\left(1 + \frac{r}{100}\right)^{n}$

53. Given that $log_{10}^{12} + log_{10}^{x} = log_{10}^{20}$. Find the value of x.

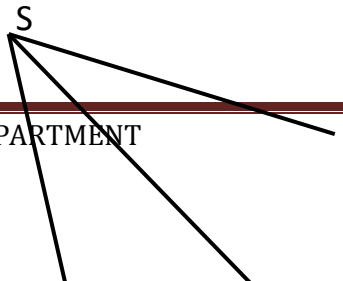
54. Solve the simultaneous equations
x = 4y + 6 = 0
$3x = 2y^{2}$

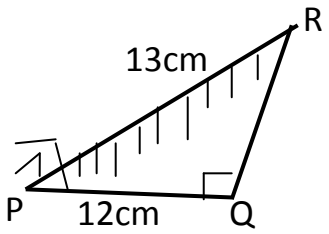
55. A pyramid stands on a square base of side 10cm each of its edges s 13cm long. Calculate its surface area.

56. Given $\{2, 3, 4, 5, 6, 7, 8, 9\}$ draw a papygram showing the relation " is a multiple of "

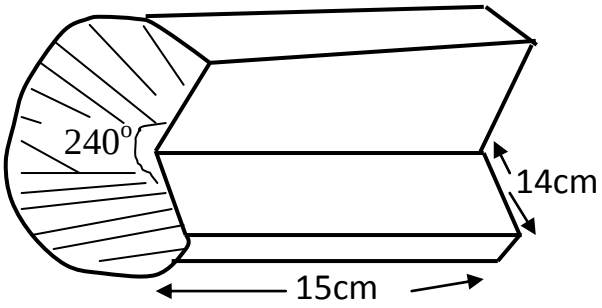
57. Point A (2,2) is rotated through 90^{o} using centre (1,0). Determine the coordinates of A , the image of A after the rotation.

58. In the pyramid PQRS, $\triangle$ PQR is the base, $\angle PQR = \angle SPQ = \angle SPR = 90^{o}$ PQ = 12cm, PR = 13cm, PS = 8cm. Calculate the value of the pyramid.

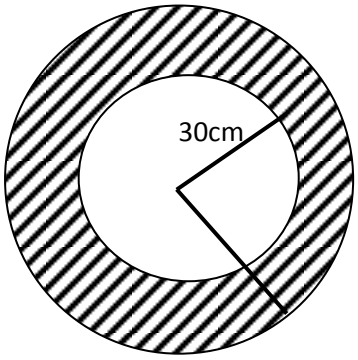




59. Find the volume of the figure below.



60. The figure shows a crossection of a thick cylindrical water main which is 10m long. Find its volume ($\pi = {}^{22}/_{7}$)



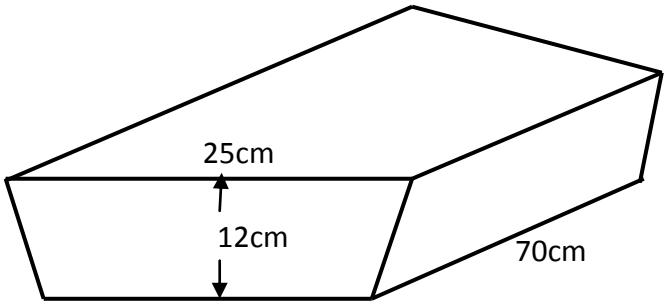
61. Solve the inequality $18 < 3(x+2) < 36$

62. Make b the subject of the formula

$$N = \frac{\sqrt{(b-x)}d}{3y}$$

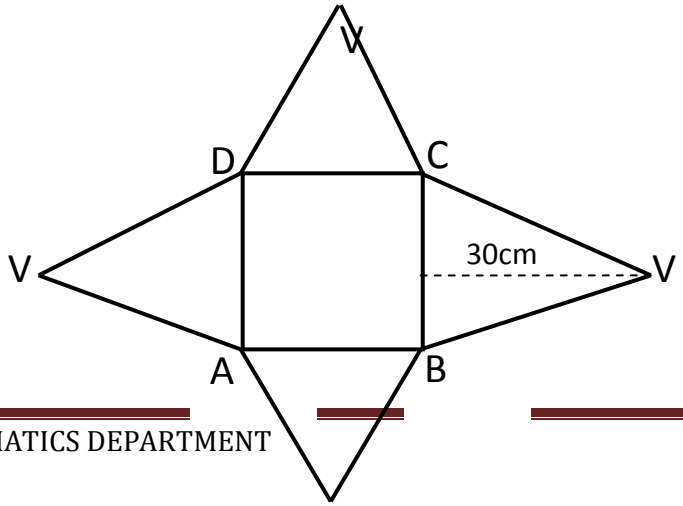
63. Given that 4tanx – 3 = 0, without using mathematical tables or calculators evaluate 4sinx – 2cosx for $180^o \leq x \leq 270^o$
64. After a decrease of 15%, the price of a car is shs 17,106,250. Find the price of the car before the decrease.
65. A square has a side of 20cm. If each side is increased by 20%. What is the percentage increase in (a) the perimeter (b) the area of the square
66. Mary bought a dress at shs 66,000 after being given a discount of 12%. Calculate the original price of the dress.
67. An integer is picked at random from I = { 2,3,4……..10}. What is the probability that the integer is a factor of 24.
68. Okello bought a television set at shs 450,000. She sold it as shs 550,000. Calculate her percentage profit.
69. Simplify $2log_{10}^{2}$ - log_{10}^{3} + log_{10}^{75} without using tables or calculators.
70. Solve the inequality $\frac{1}{2} - \frac{2}{3}x < \frac{1}{6}x - \frac{1}{4}$

71. The figure below shows a water trough for feeding animals.



Calculate the volume of the trough.

72. Given that D = { All triangular numbers less than 25}
73. The diagram below shows a net of a right pyramid ABCDV on a square base. The sides of the square are 36cm each. M is the midpoint of BC and MV = 30cm.

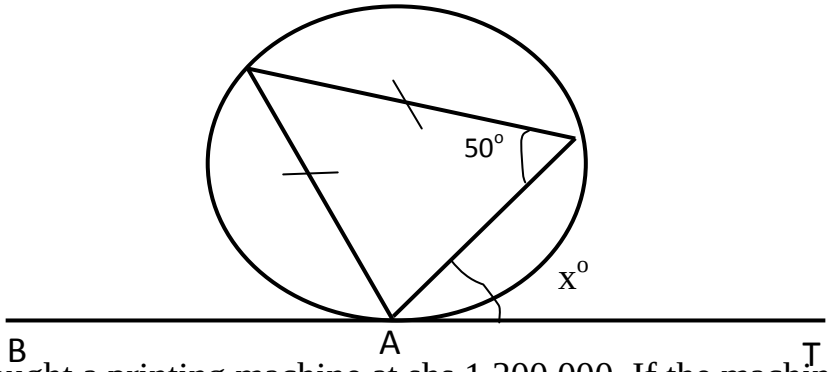


V

(a) Draw a sketch diagram of the pyramid

(b) Calculate the height of the vertex of the pyramid from the base.

74. In the diagram below, BAT is a tangent to the circle, given that $\overline{AC} = \overline{CD}$ and $\angle ADC = 50^o$ find the value of X



75. Mr. Opio bought a printing machine at shs 1,300,000. If the machine depreciates at a rate of 20% per annum, calculate the value of this printing machine after 3 years.

76. A man made a journey walking for 30 minutes at 3km/hr, riding a bicycle for 1 ¼ hours at 24km/hr. Calculate his average speed in km/hr at which he was travelling over the whole journey

77. The gradient of a line $\angle$ through points A(2x,4) and B(-1, x) is $^1/_7$. Find the value of x.

78. Use logarithm tables to evaluate $\sqrt[3]{0.84\ x\ 32.7}$

79. A rectangle 6cm long and 5cm wide is enlarged so that its area becomes 270cm^2. Find the linear scale factor of the enlargement.

80. A fair die with faces marked 1 to 6 and a fair coin with one side showing the court of arms (C) and the other a fish(F) are tossed together once

(a). construct a possibility space showing all the possible outcomes.

(b). find the probability that a six and a fish will show up.

81. If 1 Kenya shilling = 30 Ushs and a man got 10,000 US dollars from 700,000 Kenya shillings. How much in US dollars would be required to get 350,000 Ushs.

82. Form a quadratic equation whose solution set is $\left\{^3/_5, -3\right\}$

83. Simplify $\left(\frac{32}{243}\right)^{-4/5} \div \left(\frac{512}{729}\right)^{-2/3}$

84. Given that f(x) = $\frac{1}{2x-6}$ and g(x) = $x^2 - 1$. Find the values of x such that fg(x) is meaningless.

85. Without using tables or calculators evaluate $\frac{17.385^2 - 2.615^2}{2}$

86. Given that Cosθ = $-8/7$ and θ is obtuse, find without using tables or calculators: (i). Sinθ (ii). tanθ

87. The table shows marks obtained by students in a chemistry test.

Marks	30	32	34	36	38	40
No. of students	5	6	7	α	3	5

Find the value of $\boldsymbol{\alpha}$ if the mean mark for the class is 34.6

88. The mean height of 35 boys in a class is 152cm. Recently other five boys whose mean height is 160cm joined the class. Find the new mean height of the boys in the class.

89. ABCD is a parallelogram with A(3,4), B(-1,2), C(-1,-1) and D(x,y). Find the coordinates of D

90. Evaluate log_{10} ($a^2b^{1/2}$). If log_{10}^a = 0.234 and log_{10}^b = 1.815

91. Given that $\begin{pmatrix} x & 3 \\ 2 & 2x-1 \end{pmatrix}$ has no inverse . Find the possible values of x.

92. Use matrix method to solve the following simultaneous equation

93. Given the matrices A = $\begin{pmatrix} 3 & 4 \\ 4 & -1 \end{pmatrix}$ and B = $\begin{pmatrix} 1 & 2 \\ -3 & 1 \end{pmatrix}$. Determine A^2+B

94. Express $x^2 + x - 12$ in the form $(x + a)^2 + b$

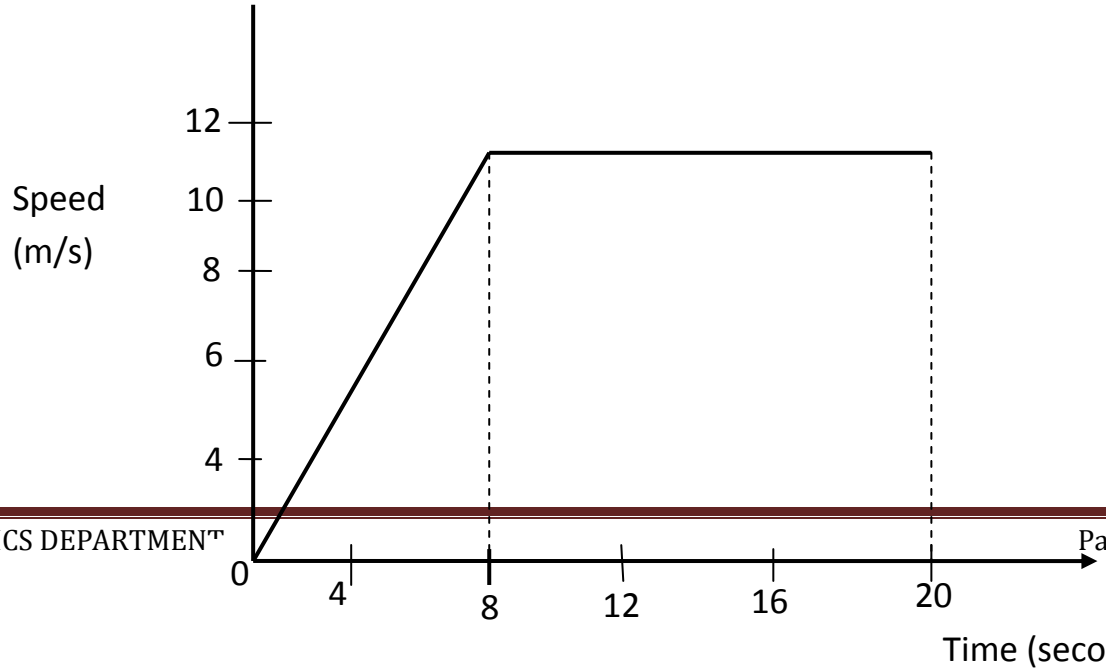
95. If CosX = 0.634. Find the two possible values of X

96. 6 men take 56hours to pack 2240 parcels. Find the number of hours 5 men would take to pack 2500 parcels

97. Given that $\sqrt[4]{px^2 + \alpha}$ = L . Express X in terms of L,P and α

98. A map has a scale of 1:200,000. The area of a swamp on the map is 5.5cm^2 . What is the actual area of the swamp in km^2.

99. The diagram shows part of the speed –time graph of an object moving in a straight line.



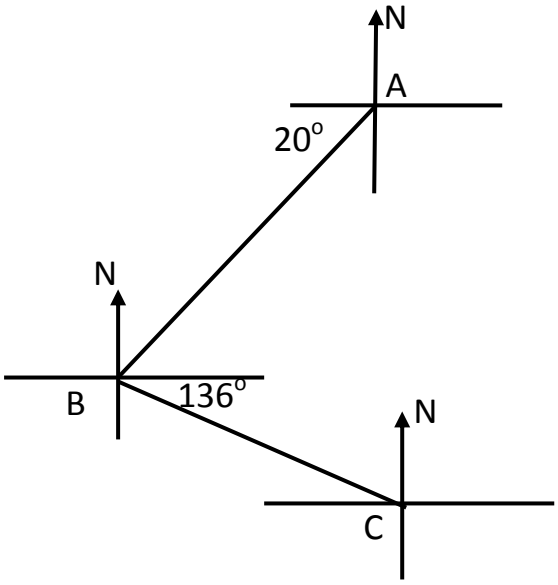
Find the distance travelled in 20 seconds

100. A straight line AB, cuts X and y-axis at A and B respectively. If the X-intercept is -2 and y – intercept is -3. Find the equation of the line AB.

101. Simply $\left(\frac{1}{343}\right)^{-2/3} \times 49^{\frac{1}{2}} \times 7^{-1}$

102. A bus set off from town P at 8:30pm for town Q at an average speed of 80km/hr . It arrived at Q at 3:15am. Determine the distance $\overline{PQ}$.

103. Study the diagram below.



(a). What is the bearing of B from A?

(b). What is the bearing of B from C?

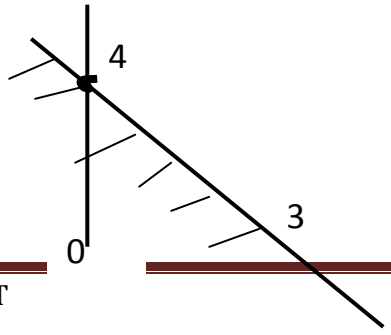
104. Given that H denotes half turn about the origin and X denotes reflection in the X- axis . Find a single transformation matrix H followed by X.

105. Solve the simultaneous equations

$x+y = 5$

$x^2+ y^2 = 5$

106. Determine the inequality represented by the unshaded region in the diagram below



107. If log_{10}^{a} = 1.234. Determine the value of $log_{10}^{\sqrt{a}}$

108. A bag contains X red balls and (x-8) white balls. If the probability of drawing a a red ball is $^{2}/_{3}$. Find the number of balls in the bag.

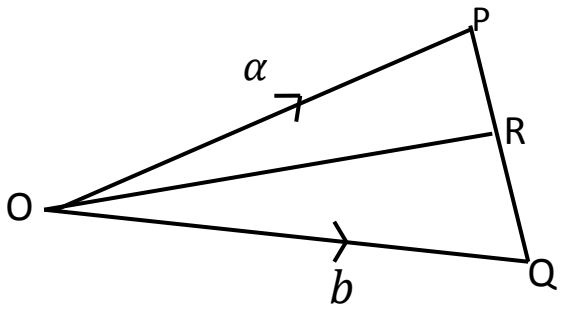
109. In the table below, y is inversely proportional to x

y	P	45
x	5	8

Find the value of P

110. A wooden box is 60cm long, 50cm wide and 40cm high. Find the surface area of box in cm^2

111. The figure below is that OP = $\underset{\sim}{a}$, OQ = $\underset{\sim}{b}$ and PR = $\frac{1}{3}$ PQ.



Express OR in terms of $\underset{\sim}{a}$ and $\underset{\sim}{b}$

112. Simplify $\dfrac{2\frac{1}{2} + \left|\frac{1}{3} \times 2\frac{1}{4}\right.}{\frac{5}{6} + \left|\frac{2}{3}\right.}$

113. (a). Plot the point P(4,-3) on a square paper

(b.). On the same graph, draw the line y = x hence determine the image of the point P under the reflection in the line y = x.

114. Find the values of x and y given that $(1 \quad 3 \quad 2)\begin{pmatrix} 4 & 3 \\ x & 2 \\ 10 & y \end{pmatrix} = (27 \quad 17)$

115. A traffic police patrol car travelling at 120km/h is chasing a taxi 00.5km away and travelling at 100km/h. How far must the police patrol car travel in order to catch up with the taxi

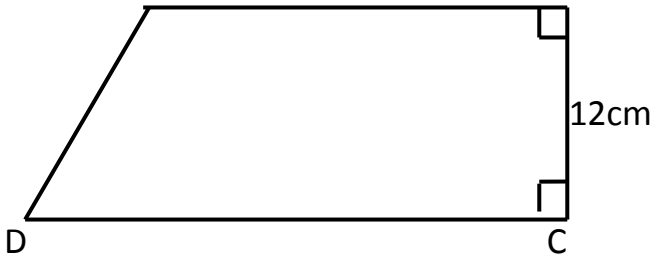
116. ABCD is a trapezium in which <B = <C = 90^{o}. Calculate;

(a) Length DC

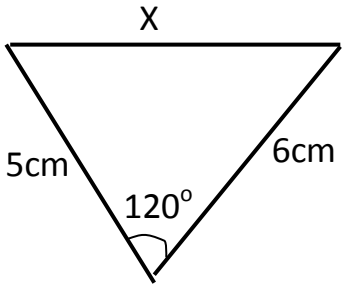
(b) Area of trapezium

42cm

20cm



117. Find the value of X



118. Find the value of X for which the matrix $\begin{pmatrix} x+6 & 0 \\ 0 & 5 \end{pmatrix}$

(a) Has no inverse

(b) Represents an enlargement

119. In a national examination, there were 20000 candidates who were awarded Grades as follows:

Grade	A	B	C	D	E	F
No. of candidates						

Find the probability that a candidate picked at random will have

(i) Grade C

(ii) Grade A or B

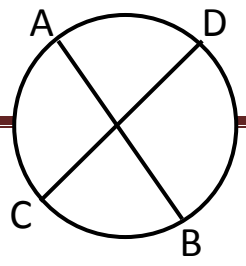
120. A circular fish pond has a radius of 2.7m. A sector of angle 75^o is used for fish Breeding. Calculate in m^2 to one decimal place.

(a) The area of the pond

(b) The area of the breeding sector.

121. A coin is tossed and a die is thrown . Calculate the probability of obtaining a Ahead on the coin and a prime number on the die.

122. Two chards AB , CD of a circle intersect at X. If AX = 2cm, CX = 4cm, CD = 9cm. Calculate the length of AB.



123. A mans annual salary was ε 6400 . He was allowed $^{9}/_{32}$ of this as tax free, then paid 25% tax on the next ε 1000 and 33% tax on the remainder. Calculate his monthly salary after payment of tax.

124. Simplify $\frac{3x^2 - 4xy + y^2}{9x^2 - y^2}$

125. If p:q = 5:6 and q : r = 8:9. Find p:q:r

126. If log_{10}^{2} = x, find in terms of X.
$log_{10}^{32} + log_{10}^{5} - log_{10}^{(1/8)}$

127. If $1 - \left(\frac{1}{2}\right)^{X} = \frac{31}{32}$. What is X.

128. The diameter of a wheel is 70cm. Taking $\pi = {}^{22}/_{7}$. Find the number of Revolutions the wheel makes when the car travels 2km.

129. When asked to find $^{7}/_{18}$ of a certain number, a boy found by mistake $^{7}/_{8}$ of it. Hence the answer was too large by 105. Find the number.

130. Find the value of p and t such that
$2^{t+p} = 8$ and $\frac{3^{p}}{3^{2t}} = \frac{1}{27}$

131. Solve for X in the equation: $\frac{6x - 4}{3} - \frac{2x - 2}{2} = \frac{6 - 5x}{6}$

132. Factorise completely;
(a) $128x^3 + 54$
(b) $29^2 - 15ab + 18b^2$

133. Given that $f(x) = 2x^2 - nx$ and $f(-) = 18$. Find the value of **n**.

134. Find the equations of the straight line which passes through (3,4) and is
(a) Parallel
(b) Perpendicular to the line y = 5x + 50

135. Simplify $\sqrt{128} + \sqrt{18} - \sqrt{72}$

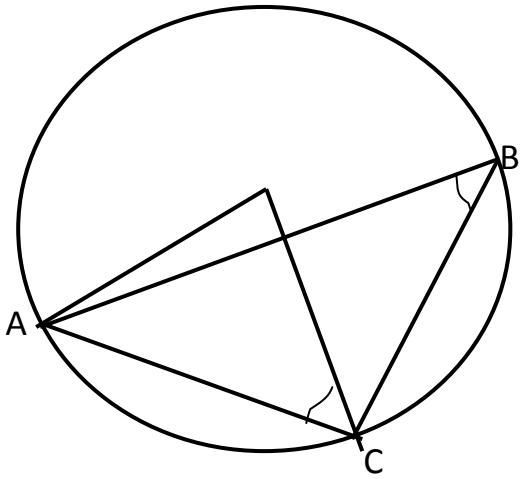
136. Solve for y in log(2y-4) + log2 = log(y-2)

137. Town B can be reached from town A. It takes a driver 2 hours to reach B. The driver covered the first **x** km at an average speed of 54km/h and then covered the remaining **y**km at an average speed of 108kmh^{-1}. Show that the time taken using the route is given by 2x + y = 216.

138. In the figure below, O is the centre of the circle. $\angle ABC = 37^{o}$

Find (a). angle AOC

(b.). ∠ACO marked x



139. Okello is 35m away from a tree, he measures the angle of elevation of the top of a tree and finds it to be 26 : Okello is 1.6m tall: How tall is the tree.

140. Factorise completely :

(a) $2x^3 - 50xy^2$

(b) $Yx^4 - 81y^5$

141. The mean height of 12boys is 1.60m and mean height of the 8 girls is 1.50m. Find

(a) The total number of 12 boys

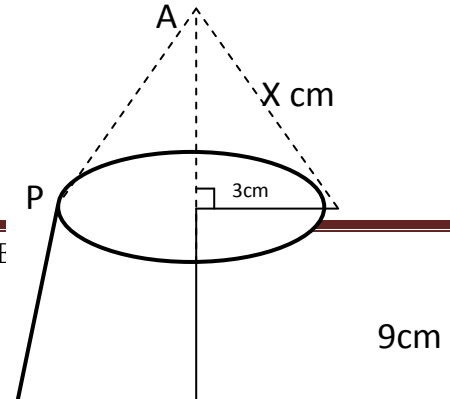
(b) The total number of 8 girls.

142. If $a * b = a^2b - a$, find x if $3* (4*x) = 105$.

143. Solve the inequality $20 < 2(3x-2) < 42$

144. Calculate the volume of hemisphere whose radius is 4.9cm.

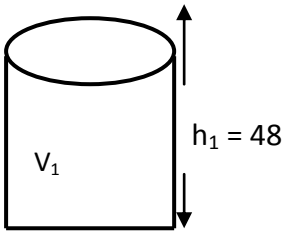
145. The figure below shows a cone ABC with circular end of radius 7.5cm from which cone APT is cut off at radius 3cm.

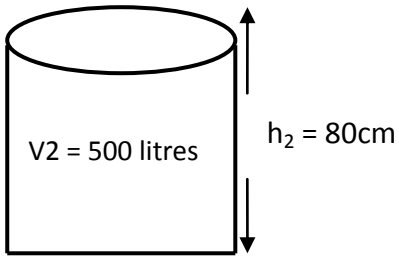




Determine the ratio of the volume for the cut off cone to the volume of the frustrum BCTP.

146. Two tanks are of similar shape.





What is the capacity of the smaller tank whose height is 48 cm

147. Given that $\log_{10} x = 1.3586$ and $\log_{10} y = 2.1428$. Use the information to find $\log_{10}\left(\sqrt{\frac{x}{y}}\right)$.

148. Simplify $\frac{x^2 + 3x - 10}{x+5}$

149. Express 216 as a product of its prime factors hence find the cube root of 216.

150. A bag contains 14 marbles of which 10 are red and 4 are green. Two marbles are picked at random one at a time without replacement . Find the probability of picking marbles of different colours.

151. Without using tables or calculators, find the value of $\frac{\text{Sin}45}{\text{Cos } 45}$

152. Given that P = $\begin{pmatrix} 3 & -2 \\ -2 & 1 \end{pmatrix}$, Q = $\begin{pmatrix} -1 & 2 \\ 1 & 3 \end{pmatrix}$ and R = $\begin{pmatrix} 3 & -12 \\ -9 & 6 \end{pmatrix}$

Find matrix S such that $S = P^2 + 2Q - \frac{1}{3}R$.

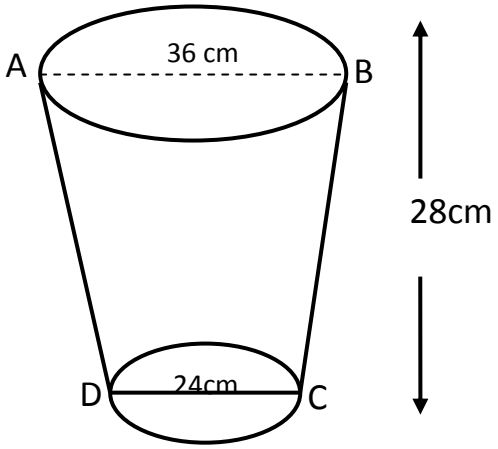
153. Given that $\frac{6}{\quad} = \alpha\sqrt{2} + b\sqrt{3}$

$3\sqrt{2} - 2\sqrt{3}$

Find the values of **α**and **b**

154. If QR = $\begin{pmatrix}-4\\-4\end{pmatrix}$, QS = $\begin{pmatrix}-4\\1\end{pmatrix}$ and ST = $\begin{pmatrix}-1\\3\end{pmatrix}$, Calculate RT.

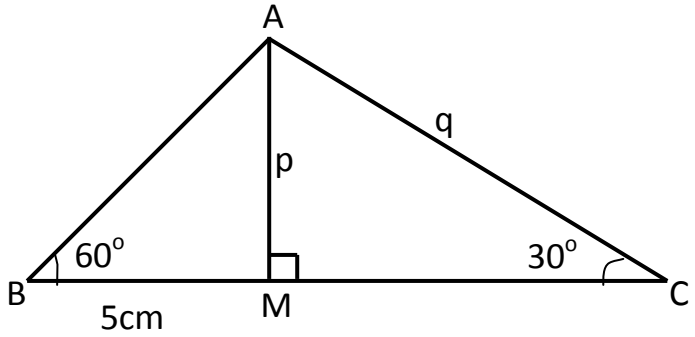
155. A bucket in the shape of a frustrum, as shown in the diagram has diameters 36cm and 24cm. Calculate the volume of the bucket.



156. Simplify 4^{x+1} x $\left(\frac{1}{32}\right)^{2-x} = 16^{\left(x-\frac{1}{2}\right.}$

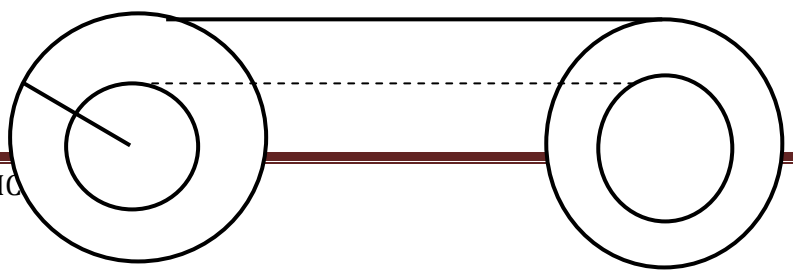
157. A sales agent gets 10% commission on the first shs 20,000 worth of goods sold and 15% on all sales above shs 20,000. Find the total sales in shillings of goods sold. If in a certain month he received shs 5,000 as commission payment.

158. In the diagram below, find the values of p and q, correct to one decimal place.



159. Find the value of K for which $\log_{10} k + \log_{10}(k+3) = 1$

160. The diagram shows a cylindrical metal pipe with an outside radius of 3cm and an inside radius of 2cm. the pipe is 1.5m long. Find the volume of the metal in the pipe.



161. The mean of the following set of numbers y, (y-5), 3, 20, 32, (y-2) and 2 is 14. Find:
   (i) The value of y
   (ii) The median of the numbers.

162. Find the rate of compound interest levied on shs 8000 when it has been deposited for 3 years and earned shs 27,000.

163. Study the table below and answer questions that follow.

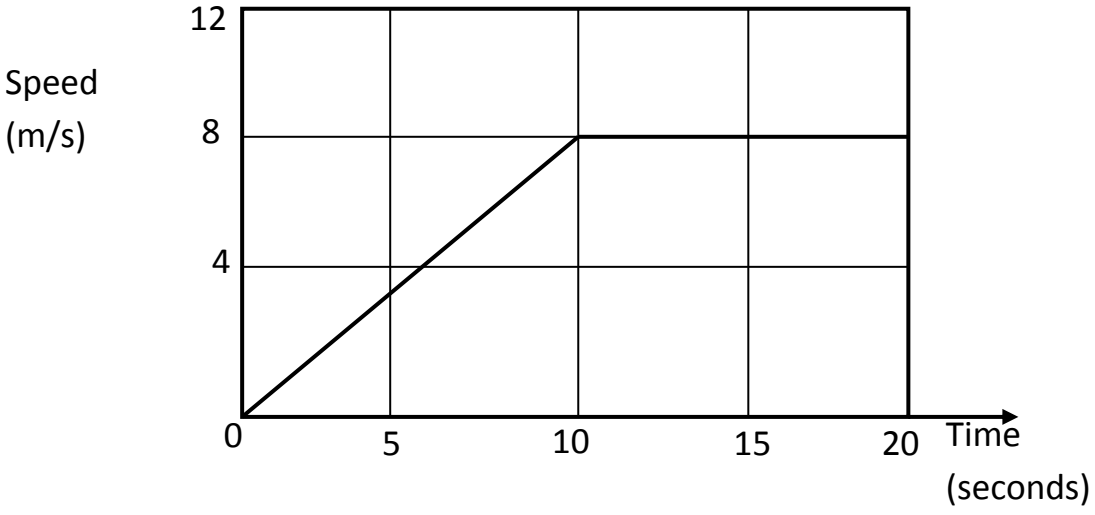
Currency	Buying (shs)	Selling (Ushs)
1 Us dollar	147.60	153.60
1ε	250.26	260.43

Mr. Opolot had ε825 sterling. He decided to change it to Uganda shillings. How much did he get.

164. Matrices A and B are such that A = $\begin{pmatrix} 4 & x \\ 2 & x \end{pmatrix}$ and B is α 2x 2.
Identify matrix. Given that A + B is a singular matrix. Find the value of x.

165. Find the area of a regular pentagon of side 10cm.

166. The diagram shows part of the speed time graph of an object moving in a Straight line.



(a) Find the accn dunnng the
First 10 seconds

(b) Distance travelled in 20 seconds

167. Factorise completely
(a) $8m^3 - n^3$
(b) $X^3 + 1$

168. A pyramid stands on a rectangular base measuring 12 cm by 14cm. Each of its edges is 13cm long. Calculate its surface area.

169. Use mathematical tables to evaluate($0.48)^{3/5}$ correct to 2 decimal places.

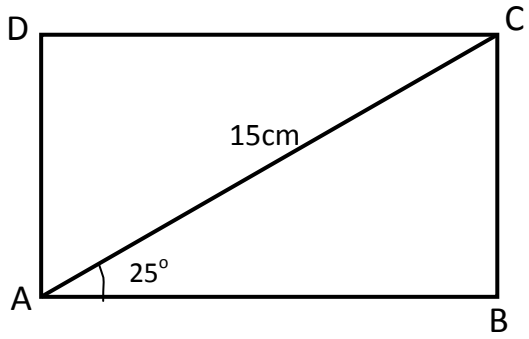
170. Without using tables or calculators evaluate
(i) 115.5 x 13.05 – 13.05 x 15.5
(ii) $\frac{22.\ 35^2 - 42.35 \times 22.35}{0.2}$

171. Given that PQ = $\begin{pmatrix} -6 \\ 8 \end{pmatrix}$, QR = $\begin{pmatrix} 2 \\ -3 \end{pmatrix}$ and Q is (4,1) . Find
(i) PQ (ii). the coordinates of P.

172. The coordinates of points A and B are (-4, -5) and (x , y) respectively.
The coordinates of the midpoint of AB are (-3, 1). Determine the value of x and y.

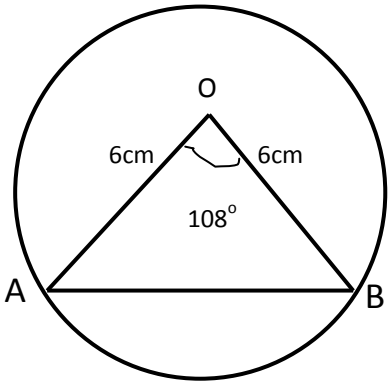
173. Solve the inequality $\frac{1}{2} - \frac{x}{6} > -\frac{5}{2}$
Hence show the solution on the number line.

174. ABCD is a rectangle with diagonal AC = 15cm and < BAC = 25^o . Calculate the area of the rectangle.

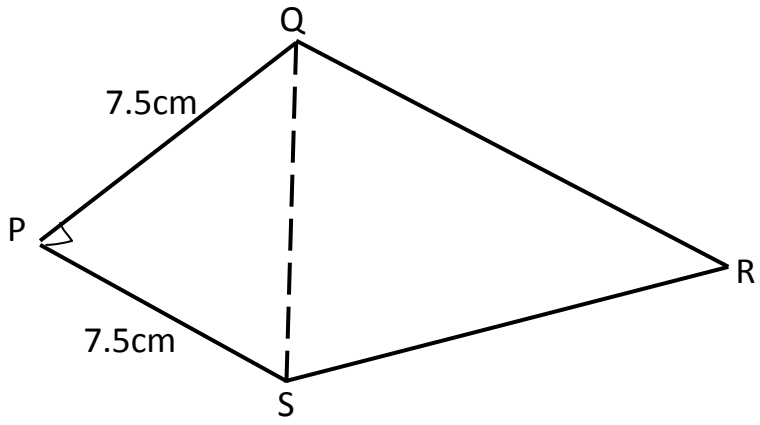


175. The angle of depression of a boat from the top of a vertical cliff 50m high is 10^o. Find the distance of the boat from the foot of the cliff.

176. The radius of a circle, centre O, is 6cm. A chord AB subtends an angle 108^o at the centre. Find the length of AB.



177. Find the area of Kite PQRS, in which PQ = PS = 7.5cm, <P = 90^o and PR=20cm



178. Solve the following

(a) $x - 2 = \frac{5}{x+2}$

(b) $(3x + 7)^2 = 16$

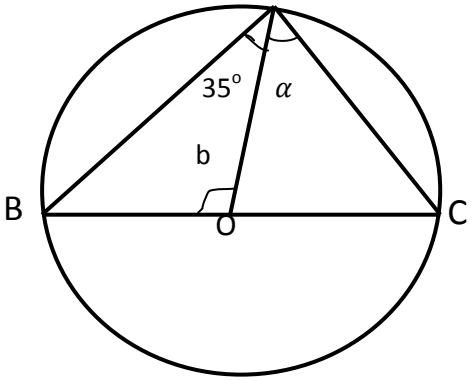
(c) $P^2 = 7p$

179. The number of diagonals N, in a polygon is given by $N = n(\frac{n-3}{2})$, where n is the number of sides. How many sides are there if the number of diagonals is 54.

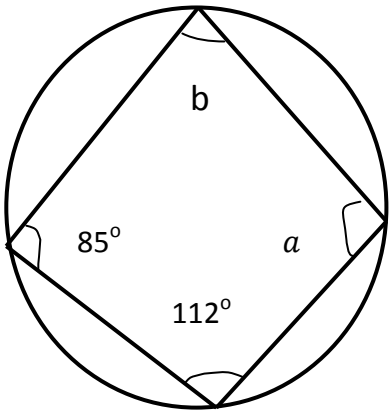
180. The cost of a square carpet is £128 and that of another square carpet whose sides is 1m longer than that of the first one is £200. If the cost per m^2 is the same for both, find the length of their sides.

181. Calculate the angles marked with small letters

(i).



(ii)



182. Given that X = $\sqrt{\frac{y-3}{2y+1}}$, make y to subject of the formula.

183. Factorise completely

(a) $2\alpha^2 - 15\alpha b + 18b^2$

(b) $128x^3 + 54$

184. Without using tables or calculator, find the value of x which satisfy the equation

$2\log_{10}(x^2-5) = 4\log_{10} 2$

185. The following are the percentage marks obtained by ten pupils

12, 3, 39, 61, 40, 10, 28, 40, 15, 52.

Find the probability that a pupil selected at random from this group obtained a mark below the mean mark.

186. Find t, if $log_3^y = 2$ and $log_3^{(ty)} = 6$.

187. A floor measuring 2.5m by 2.0m is to be covered by square tiles measuring 25m each. Find the number of tiles that will be needed to cover the floor.

188. Given that $2g - e = 3g(g-e)$ express g in terms of e in its simplest forms.

189. Find the H.C.F and LCM of

(i) $\alpha^2 - \alpha x^2$, $4\alpha^2 - 4\alpha x$ and $6\alpha^2 x - 6\alpha x^2$

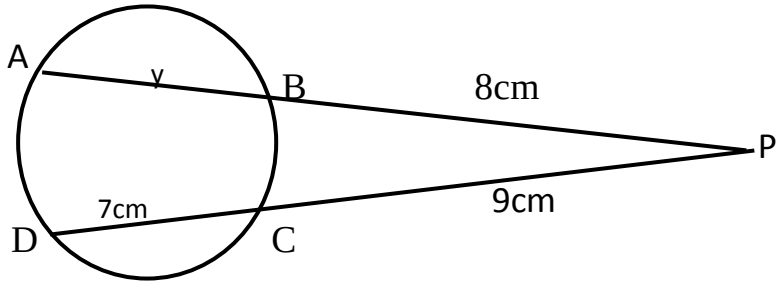
190. Given that X varies jointly as a square of y and inversely as Z. When x = 6, y = 1000 and z = 9. Find z, when x = 2 and y = 5.

191. A container has a volume of $343cm^3$ and surface area of $49cm^2$. Find the surface area of a similar container which has a volume $125cm^3$.

192. Opio was given three digits 3,1 and 5 to form three digit numbers. Write down the possible three digit numbers formed. If a number is randomly picked, find the probability that it is less than the range of the numbers formed.

193. Two dice are rolled and their sum recorded. Find the probability that the number (sun got) is greater than 5.

194. In the above figure BP = 8cm, DC = 7cm , CP = 9cm. Calculate the length of AB



195. The areas of two similar shapes are $27m^2$ and $48m^2$ respectively. A side of the smaller one is 4.5cm long. Find the length of the corresponding side of the larger one.

196. If $\log_{10} 2 = 0.30103$ and $\log_{10} 3 = 0.47712$. Calculate the value of $\log_{10} 60$

197. Evaluate $27^{2/3} + \left(\frac{1}{81}\right)^{-3/4}$, without tables

198. Make q the subject of $P = r\sqrt{1 - q^2}$

199. Simplify $log_{10}^{120} + \frac{1}{3} log_{10}^{27} - 2log_{10}^{6}$

200. An inverted cone of height of 15cm and base radius 4cm contains water to a depth of 10cm. Calculate the volume of water required to fill up the cone.

END

Best wishes

Stay home; fight covid-19