FORM 4 NAME:DATE:.....

1. Use logarithms to 4 decimal places to evaluate: (4 marks)

$$\left(\frac{0.7841 \times \sqrt{0.1356}}{Log \ 84.92}\right)^{\frac{1}{3}}$$

2. A globe representing the earth has a radius of 0.5m. point $A(0^0, 10^0 W)$, B $(0^0, 35^0 E)$, P(60⁰N, 110⁰E) and Q(60⁰N, 120⁰W) are marked on the globe.

a) Find the length of arc AB, leaving your answer in term of π (3mks)

3. A circle centre is the point C(2,3) passes through a point P(a,b). A point M(-2, $\frac{-5}{2}$) is the mid-point of the line CP.

a) Calculate the coordinates of P. (1mk)

b) Determine the equation of the circle in the form $x^2 + y^2 + ax + by + c = 0$ (3mks)

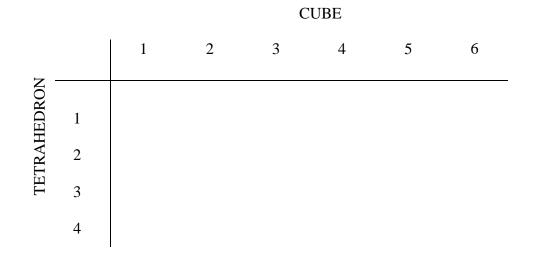
4. Make **a** the subject of the formula:

6

$$\mathbf{x} = \mathbf{y} + \sqrt{\mathbf{x}^2 + \mathbf{a}^2} \tag{3marks}$$

5. Given that $\operatorname{Sin}\left(\frac{2}{3}x + 20^{0}\right) - \operatorname{Cos}\left(\frac{5}{6}x + 10^{0}\right) = 0$. Without using a mathematical table or a calculator, determine tan $(x + 20^{0})$. (3 marks)

6. Two fair dice one a regular tetrahedron (4 faces) and the other a cube are thrown. The scores are added together. Complete the table below to show all possible outcomes. (2 mark)



a) Find the probability that:

i)	The sum is 6.	(1 mark)	
•••			
111)	The sum is 6 or 9.	(2 marks)	
	7. A particle moves along a straight line such that its displacement s metres from a given		
	point is $s = t^3 - 5t^2 + 3t + 4$ where t is time in seconds. Find:		
	(a) The displacement of the particle at t = 8.	(2 marks)	

(b) The velocity of the particle when t = 10. (3 marks)

8. A classroom measures (x + 2) m by (x - 5)m. If the area of the classroom is $60m^2$.

Find its length.

(3 marks)

SECTION B

Lengths of 100 mango leaves from a certain mango tree were measured t the nearest centimeter and recorded as per the table below,

Length in cm	No. of leaves
10 to 12	3
13 to 15	16
16 to 18	36
19 to 21	31
22 to 24	14

Compiled& distributed by Schools Net Kenya, P.O. Box 15509-00503, Nairobi | Tel:+254202319748 E-mail: infosnkenya@gmail.com | ORDER ANSWERS ONLINE at <u>www.schoolsnetkenya.com</u>

- a) On the grid provided draw a cumulative frequency graph to represent this data. (5mks)
- b) Use your graph to estimatei) The median length of the leaves (2mks)

ii) The number of leaves whose lengths lie between 13cm and 17cm.(3mks)

(a) Draw $\triangle PQR$ whose vertices are P (1, 1), Q (-3, 2) and R (0, 3) on the grid provided.(1mk)

- (b) Find and draw the image of Δ PQR under the transformation whose matrix is $\begin{pmatrix} 3 & 0 \\ 1 & 1 \end{pmatrix}$ and label the image P¹Q¹R¹. (2 marks) (c)P¹Q¹R¹ is then transformed into P¹¹Q¹¹R¹¹ by the transformation with the matrix $\begin{pmatrix} -1 & 0 \\ 1 & 3 \end{pmatrix}$. Find the co-ordinates of P¹¹Q¹¹R¹¹ and draw P¹¹Q¹¹R¹¹. (3 marks)
- (d) Describe fully the single transformation which maps PQR onto P¹¹Q¹¹R¹¹ find the matrix of this transformation. (3 marks)

(d) Describe fully the single transformation which maps PQR onto P¹¹Q¹¹R¹¹ find the matrix of this transformation.
(3 marks)