1a. Given that $\log_2 128^x = \sqrt{3}$.find the value of x.

b) Given that $\frac{1}{\sqrt{2}} - \frac{\sqrt{2+1}}{1+3\sqrt{2}} = a\sqrt{2} + b$.

c) Show that $\frac{2a.b.a+a.a.a+b.b.b}{ab(a+3b)} = \frac{2+11\sqrt{2}}{14}$. When $a=b\sqrt{2}$

2. The table below shows the weights of 52 students in kgs.

Weights	Cumulative frequency
40-	3
45-	5
50-	12
55-	30
60-	48
65-	51
70-74	52

a)calculate the:

i)mean **weight**

ii)variance of their weights.

b)draw a cumulative frequency curve and estimate:

i)median

ii)number of stundents whose weights exceed 58kg.

3. The data below shows marks obtained by 50students in a test.

7.6	1.7	5.7	6.3	1.2	9.6	3.8	4.6	8.2	4.8
6.1	9.3	4.4	19	7.0	6.0	7.1	1.8	4.0	5.4
5.0	2.7	6.2	4.2	6.3	5.2	5.3	3.8	6.2	2.5
6.2	2.3	3.2	8.1	3.1	6.3	6.4	1.8	7.0	2.7
5.2	8.1	3.5	6.3	3.8	3.7	4.4	1.9	7.0	3.2

a)construct a grouped frequency distruction .

b)Draw a histogram and use it to estimate the modal mark.

c) Calculate the mean and standard deviation of the marks.

4. The ages of eight students in a class 12, 13, 14, 15, 12, 17, 13, 16. Find the;

(a) Mean age.

(b) Variance.

5. Express $\frac{4}{\sqrt{3}+\sqrt{2}}+\frac{4}{\sqrt{3}-\sqrt{2}}$ in the form $b\sqrt{c}$ where b and$c$ are integers.

6. The marks scored in the test by 8 students are 5, 9, 11, 15, 19, 15, 10, 14.

   Determine the;

   (a) Mean mark.

   (b) Variance.

7. Given that $\log_3 x = 2\log_3 4 - \log_3 5 + \log_3 9$, find the value of x.

8. Evaluate $\frac{\log_6 216+\log_2 64}{\log_3 243+\log_{10} 0.1}$.

9. The table below shows the number of students and the marks scored in a test.

MARKS	NUMBER OF STUDENTS
0-4	10
5-9	7
10-14	5
15-19	3
20-24	7
25-29	11
30-34	37
35-39	20

a) (i) Draw a cumulitive frequency curve (0 give) for the data.

(ii) Use the (0 give) to estimate the median mark.

b) Calculate the;

(i) Mean mark

(ii) Standard deviation.

10.A)Given that $p = \log_a(a^3y^{-2})$ and $q = \log_a(ay^2)$. Find the value of $p + q$.

b) Factorise the expression $(X+4)^2 - (X-2)^2$ and hence solve for X in $(X+4)^2 - (X-2)^2 = 6^2$.

11.Find the values of X and Y by solving the following simultaneous equations : a) $5X^2 + 3y = 6$, $3X^2 + 9Y = 12$.

b) $2Y - X = 1$, $3Y + X^2 = 1$.

c) $2X + y = 1$, $5X^2 + 2XY = 2X + Y - 1$.

d) $X + 2Y = 1$, $3X^2 + 5XY - 2Y^2 = 10$.

e) $2X - 2Y = 1$, $X^2 - XY - 4 = 0$.

f) $5^{x+2} + 7^{y+1} = 3468$, $5^x - 7^y = 76$.