



Science Numeracy homework task – October.

Please attempt all questions. If you get stuck, please see your teacher for help before the deadline date or use the Numeracy guide available on Bathgate Academy's school website.

**PERCENTAGES**

1. Calculate the following;

- a. 10% of 50                      b. 25% of 120                      c. 40% of 200  
d. 75% of 24                      e. 5% of 800                      f. 45% of 60

2. Express the following as percentages;

- a. 24 out of 80    b. 3 out of 300    c. 80 out of 500  
d. 16 out of 96    e. 12 out of 96    f. 350 out of 1400  
g. one fifth                      h. two eighths                      i.  $\frac{5}{6}$ .

3. The rate of cell division of three different species of bacteria was compared by culturing 4 individual cells of each species in separate culture dishes. The number of active bacterial cells in each culture dish was counted 24 hours later. The results are shown below;

Dish number	Species X	Species Y	Species Z
1	120	60	42
2	150	60	72
3	96	80	54
4	122	88	64
Average	122	72	58

- a. For each of the 4 dishes calculate the number for Species Y as a percentage of the number for Species X.  
b. For dish 3 calculate the number for Species Z as a percentage of the number for Species X.  
c. For dish 1 calculate the number for Species Z as a percentage of the number for Species Y.  
d. Express the average value for Species Y and for Species Z as a percentage of the average value for Species X.

4. The effect of temperature on the rate of cell division of the three different species of bacteria was tested. 8 individual cells of each species were cultured in separate culture dishes and incubated at different temperatures. The number of active bacterial cells in each culture dish was counted 24 hours later. The results are shown below;

Temperature (°C)	Species X	Species Y	Species Z
20	40	20	24
25	64	50	32
30	96	60	40
35	400	60	80
40	360	39	68

- a. For each species, calculate the percentage increase in active bacterial cell number at 30°C compared to 25°C.  
b. For each species, calculate the percentage decrease in active bacterial cell number at 40°C compared to 35°C.

c. For species X, calculate the increase in active bacterial cell number at 35°C compared to 20°C.