



Science Numeracy homework task – December.

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.

AVERAGES

1. Calculate the average for the following sets of numbers;

a. 7, 18, 2

b. 6, 3, 9, 1, 1, 4

c. 10, 25, 19

d. 1, 60, 4, 3

e. 9, 7, 18, 9, 15, 12, 10, 8

f. 100, 120, 122

g. 1.2, 3.5, 4.7, 6.2

h. 12.5, 7.1, 8.2, 12.6

i. 0.24, 0.34, 0.56

2. Some S3 pupils devised an experiment to determine the order of reactivity of four metallic elements. They timed how long a 0.2 g piece of metal took to completely react in acid. Each metal was tested 5 times. The results are shown below;

Time taken to completely react (s)

	Calcium in 10ml of 1M nitric acid	Magnesium in 10ml of 0.5M sulphuric acid	Iron in 5ml of 2M hydrochloric acid	Zinc in 10ml of 1M nitric acid
Test 1	54	180	50	100
Test 2	49	200	46	120
Test 3	62	174	44	34
Test 4	55	190	56	146
Test 5	50	196	44	150
Average				

a. Calculate the average time for each metal to completely react.

b. What result in the table may have been caused by an experimental error?

c. The pupils concluded that the order of reactivity from most reactive to least reactive was – Iron, Calcium, Zinc, and Magnesium. Give **three** reasons why this finding is not valid.

3. After realising their experimental errors, the pupils came up with a valid plan and carried out the experiment again with the following results;

Time taken to completely react (s)

	Calcium	Iron	Magnesium	Zinc
Test 1	54	280	70	100
Test 2	49	200	66	130
Test 3				
Test 4	55	250	86	136
Test 5	50	236	94	140
Average	54	248	82	128

- Calculate the missing values for test 3 for each metal.
- What is the order of reactivity from least reactive to most reactive?