SCIENTIFIC METHOD AND MEASUREMENT STUDY GUIDE

Sara and Maria are trying to determine how the amount of salt in water affects algae growth. They set up 6 fish tanks with water and bacteria and add 10 grams of the salt to the first tank and increase the amount of salt in each tank by 10 grams each time. The set up a 7^{th} tank with just water and algae to match their natural environment. The girls will monitor each tank once a day and will record how many algae colonies they see in each tank.

1. Write an acceptable hypothesis for Sarah and Maria

2. What is their independent variable?

3. What is their dependent variable?

4. Which tanks are the control tanks?

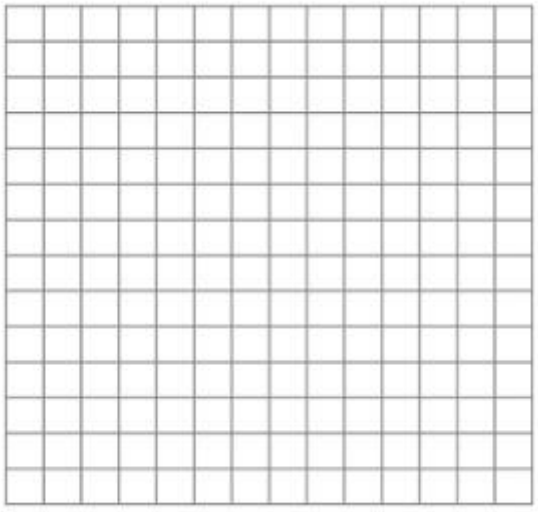
5. Which tanks are the experimental tanks?

6. Name two control variables the girls should have to make sure their experiment obtains valid data.

The table below shows Sara and Maria's data from the last day of the experiment.

Amount of salt	Day 7
10g	24
20g	20
30g	20
40g	16
50g	9
60g	3
0g	37

Make a graph of their data:



7. Looking at the data, what kind of relationship exists between salt and algae growth?

8. What should the girls' conclusion be about salt and algae growth?

9. Convert the following to km:

1600.0 m = _____ 2050 cm = _____ 1.033 Mm = _____

245 565 mm = _____ 20 099 m = _____ 499 m = _____

10. Convert the following:

10.034 mJ = _____ cJ 36.45 cL = _____ mL

1024 B = _____ kB 0.0325 kJ = _____ cJ

1202.5 mL = _____ L 25.5 km = _____ m

0.12907 cm = _____ mm 268 000 cm = _____ km

11. Determine how many significant figures are in the following numbers:

a. 579.420 b. 3.14159265 c. 2×10^{11} d. 50.0

e. 3800 f. 5.60×10^{48} g. 243. h. 9.0000×10^{-9}

i. 0.00000030 j. 8

12. Solve the problems and round to the correct number of significant figures:

a. 3.56 x 9 =

b. 16 x 20 =

c. 345 / 17 =

d. 900 / 1.277 =

e. 0.33 / 8 =

f. 55.3 x 6.8991 =

13. Put the following numbers into scientific notation:

a. 230 b. 5601

c. 14,100,000 d. 56,000,000

e. 0.2 f. 0.45013

g. 0.089 h. 0.00026

i. 0.000000 698 j. 0.12

14. Put the following numbers into standard notation:

a. 1.2×10^{5} b. 5.35×10^{-6}

c. 3.67×10^{4} d. 6.44×10^{2}

e. 7×10^{6} f. 2.01×10^{-5}

15. Calculate the density of a can of soda if the mass is 420 g and the volume is 355 mL.

16. A banana has a density of 1.89 g/mL and a mass of 76.2 g. What is it's volume?