1st Year Science, Christmas 2020
Time allowed: Double class

Mr. A. Goodison

Student Name _____

Answer all questions in the spaces provided.

An image of the international space station passing in front of the Moon on 14th Oct 2020.

Good luck!

Question	Marks	Awarded
1	7	
2	18	
3	9	
4	8	
5	4	
Total	**46**	
Grade descriptor		

Junior Cycle	
Percentage	**Grade Descriptor**
≥ 90 to 100	Distinction
≥ 75 and < 90	Higher Merit
≥ 55 and < 75	Merit
≥ 40 and < 55	Achieved
≥ 20 and < 40	Partially Achieved
≥ 0 and < 20	Not Graded (NG)

Question 1

- Table salt is a white solid
- Water is a liquid that will boil at 100°C

A student was asked to investigate what effect adding salt has on the temperature water will boil at (the boiling point).

Complete the hypothesis below using one of the three options (1. Increase, 2. Decrease, 3. Stay the same)

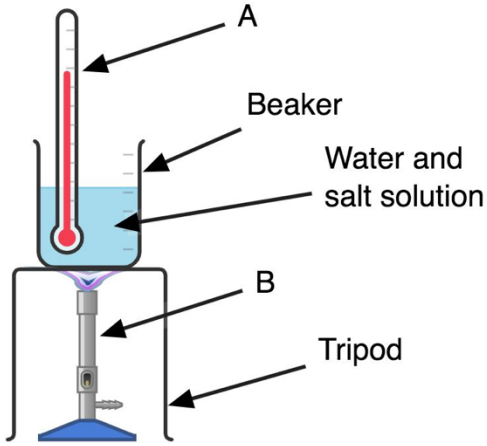
(i) Hypothesis: If I add more salt to the water, then the temperature the water boils at will…
_____(1)

(ii) The independent variable is the variable you change. What is the independent variable in this experiment? _____(1)

(iii) The dependant variable is the result you measure. What is the dependant variable in this experiment? _____(1)

Name the instrument (A) in the diagram that is used to measure temperature.
(iv) _____(1)

Name the device (B) in the diagram used to heat the water
(v) _____(1)



The student collected the following data for the boiling point of water when different amounts of salt were added to 60 cm^3 of water.

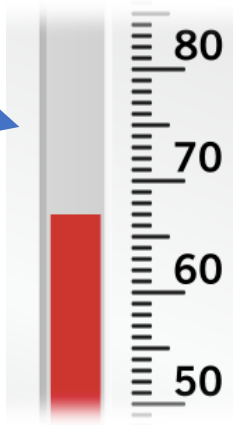
Mass of salt (g)	**Boiling point (°C)**
0	100
2	102
4	105
6	107
8	109

(vi) Does the data in the table support your hypothesis from part (i) Explain your answer.

_____

_____(1)

(vii) During the experiment the student measured the temperature.
What is the temperature reading shown on this measuring instrument.



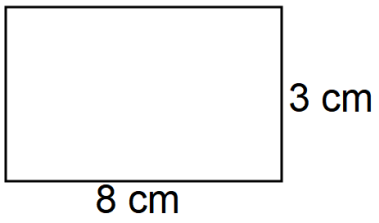
Temperature _____ (1)

Question 2

(i) Convert 1.7 metres to millimetres (1)

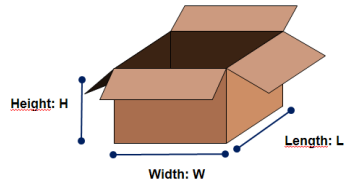
(ii) Convert 12,000 grams to kilograms (1)

(iii) Calculate the area of a rectangle of length 8 cm and width 3 cm.



Answer _____ (3)
Don't forget your unit

(iv) Calculate the volume of a box of length 2 m, width 5 m and height 3 m.



Answer _____ (3)
Don't forget your unit

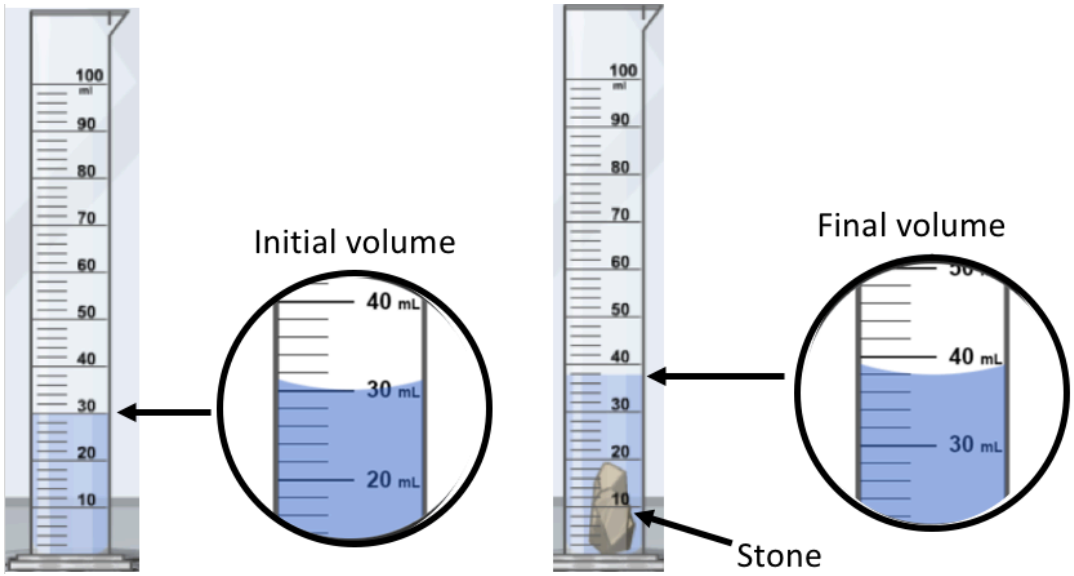
(v) Complete the table below for the instruments shown. (10 marks)

In each case, state what physical quantity the instrument measures. Also state the unit used for that measurement. (Some parts of the table are already completed for you)

Instrument	**Quantity measured**	**Unit**
Metre stick		
Stopwatch		
Graduated cylinder		
Thermometer	Temperature	^{o}C
Trundle wheel		
Mass balance		

Question 3

Your science teacher has asked you to find the **volume** of a stone using a graduated cylinder. During the experiment you made the observations as seen in the diagram below.



Study the diagram above for measuring the volume of the stone carefully.

(i) What was the initial volume of water? _____(1)

(ii) After the stone was added, what was the final volume? _____(1)

(iii) Calculate the volume of the stone_____(1)

Your science teacher then asks you to figure out **what type of rock** the stone is made of by determining its **density**.

You measure the **mass** of the stone to be: **24 g**

(iv) Using the volume of the stone from part (iii) and the mass of the stone, calculate the density.

$$Density = \frac{Mass}{Volume}$$

Density of the stone_____ (3)
(don't forget your units)

(v) Use the density of the stone and the table below to identify which type of rock the stone is made from. Type of rock _____ (1)

Rock type	**Density (g/cm^3)**
Pumice	0.6
Sandstone	2.1
Shale	2.4
Limestone	2.6
Quartzite	2.7
Basalt	2.9
Granite	3.0
Pyrite	5.0
Galena	7.4
Magnetite	7.8

(vi) The density of water is 1 g/cm^3. Name one rock type in the table that will float on water? _____ (1)

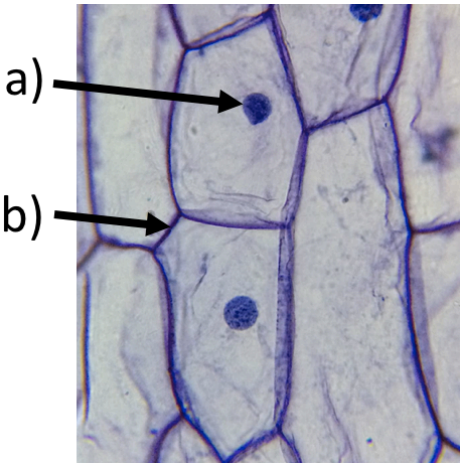
(vii) Explain why this rock you choose from part (vi) will float on water.

_____

_____(1)

Question 4

The image on the right show onion cells.



(i) Name the instrument used to view cells:

_____(1)

(ii) Using the diagram name the part labelled a) and give its function.

Name_____(1)

Function_____

_____(1)

(iii) Using the diagram name the part labelled b) and give its function. (Hint: it is **not** the cell membrane)

Name_____(1)

Function_____

_____(1)

(iv) What is the function of the cell membrane?

_____

_____(1)

Name two cell structures that are different between plant and animal cells.

(v) _____ (1) (vi) _____(1)

Question 5

Read the following passage and answer the questions

Jellyfish are known for drifting in ocean currents—but one type of jellyfish is very different.

Golden Jellyfish pack a remote island lake which is located in the Pacific Ocean. Golden Jellyfish spend much of their lives on the move during a daily journey that follows the Sun across the sky. Each morning at around 6 am, when the Sun rises, they begin to swim toward the light. They follow the sunlight until they nearly reach the shore—stopping just before the shadows caused by trees. They repeat this journey every day.

Golden jellyfish need this light to survive. The Sunlight is used by a special plant called algae which live inside the body of the jellyfish. The process of photosynthesis allows the algae to make food using sunlight, for itself and the jellyfish.

(i) What lives inside the Golden Jellyfish? _____(1)

(ii) Why does the golden jellyfish follow the light from the Sun?

_____

_____(1)

(iii) What is the cell structure that can be found in plant cells that allows photosynthesis to take place? _____(1)

(iv) In order for the jellyfish to swim, its cells must release energy from the food the algae provide. In what part of the cell does respiration happen so that the energy is released from the food? _____(1)

If finished feel free to colour in this picture.

Happy Christmas to the best students!