Class:
G O S F R (D)

Student Name: Abby Wang

Part A /16	
Part B / 27	
TOTAL	/43

ANSWER SHEET for MULTIPLE CHOICE -Clearly mark 1 answer for each question.

QUESTION	A	B	C	D
1			x	
2				x
3		x		
4				x
5		x		
6			x	
7	x			
8				x
9			x	
10		x		
11	x			
12	x			
13			x	
14				x
15		x		
16				x

Part II

27 marks
Attempt Questions 16-19.
Allow about 35 minutes for this section

Question 16 (15 marks) **Marks**

The paragraph below is a student's write-up of an experiment.

1. I put 100 mL of water in a test tube and measured its temperature. It was 18ºC. Then I put some of the crystals in it and stirred the mixture to dissolve the crystals. I kept stirring until some remained on the bottom of the tube no matter how much longer I stirred.
2. I filtered the mixture and then evaporated all the water from the solution. I weighed the amount of solid left behind and found that 6.0 g had been dissolved.
3.Then I did it again but this time I heated the water using a Bunsen burner, gauze mat and tripod while the thermometer was suspended form a retort stand using water at 29ºC. I found that 8.0 g dissolved.
4. I repeated it at 40ºC and at 47ºC and got 10.0 g and 11.2 g as my results

(a) Write an aim appropriate for the experiment. **1**

The aim of the experiment is to find out if heat affects the mass of crystal dissolved in water.

(b) Complete the table for the student's results. **2**

Temperature (°C)	Crystal dissolved (g)
18	6
29	8
40	10
47	11.2

(c) Identify the independent and dependent variable for this experiment. **2**

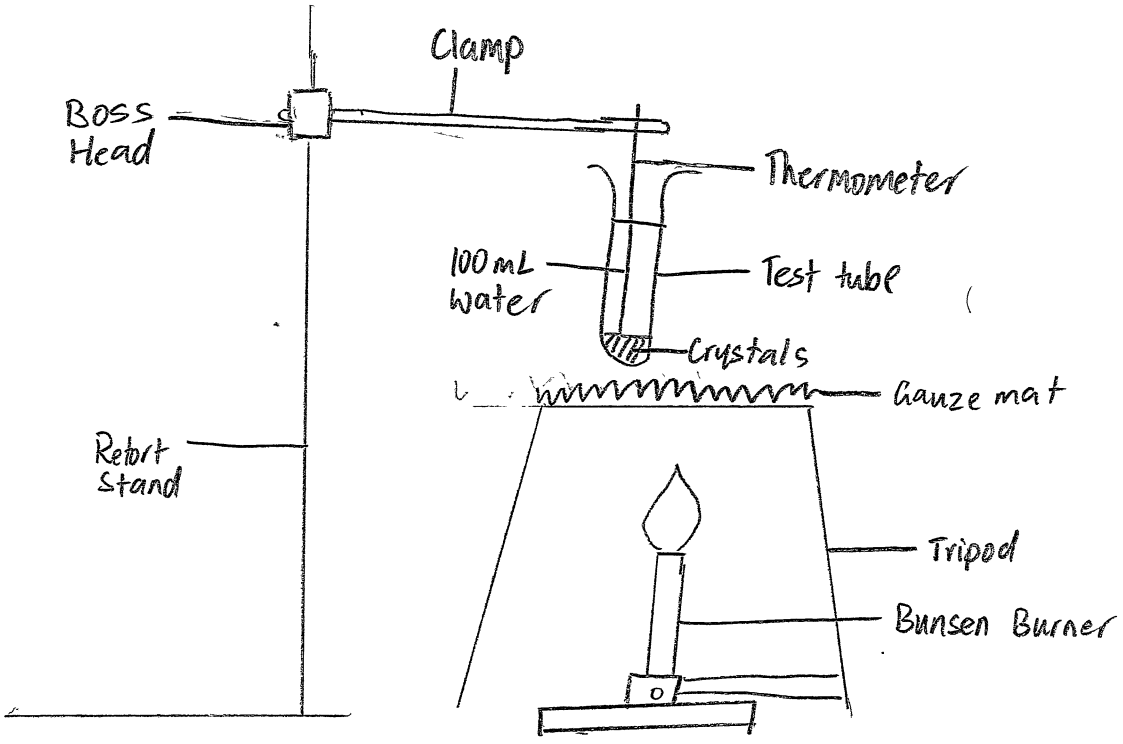
The independant variable is the temperature of the water.

The dependant variable is the amount of crystal that dissolves.

(d) Identify a variable that needs to be controlled during the experiment to make it a fair or valid test. **1**

The amount of water in the mixture has to be controlled, and the amount of crystal added has to be controlled as well.

(e) Draw a labelled scientific diagram showing the equipment set up required to carry out step 3 as described above. **3**



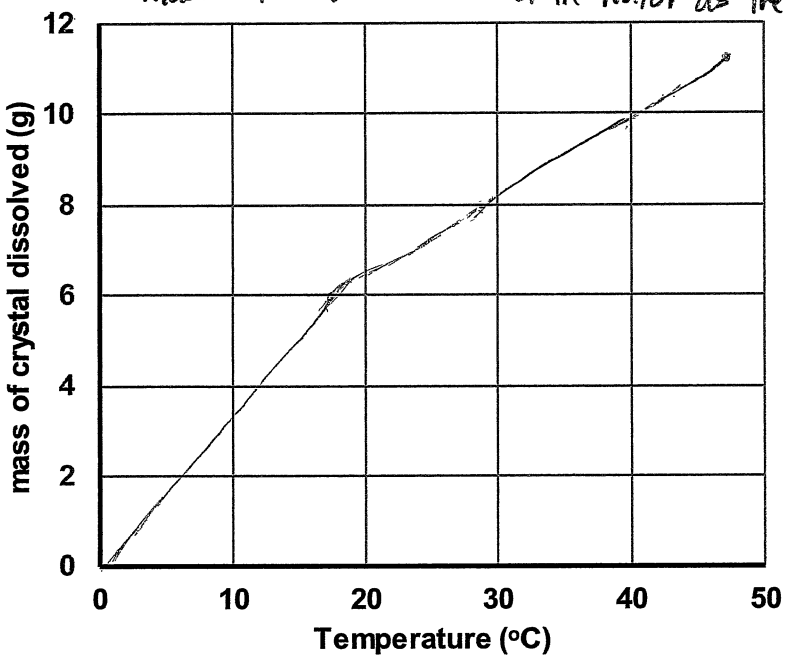
(f) Identify two safety issues the student will have to be concerned with through this experiment. **2**

1. The student needs to be careful about getting burnt from the hot water while filtering it from the crystal.

2. The student needs to be concerned about dropping the test tube.

(g) Graph the students results on the axes provided. 3

Mass of crystal dissolved in water as the temperature goes up.



(h) Write a conclusion for the experiment. 1

As the temperature of the water increased, the amount of crystal dissolved in the water increased.

Question 17 (4 marks)

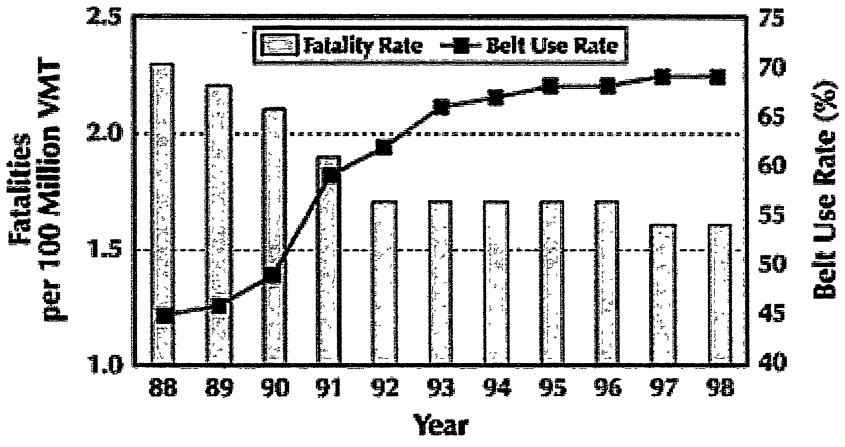
The following scientists are working in different branches or disciplines of science. Identify which branch each is working in:

4

Activity	Branch of Science
Paris is studying the crystals embedded in a rock.	archeology
Beau is developing a new type of plastic	engineering
Shaun is investigating the eating habits of insects	zoology
Angus is monitoring the movement of an asteroid	Astronomy

Question 18. (4 marks).

The graph shows information about road fatalities and the use of seat belts in cars.



(a) According to this data what is the trend shown in the number of fatalities between 1988 and 1996? Provide data to support your answer. **2**

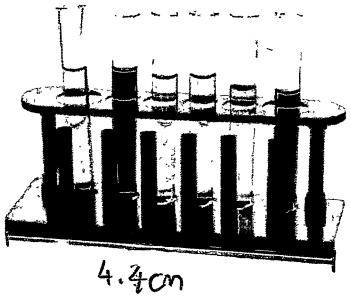
As the usage of seatbelts increased, the number of fatalities decreased until 1933, when it stayed the same for four more years.

(b) Analyse the data presented and provide reasons for the conclusion you made. **2**

As the seatbelt usage rate increased sharply, the fatalities also decreased sharply, and as the increase of belt use rate slowed down, the number of fatalities also slowed down.

Question 19. (4 marks).

The drawing made by a scientist was twice as big as the real size of the object.
Determine the actual length of the whole piece of equipment. *Show your working.*
2



4.4cm ÷ 2 = 2.2cm

The actual length of the equipment was 2.2cm.

b) There are some problems with the equipment diagram above. Identify two things that the scientist needs to change to accurate represent the equipment above. 2

1 The scientist needs to to draw the diagram as a cross-section (2D).

2. The scientist needs to draw the diagram in pencil and label it.

END OF EXAM