

Class:

G O S F R D

Student Name:

Jamie Yu

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			✓	
2				✓
3		✓		
4				✓
5		✓		
6			✓	
7	✓			
8				✓
9			✓	
10				✓
11	✓			
12	✓			
13			✓	
14				✓
15		✓		
16				✓

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 18°C. 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 from a retort stand using water at 29°C. I found that 8.0 g dissolved.
4. I repeated it at 40°C and at 47°C and got 10.0 g and 11.2 g as my results

- (a) Write an aim appropriate for the experiment.

1

What temperature is the best at dissolving crystals.

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

2

temperature (°C)	amount dissolved (g)
18°C	6g
29°C	8g
40°C	10g
47°C	11.2g

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

2

The independent variable are the crystals and the dependent variable is the temperature.

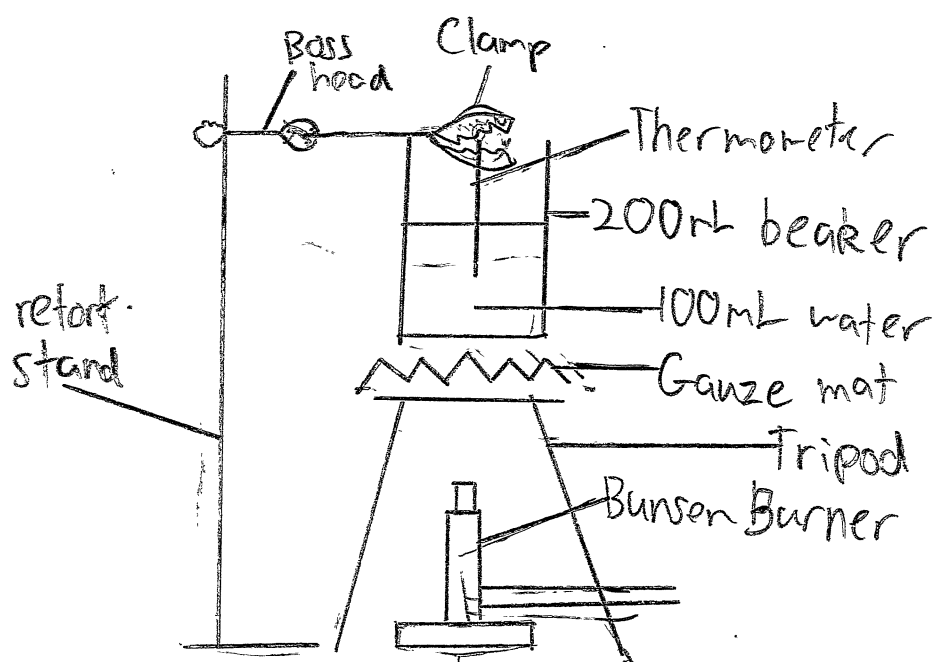
(d) Identify a variable that needs to be controlled during the experiment to make it a fair or valid test.

1

The temperature of the surrounding area, the type and amount of water and the beaker the experiment is used in.

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

3



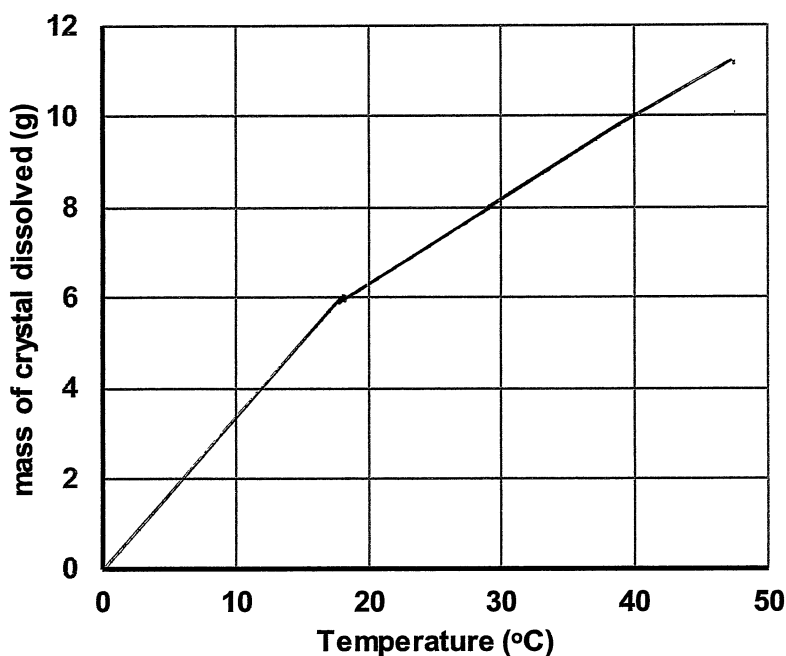
(f) Identify two safety issues the student will have to be concerned with through this experiment.

2

Doing this experiment alone with no supervision so he might be in danger when something goes wrong or putting random crystals in heated water which might create a dangerous chemical reaction.

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

3



(h) Write a conclusion for the experiment.

1

As the temperature rose, the amount dissolved went up.

Question 17 (4 marks)

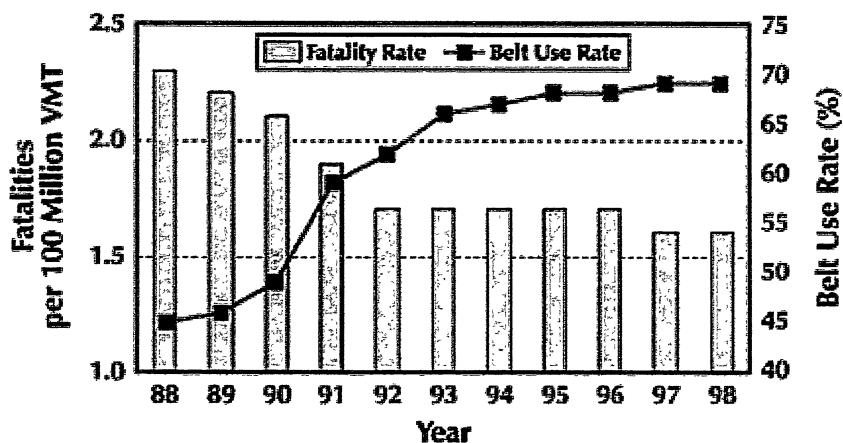
The following scientists are working in different branches or disciplines of science. Identify which branch each is working in:

4

Activity	Branch of Science
Paris is studying the crystals embedded in a rock.	geology
Beau is developing a new type of plastic	chemistry
Shaun is investigating the eating habits of insects	pestology
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

The fatality rate decreased as the belt use rate increased. On the same year as belt use rate increases, the fatality decreases.

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

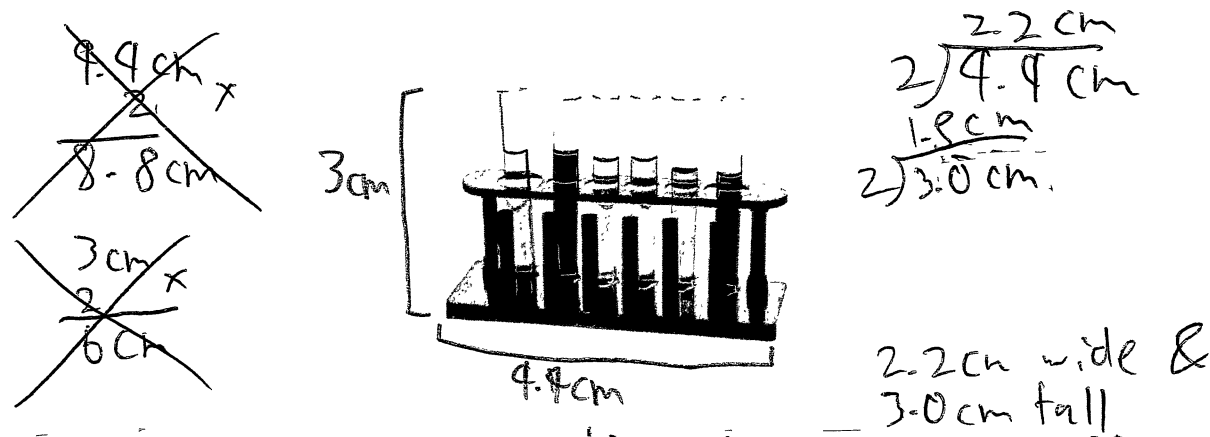
In conclusion, the belt use rate shot up throughout the years especially in 1991 and the fatality decreased by almost 1 fatality per 100 million VMT.

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



I can conclude the the object is 4.4cm wide & 3.0cm tall

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

2

The image could be more front on to give a more accurate measurement and the image should look like it has been cut in half in 2D.

END OF EXAM