



## 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

Will more crystal dissolve in higher temperature water?

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

2

18°C water	6g crystal dissolved
29°C	8g
40°C	10g
47°C	11.2g

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

2

heat (independent variable)  
Crystal dissolved (dependent variable)

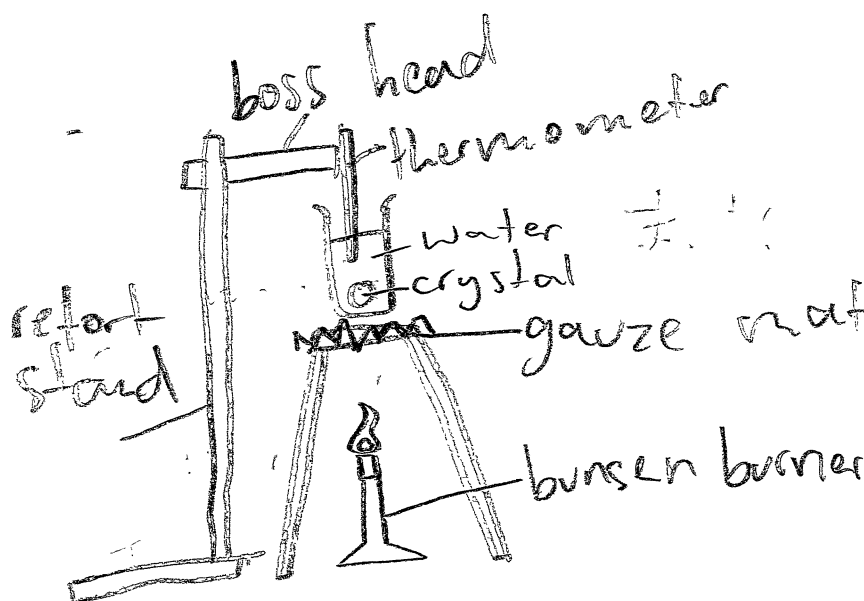
(d) Identify a variable that needs to be controlled during the experiment to make it a fair or valid test.

1

Amount of crystal added

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

3



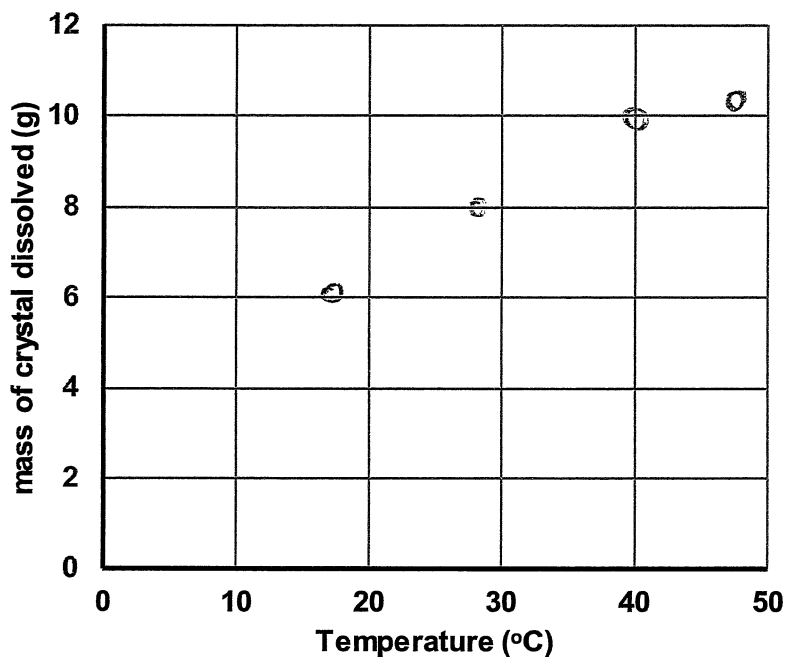
(f) Identify two safety issues the student will have to be concerned with through this experiment.

2

Not using a beaker and  
Spilling hot water while stirring.

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

3



(h) Write a conclusion for the experiment.

1

the hotter the water, the more  
crystal gets dissolved

#### Question 17 (4 marks)

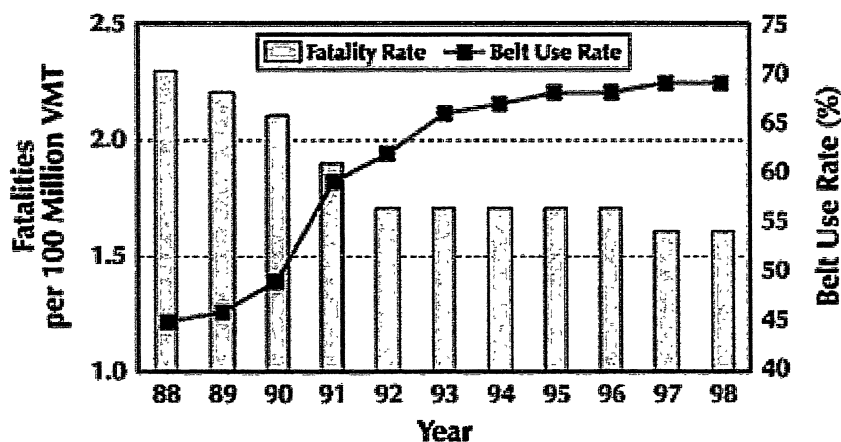
The following scientists are working in different branches or disciplines of science. Identify which branch each is working in:

4

Activity	Branch of Science
Paris is studying the crystals embedded in a rock.	geology
Beau is developing a new type of plastic	
Shaun is investigating the eating habits of insects	biology
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 more seat belts being used,  
the lower the fatalities

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

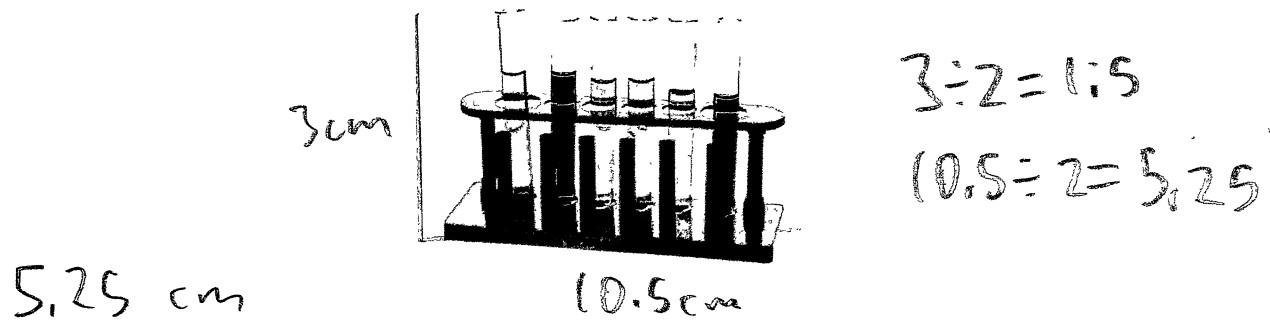
Seat belts were being worn  
more and more while fatalities  
dropped because of this

**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



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 equipment is angled and forward facing

**END OF EXAM**