

Class:

G O S F R

(D)

Student Name:

Flynn Walker

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

To find the effect temperature has on how much crystal is dissolved in water.

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

2

| Temperature of water | Grams of crystal dissolved |
|----------------------|----------------------------|
| 18°C | 6.0g |
| 29°C | 8.0g |
| 40°C | 10.0g |
| 47°C | 11.2g |

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

2

The independent variable is the temperature of the water, the dependent variable is how much crystal is dissolved.

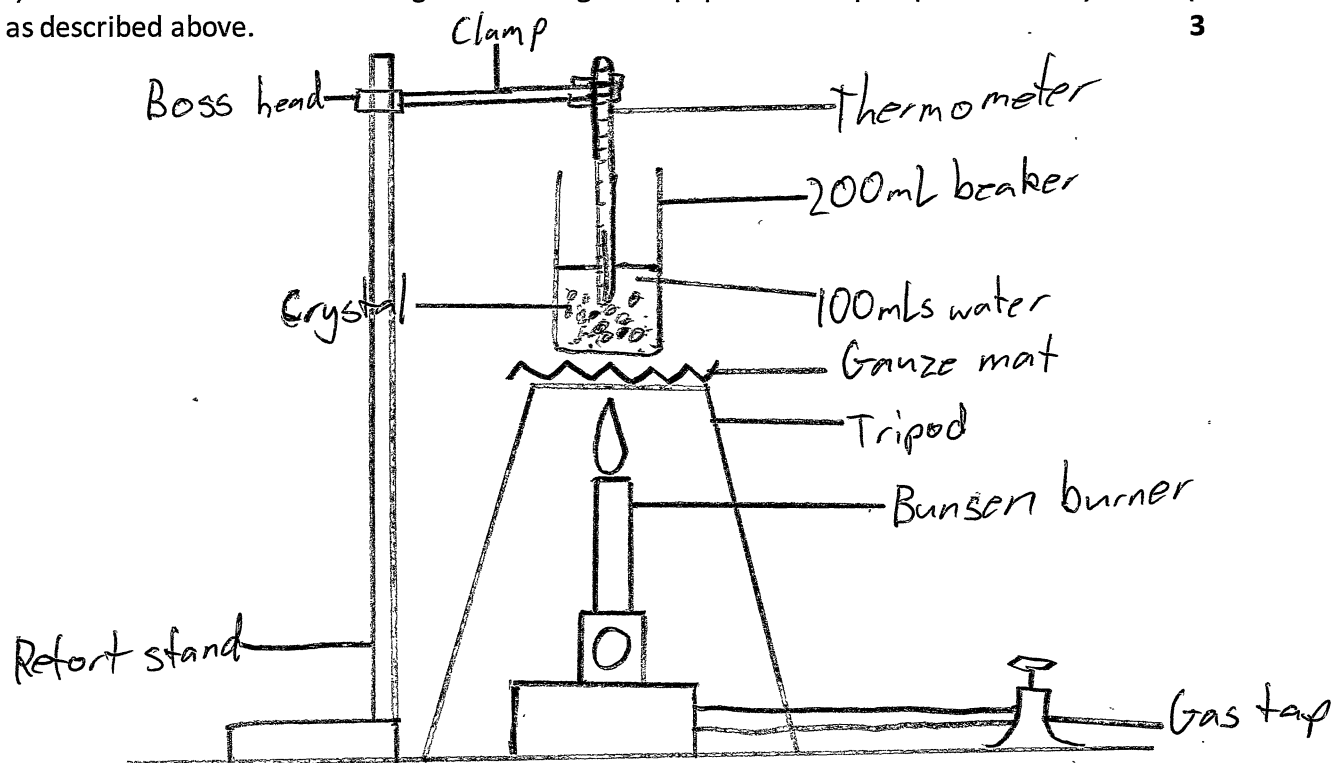
(d) Identify a variable that needs to be controlled during the experiment to make it a fair or valid test.

1

The amount of water in the test tube, and the amount of crystal in the test tube.

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

3



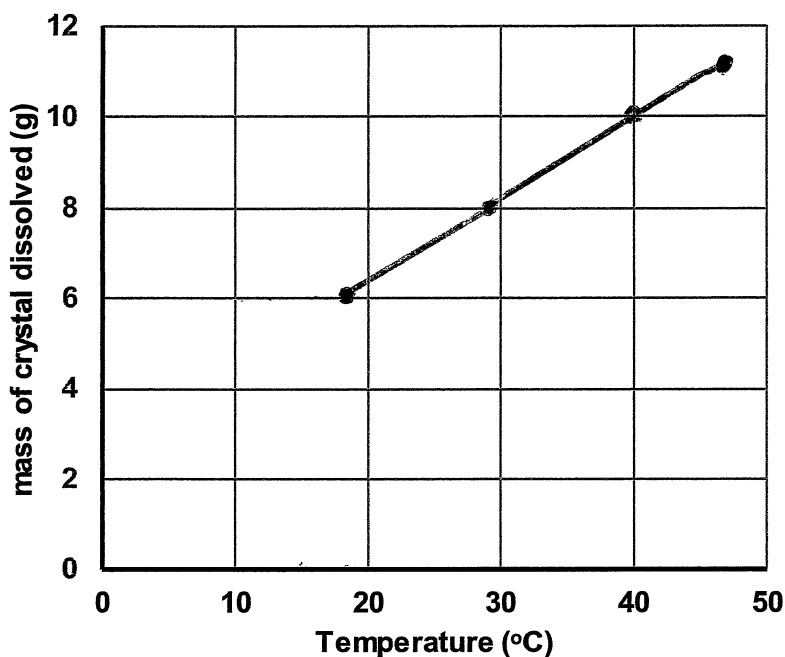
(f) Identify two safety issues the student will have to be concerned with through this experiment.

2

The heat of the Bunsen burner, tripod, gauze mat and beaker will be very hot, you shouldn't touch them. He should be careful and should let the equipment cool before filtering the water.

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

3



(h) Write a conclusion for the experiment.

1

When crystal is dissolved in 100mls of water, the hotter the water means the more crystal dissolved.

Question 17 (4 marks)

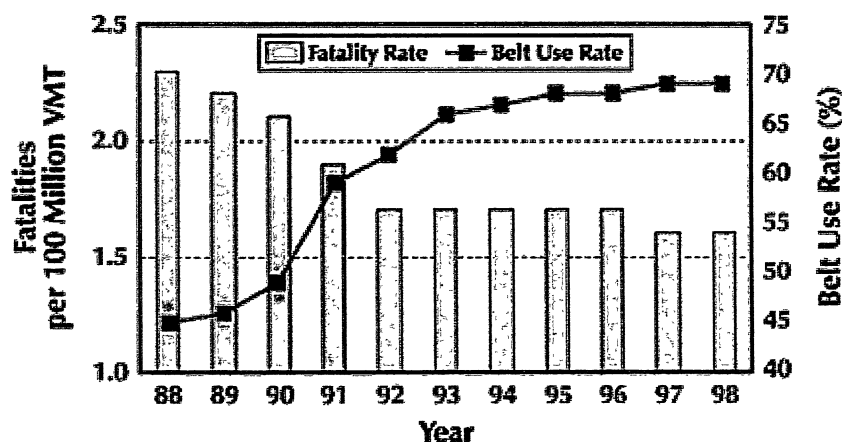
The following scientists are working in different branches or disciplines of science. Identify which branch each is working in:

4

| Activity | Branch of Science |
|---|-----------------------|
| Paris is studying the crystals embedded in a rock. | Geology/Earth science |
| Beau is developing a new type of plastic | Chemistry |
| 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

Fatalities went down between 1988 and 1996. In 1988 there was substantially more fatalities than in 1996.

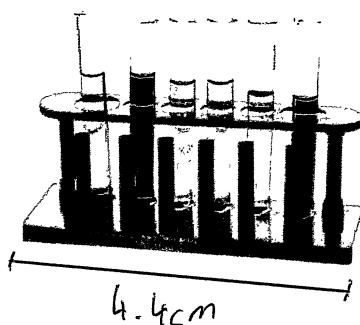
(b) Analyse the data presented and provide reasons for the conclusion you made. 2

Between 1988 and 1996, while the use of seatbelts went up, the fatalities went down. This is probably because people became more aware of the danger of not wearing a seatbelt.

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



length of drawing: 4.4cm. $4.4\text{cm} \div 2 = 2.2\text{cm}$

Answer: 2.2cm

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 diagram needs to be drawn from a side on view,
and it also needs to be labelled.

END OF EXAM