education

Department of Education
FREE STATE PROVINCE

PRACTICAL TASK

GRADE 11

PHYSICAL SCIENCES

JUNE 2018

MARKS: 15

TIME: 30 MINUTES

This paper consists of FOUR pages.

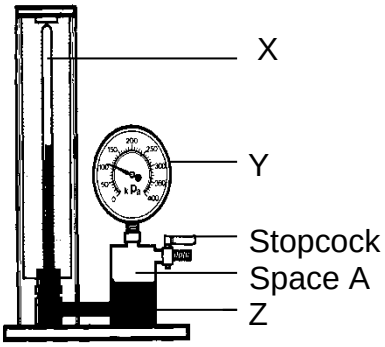
Name of learner: ..... Grade: .....

INSTRUCTIONS AND INFORMATION

1. Write your name and grade in the appropriate spaces on the FRONT PAGE of this question paper.
2. Answer ALL questions in the spaces provided in THIS QUESTION PAPER.
3. You may use a non-programmable pocket calculator.
4. You may use appropriate mathematical instruments.
5. Give brief motivations, discussions, et cetera where required.

QUESTION 1

Boyle's law demonstrates one of the gas laws and can be verified with the following apparatus.



1.1 Write down an investigative question for Boyle's law. (2)

_____

_____

1.2 Study the diagram above and label the parts that are marked **X**, **Y** and **Z**. (3)

X _____

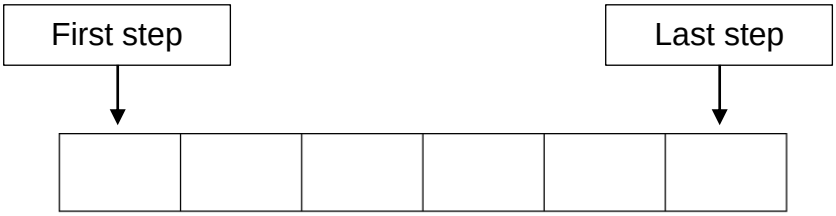
Y _____

Z _____

1.3 Consider the following SIX steps for the procedure. The steps are NOT necessarily in the correct order.

1.	Open the stopcock.
2.	Wait a few minutes for the temperature of the enclosed gas to return to room temperature.
3.	Pump a small amount of air through the stopcock to reach a pressure that is higher than atmospheric pressure.
4.	Record the volume and pressure readings.
5.	Take your FIRST set of readings for volume and pressure at ATMOSPHERIC pressure.
6.	Close the stopcock.

Use the numbers 1 to 6 and write them down in the CORRECT ORDER in which they must be used. (2)



1.4 How does the volume of air in space **A** change when air is pumped in through the stopcock? Only write down INCREASE, DECREASE or REMAINS THE SAME. (1)

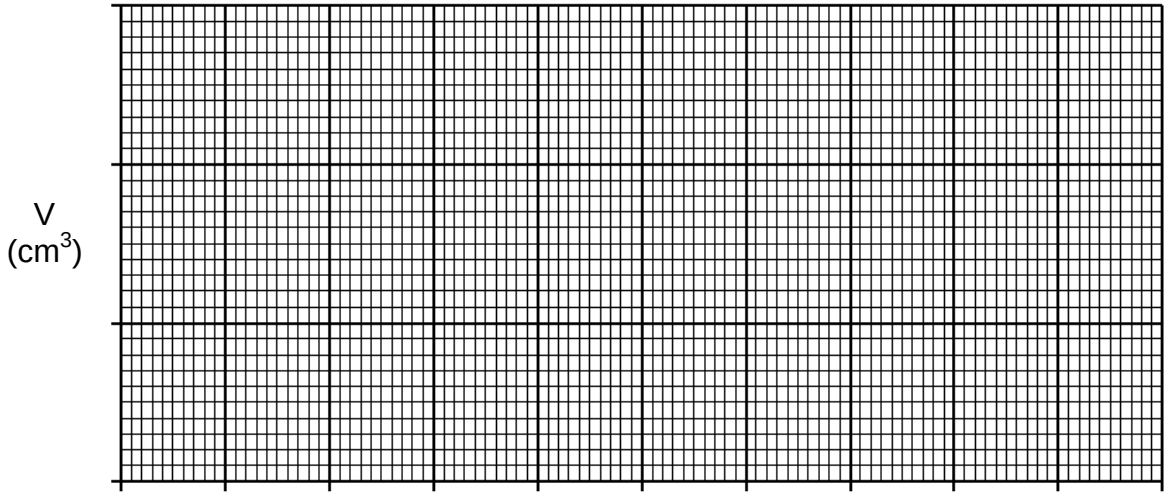
_____

1.5 Consider the following incomplete table of results. Three values, represented by **S**, **T** and **Q**, are missing.

Pressure (Pa)	**Volume (cm^3)**	$\frac{1}{p}$ $(x10^{-3})$ **(Pa^{-1})**	**pV**
S	15,0	10,4	1 443
71,4	20,2	**T**	1 442
64,5	22,3	15,5	**Q**
59,5	24,2	16,8	1 440

1.5.1 Use the AVAILABLE data from the table (ignore **T** and its volume value) and draw a graph of volume versus $\frac{1}{pressure}$ for the enclosed gas on the graph paper below. Ensure that your graph has suitable scales for the axes. Plot the points and draw the best-fit line. (3)

Graph of V versus 1/p



1.5.2 Determine the values of the three missing numbers in the table that are represented by **S**, **T** and **Q** and write them down in the spaces below. (2)

S _____ **T** _____ **Q** _____

1.6 Identify one variable that must be controlled during the investigation. (1)

_____

1.7 Draw a conclusion from the results. (1)

_____

_____

GRAND TOTAL: 15