

NAME:	SCIENCE TEACHER:	9C
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SCIENCE

Year 9 Examination 2006

9C – 40 marks

Make sure that you have answered all the questions in paper 9B before you start this paper

Time allowed for both examinations: 2 hours

Answer all questions in the spaces provided on the paper.

You may use a calculator.

Show all your working in calculations; marks are awarded for it.

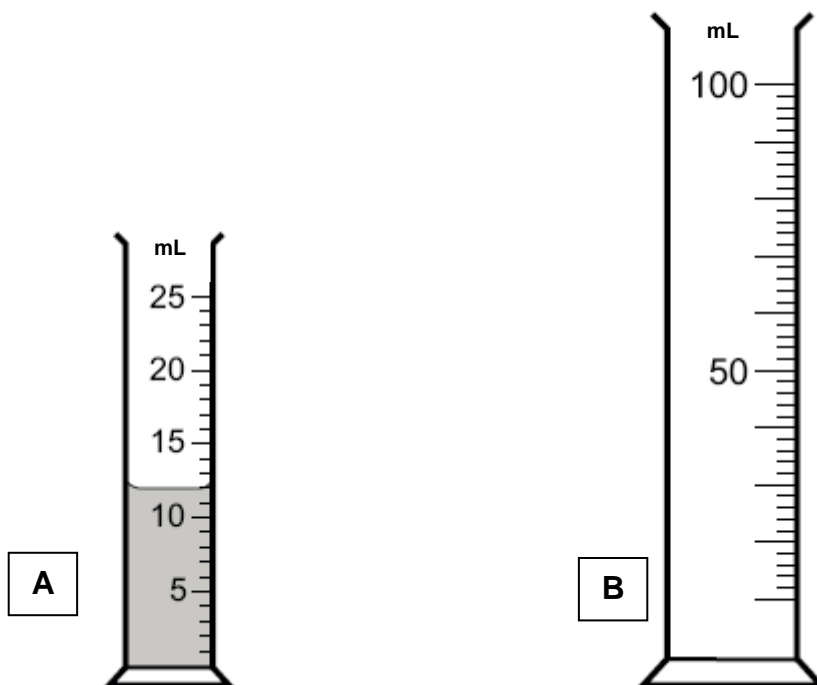
Give units for all answers (eg kg or m) unless they are already provided.

For Teacher Use

<i>Question</i>	1	2	3	4	5	6	7	8	9	10	<i>Total</i>
<i>Marks gained</i>											
<i>Marks available</i>	3	3	4	5	3	6	4	3	5	5	40

Question One [3 marks]

- (a) How much water is in measuring cylinder A? Include the units. _____ (units)
- (b) Complete diagram B to show it containing 44 mL of water



- (c) Explain why it is better to use measuring cylinder A instead of measuring cylinder B if you have to measure 21 mL of acid.

- (d) Describe how you would use this cylinder to measure out 21 mL as accurately as possible.

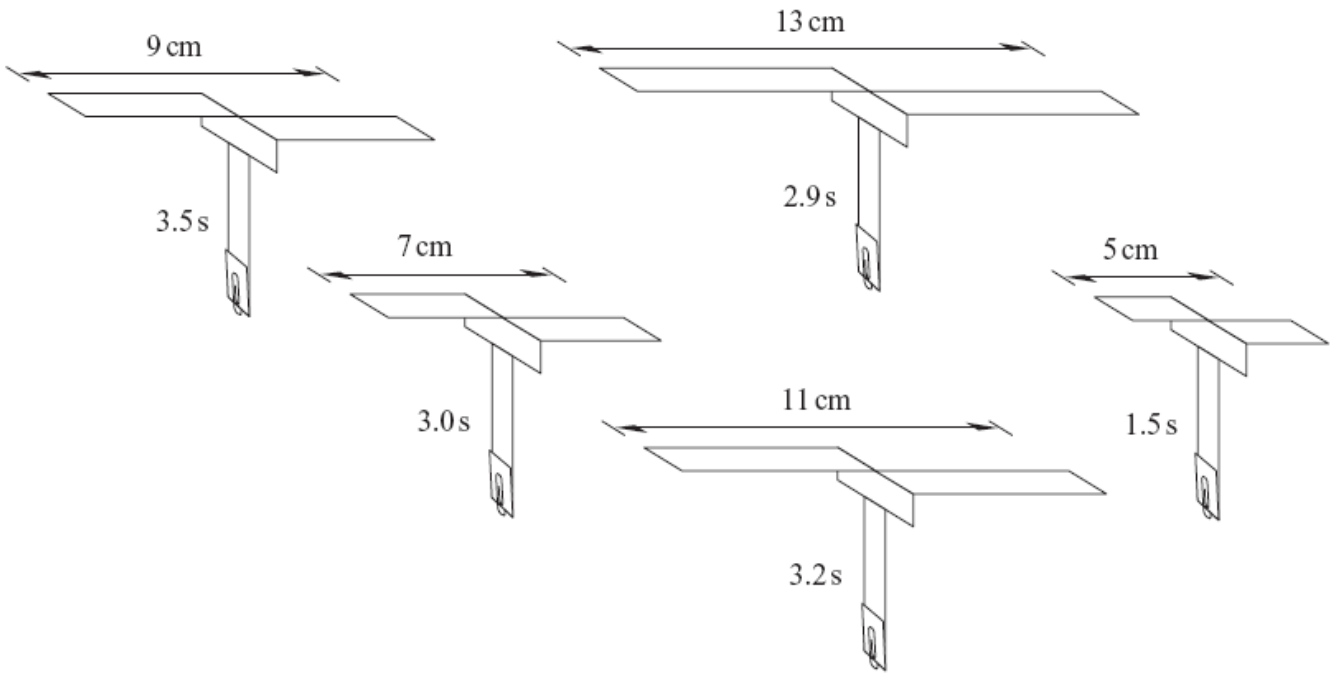
Question Two [3 marks]

A student made some paper helicopters.

She changed the length of the wings each time she made a new one.

She held each one up to the ceiling and measured how long it took to reach the ground.

The diagrams show her results. The helicopters are marked with the wing lengths and the times they took to reach the ground.



(a) Draw a results table to present these results clearly (in the space below).

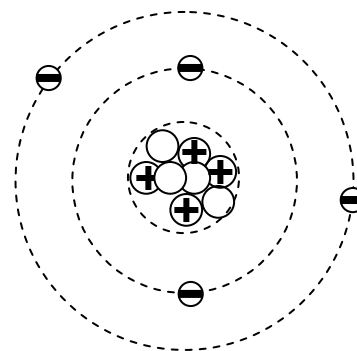
(b) Put the results in the table.

(c) Describe the pattern / trend in her results.

Question Three [4 marks]

An atom has the structure shown in the diagram.

- (a) Name each of the three types of particles shown in this atom.



⊖	
○	

- (b) What is the Atomic Number of this element? _____



- (c) What is the Mass Number of this element? _____

- (d) The following list gives the names and some chemical formulae. Circle the compounds.

sodium chloride carbon Ca CO

Ne MgO H₂SO₄

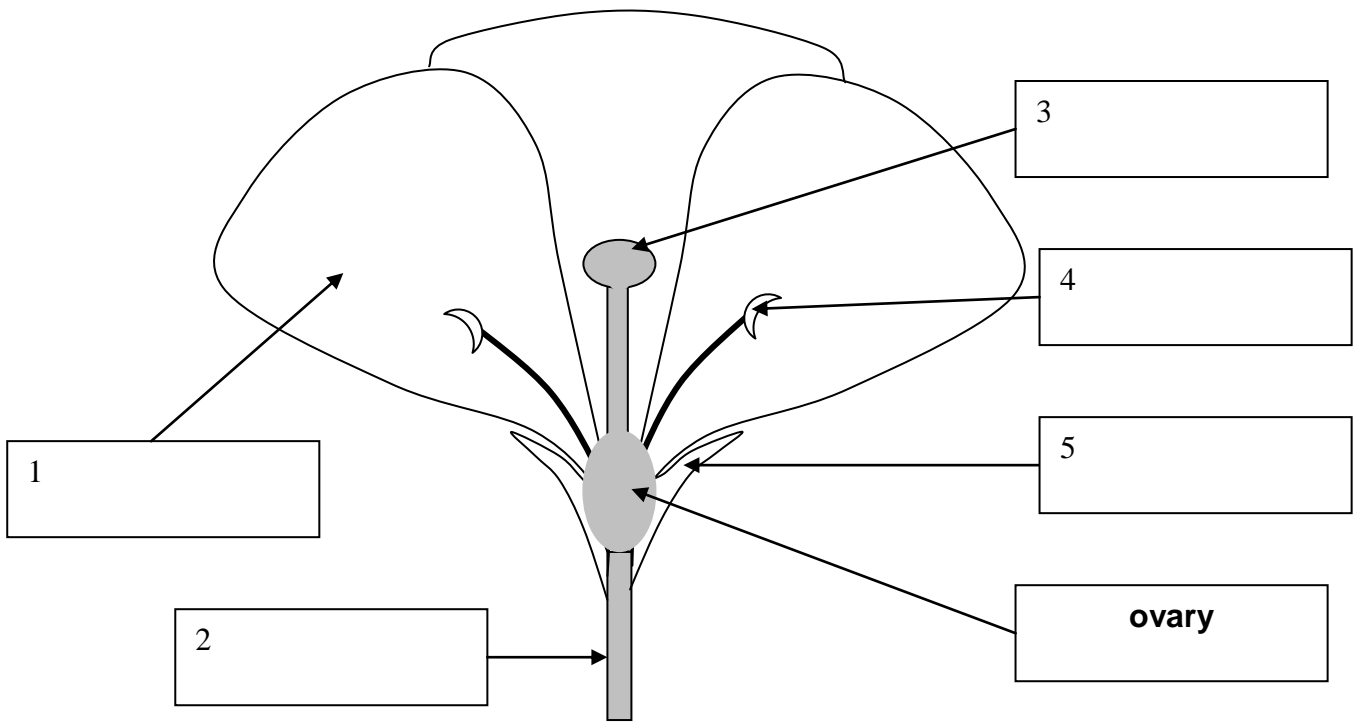
- (e) State how many atoms are present in the following formulae.

Formula	Number of atoms
CaCl ₂	
CuSO ₄	



Question Four [5 marks]

(a) Complete the missing labels on the diagram of the flower below.



(b) Seed dispersal is very important to plants. Describe, in detail, ONE way that a seed can be dispersed. Use a labelled diagram to help you.

Name of seed chosen:

Question Five [3 marks]

A chemical reaction that you have done in the lab is the burning of magnesium in air. Gemma did this experiment and described it as follows. "A strip of shiny magnesium ribbon was held with tongs in the Bunsen flame. It caught fire and burned with a very bright white flame, making a white smoke and leaving behind a white solid."

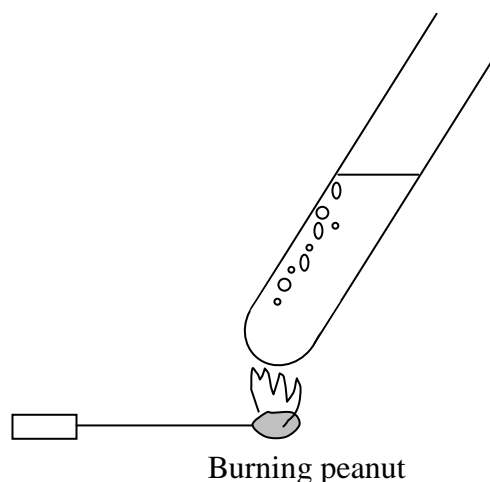
- (a) Carefully explain how Gemma's description shows that this was a chemical change.

- (b) If the magnesium was reacting with oxygen (in the air) to make magnesium oxide, write a simple word equation that describes this reaction.

- (c) The oil stored in a peanut is a good source of energy.

If the peanut is heated strongly it will catch fire and the oil in it will burn for several minutes.

An experiment was done in the lab where a peanut was set on fire and used to heat the water in a boiling tube as shown in the diagram.



The mass of water in the test tube is 20 grams.

The water temperature rises from 20°C to 50°C.

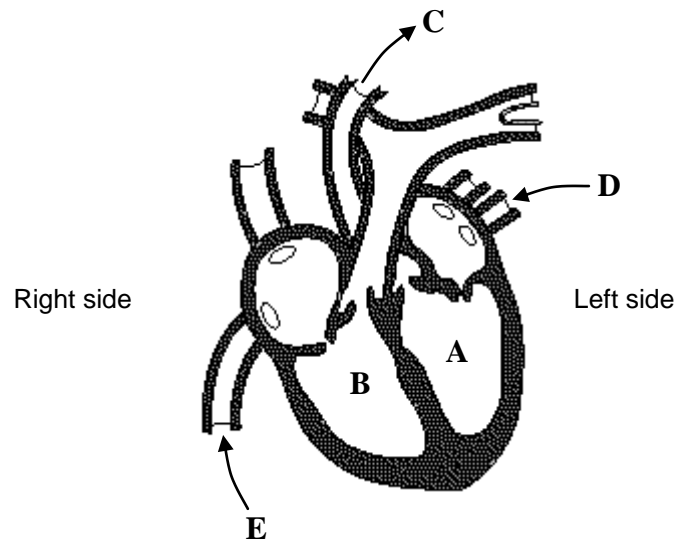
Water needs 4.2 Joules of energy to raise the temperature of one gram of water by one degree Celsius

Show (by calculation) that the energy the peanut gave to the water was 2520 J.

Question Six [6 marks]

The heart is the pump which pushes the blood around the body.

A diagram of the heart is shown opposite.



- (a) Three arrows indicating blood flow are shown on the diagram. From the key list select the correct description of the blood flow in each case (one won't be used).

Key list:

- From the body From the lungs
To the body To the lungs

C	D	E
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- (b) Explain why the muscle wall of the left side of the heart is much thicker than the right side.

In order to see how fast our hearts are pumping it is possible to “feel our pulse” and count the “pulses” every minute. Two students carried out an activity to show the effect of exercise on pulse rate. They each measured their resting pulse.

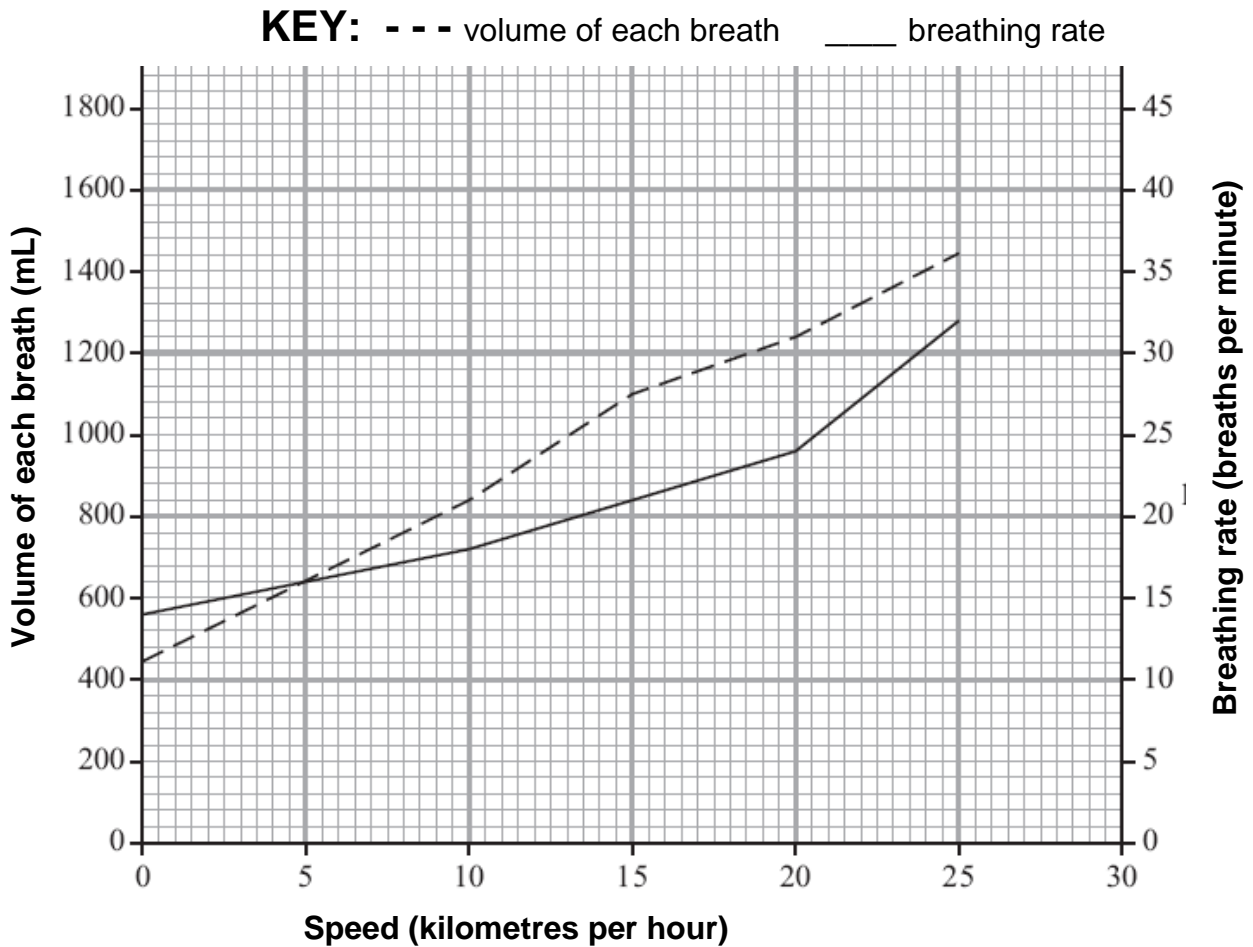
They both did exactly the same exercise and both stopped exercising after exactly 8 minutes. Their results are shown in the chart opposite

Time (mins)	Pulse rate (beats/minute)	
	Student 1	Student 2
0	56	63
2	67	75
4	120	110
6	125	130
8	126	139
10	80	120
12	65	110
14	56	Forgot to take
16	56	80
18	56	70

- (c) What was the resting pulse rate of student 1? _____ beats/min
- (d) Estimate student 2's pulse rate after 14 minutes. _____ beats/min

- (e) Which student was the fitter student, student 1 or 2? Explain your answer using the all the evidence provided.

An investigation was carried out to find how the speed of a running athlete affects the breathing rate and the volume of each breath taken. The graph shows the results of the investigation.



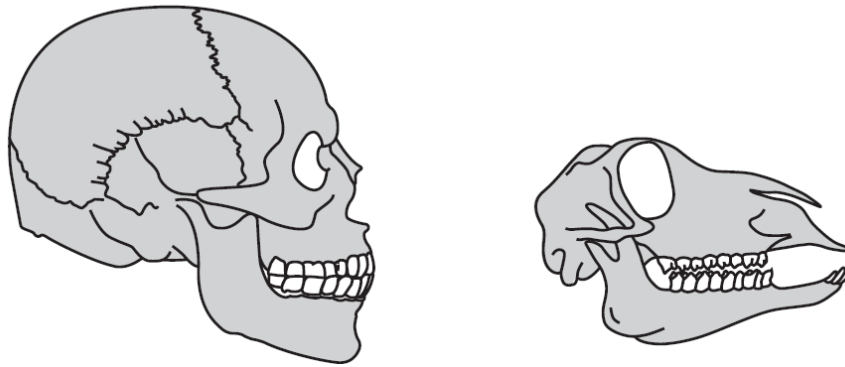
- (f) Describe how the athlete's breathing changed as their speed increased from 0 km per hour to 20 km per hour.

Volume of each breath:

Breathing rate:

- (g) Show how you would calculate the total volume of air breathed into the lungs each minute while the athlete was running at 10 km per hour. (You don't have to actually work it out – just show the calculation you would do)

Question Seven [4 marks]

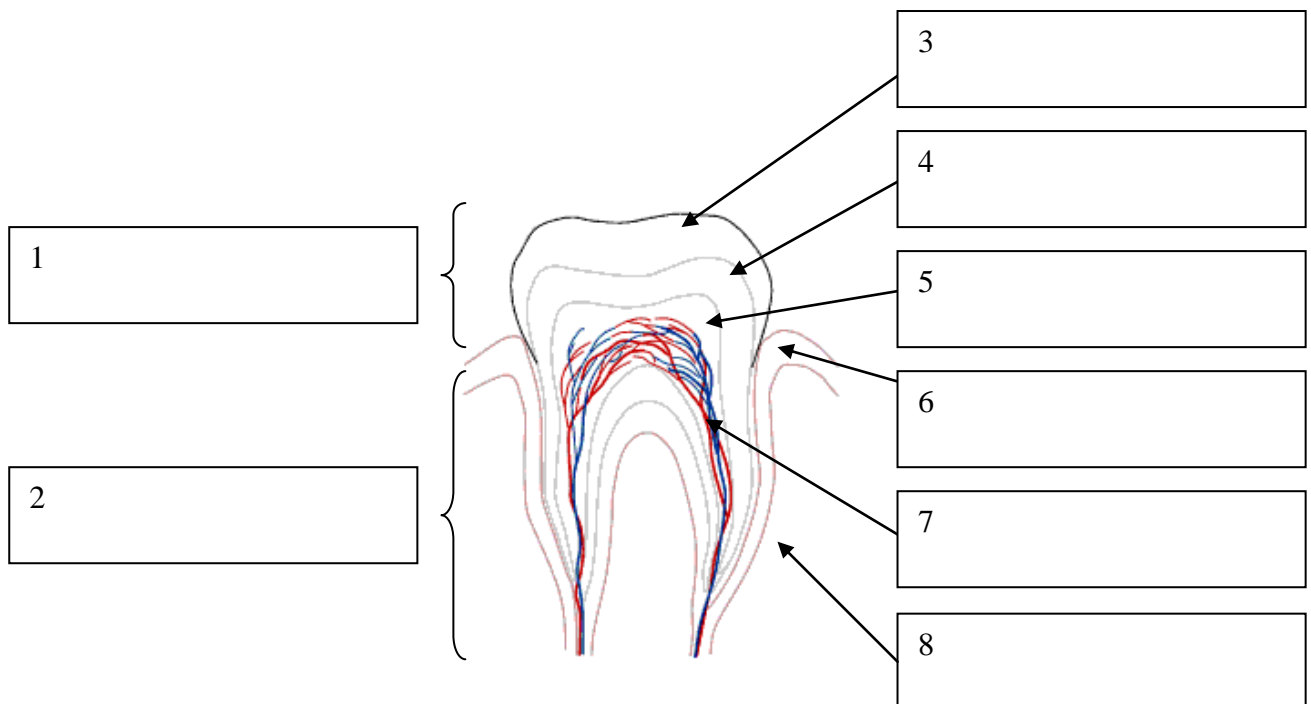


(a) The teeth (both shape and arrangement) of a sheep are very different to those of a human. State one obvious difference and explain the reason for this difference.

(b) How does the eye socket of the sheep tell you that the sheep is more likely to be prey than predator (more likely to be hunted than be the hunter)?

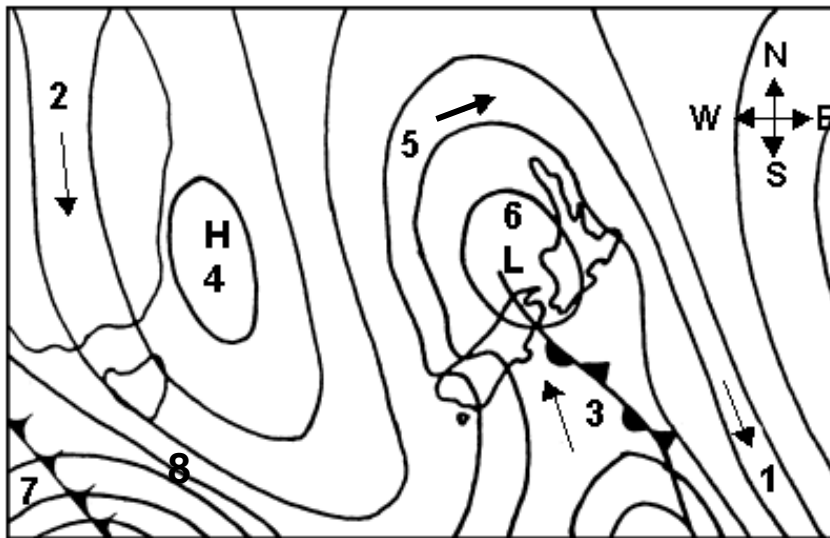
(c) Label the diagram of the human tooth using the 8 labels provided.

<i>blood vessels & nerves</i>	<i>bone</i>	<i>crown</i>	<i>dentine</i>
<i>enamel</i>	<i>gum</i>	<i>pulp cavity</i>	<i>root</i>



Question Eight [3 marks]

From the weather map select the number that best matches the weather features described below.



- (a) Clear, calm weather _____
- (b) A cold front _____
- (c) Centre of a depression _____
- (d) Describe the wind you would expect at **8** in as much detail as you can.
 - (i) What name would we give a wind blowing in this direction?

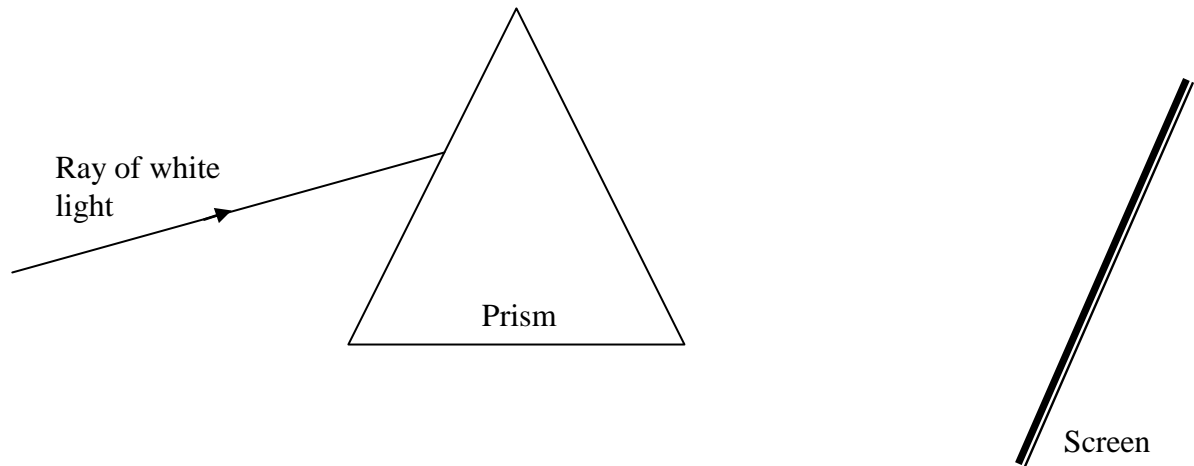
- (ii) Would this wind be light or strong?

- (iii) Why did you choose this answer in (ii)?

Question Nine [5 marks]

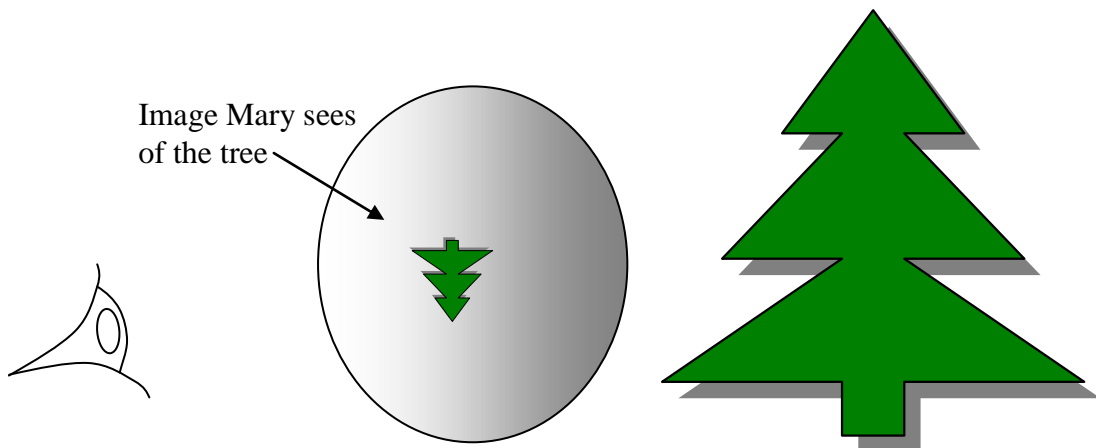
When white light passes through a prism it is split up into the colours of the rainbow.

- (a) Complete the diagram below to show how this produces a **rainbow** (spectrum) on the screen. Label the colour at the **top** of your spectrum.



- (b) Describe, in detail, why a green object looks green when it is seen in white light.

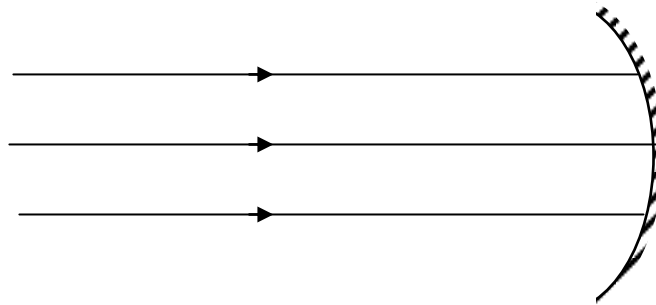
- (c) Mary looks at the tree through a convex lens is shown below. In the lens she sees the image of the tree as shown.



Describe the image by circling the correct terms from the following list.

real virtual enlarged smaller upright inverted

- (d) Three rays hit the surface of a curved mirror as shown below. Complete the diagram in as much detail as you can to show how these rays would reflect off the mirror.



Question Ten [5 marks]

Erosion is a serious problem in many parts of New Zealand. Much of our country's wealth comes from the land – but what happens when the land is blown or washed away?

- (a) Erosion has many causes, some of which are shown below. Write three more statements about the possible causes of erosion in parts of New Zealand.



