

NAME:	SCIENCE TEACHER:	10A
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SCIENCE

Year 10 Examination 2009

10A – 40 marks

Make sure that you have answered all the questions in paper 10B 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.

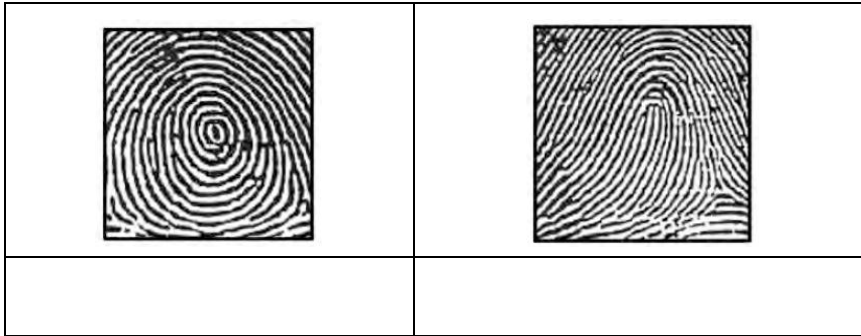
Give units for all answers (eg kg or m) unless they are already provided.

For Teacher Use

<i>Question</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	<i>Total</i>
<i>Marks gained</i>														
<i>Marks available</i>	4	1	6	3	2	4	2	1	3	3	2	5	4	40

Question 1 [4 marks]

(a) Name the type of finger print shown below. Choose from loop, arch & whorl

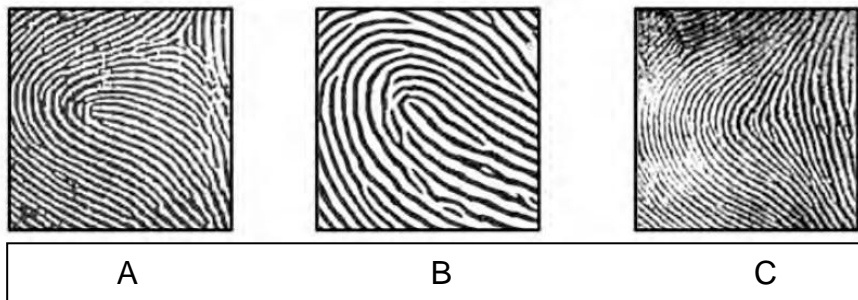


(b) The fingerprint opposite was found at the scene of a crime.



Fingerprints A, B and C come from different suspects.

Which suspect's fingerprint is the closest match to the one found at the crime scene? **Circle** A, B or C



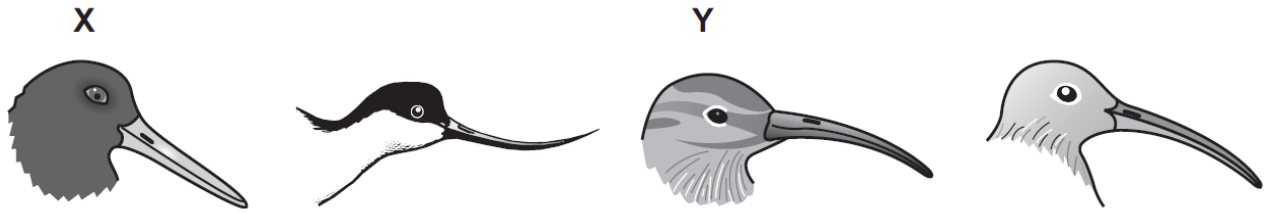
(c) Write down one method of protecting the crime scene so investigators do not leave their own fingerprints behind.

(d) There are many fingerprint records stored in NZ.

Name the most suitable method of storing a large number of fingerprint records.

Question 2 [1 mark]

The pictures show four different birds.



(a) Use the key to identify birds X and Y.

1	curved beak	go to 2
	straight beak	oyster catcher

2	beak curved upwards	avocet
	beak curved downwards	go to 3

3	stripe above eye	whimbrel
	no stripe above eye	curlew

X is:
Y is:

Question 3 [6 marks]

Jay was interested in finding out about rusting. He wanted to find out if nails rust more quickly in salt water than in fresh water.

(a) Is this an aim, a hypothesis or a method?

(b) He decides to do an experiment. What factors / variables will Jay need to **keep the same**?

Show this on the chart below by **circling yes or no** for each variable. First one is done as an example.

Type of water	yes	no
Amount of water	yes	no
Time nails are in the water	yes	no
Type of nail	yes	no

(c) Using the diagram below to help you, write a step by step method, explaining how you would do this investigation.



Nail in fresh water



Nail in salt water

(d) Rusting is an example of chemical change. Explain why it is a chemical change, and NOT a physical change.

Question 4 [3 marks]

Joe works in a factory that makes plastic supermarket bags.

His job is to check the strength of the bags.

He cuts strips from the bags and finds out the force needed to break them.

Here are Joe's results for a batch of carrier bags.



Test number	Force needed to break the sample in Newtons
1	710
2	715
3	705
4	751
5	710

(a) Put a circle around the test number in the table that does not fit the pattern.

1 2 3 4 5

(b) What is the **best estimate** of the force (in Newtons) needed to break the sample.

705 710 718 751 3591

(c) Why does Joe repeat his test several times?

Put ticks (✓) in the boxes next to the **two** correct answers.

- Repeating the test makes it a fair test.
- The more often he repeats the test, the closer the results will get.
- The more results Joe collects, the better estimate he can make.
- Repeating the test makes sure the right range is being tested.
- Repeating the test helps Joe to check for reliability.

Question 5 [2 marks]

The chart below shows five 'DNA fingerprints' produced as evidence in a murder case. It shows the 'DNA fingerprints' taken from the victim's blood and from a blood specimen found at the crime scene. It also shows the 'DNA fingerprints' taken from the blood of three suspects.



(a) Which of the three suspects was eventually convicted of the crime?

(b) Explain your answer.

Question 6 [4 marks]

This question is about taking a baby for a walk in a pram.

(a) Choose a word from this box to fill in the blanks below.

move	pull	push	speed
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- The pram will not _____ until a force is acting on it.
- When you start to _____, the pram moves forwards.
- Slowly, the _____ of the pram increases.
- To stop it you must _____ on the handle.



A baby-bouncer is a thick piece of elastic with a harness to hold the baby. It is attached to a door frame. The baby can bounce and support its own weight.

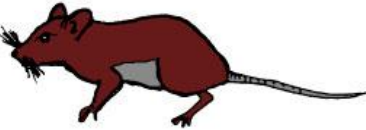


(b) What happens to the length of the elastic when the baby gets into the bouncer?

(c) What happens to the thickness of the elastic if it is pulled?

(d) What is the name of the force that pulls the baby downwards? Circle one answer.

friction weight tension push support

Question 7 [2 marks]

		
House mouse	Wheat	Owl
Not Drawn to Scale		

(a) In the box below draw a food chain using the NAMES of the plant and animals above.

(b) In the New Zealand bush, what happens to most of the plants that die?

Circle your answer.

A Animals and birds eat them.

C They decay to become part of the soil.

B People burn them as firewood.

D More plants grow from them.

Question 8 [1 mark]

Three pairs of chemicals are listed below. A reaction only takes place with two of the pairs. Draw a line from each reaction to the correct result. Draw only **three** lines.

pair of chemicals	result
calcium carbonate + hydrochloric acid	no reaction
magnesium + hydrochloric acid	a chloride, carbon dioxide and water are formed
copper + hydrochloric acid	a chloride and hydrogen are formed

Question 9 [3 marks]

Organisms have adaptations that enable them to survive in extreme conditions.

- (a) The photograph shows an arctic fox. This fox lives in the arctic, where it is very cold.

Suggest **two** ways in which the arctic fox is adapted for life in very cold conditions. Explain how each adaptation helps the arctic fox to survive in very cold conditions.



Adaptation 1
How this adaptation helps the arctic fox to survive in very cold conditions.
Adaptation 2
How this adaptation helps the arctic fox to survive in very cold conditions.

- (b) The photograph shows an antelope that lives in a sandy desert.

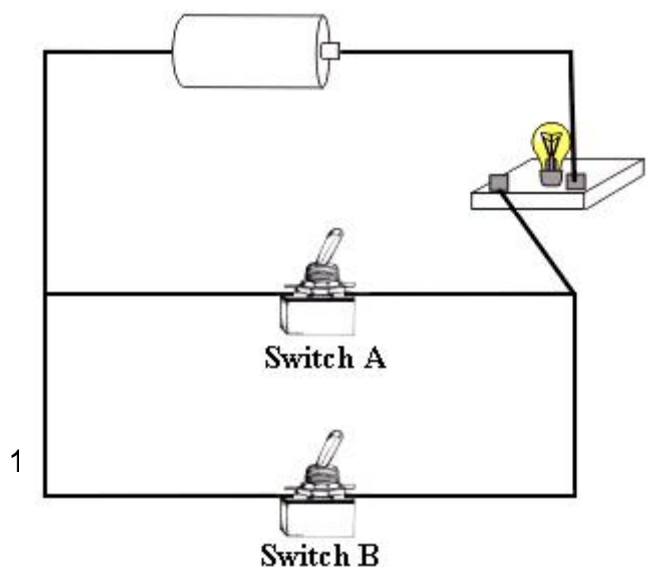
The antelope is prey to large cats such as cheetah.

Suggest **one** adaptation that help this antelope to avoid being killed by predators. Explain how the adaptation helps the antelope to avoid being killed by predators.



Adaptation
How this adaptation helps the antelope to avoid being killed by predators.

Question 10 [3 marks]

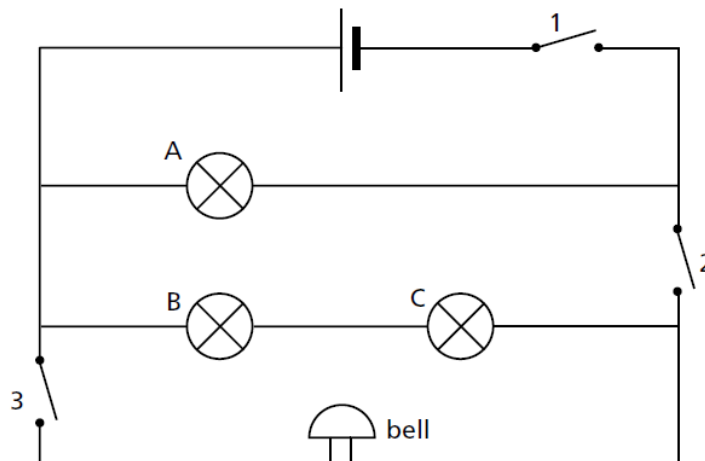


(a) Look at the electric circuit that has been set up.

Now complete the table below to show if the bulb is 'glowing' or 'not glowing' in each situation.

	Switch A	Switch B	Bulb 'glowing' or 'not glowing'
a	Turned off	Turned off	
b	Turned on	Turned off	
c	Turned off	Turned on	
d	Turned on	Turned on	

(b) Look at the circuit shown below.

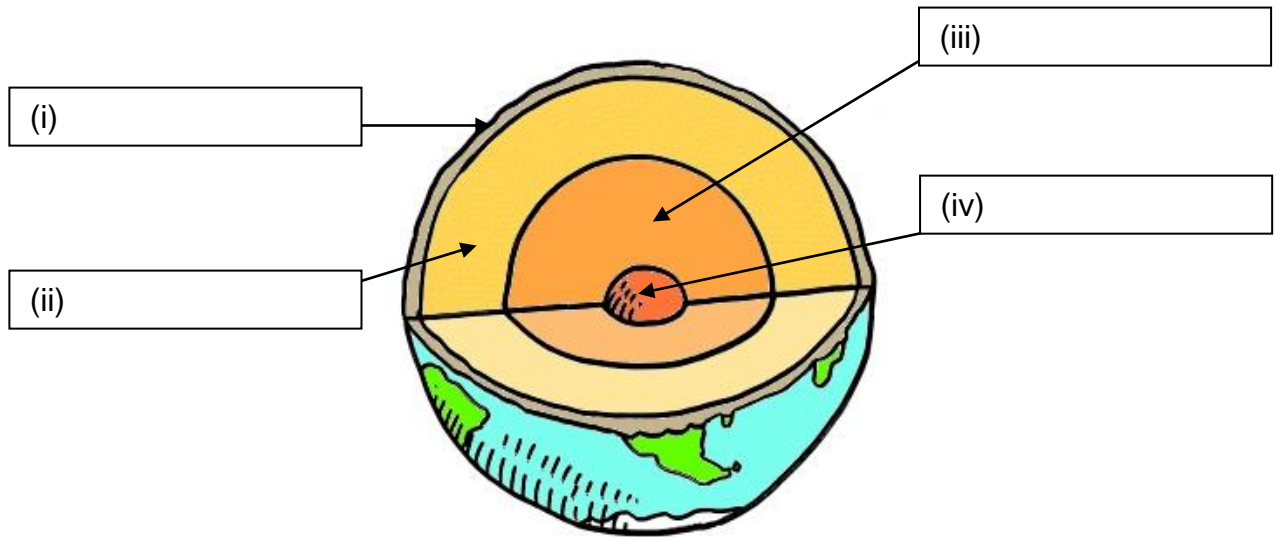


Explain what will happen when switch 2 is open, but switches 1 and 3 are closed?

Question 11 [2 marks]

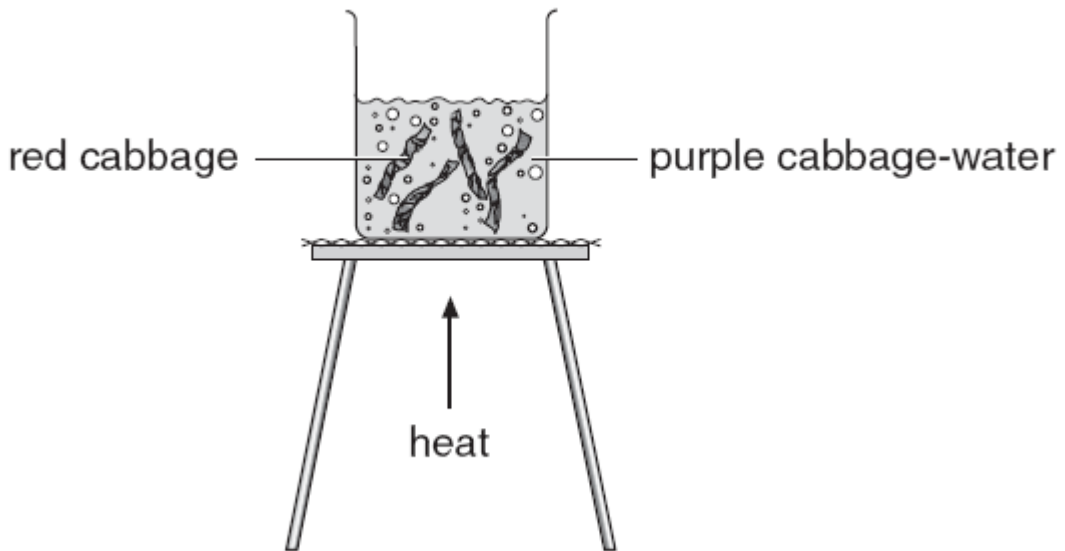
Below is a diagram of a cross-section of the Earth:
Label the diagram **choosing** words from the list below

Atmosphere Crust Liquid outer core Mantle Sea Soil Solid inner core



Question 12 [5 marks]

Sharna boiled some red cabbage in water. The cabbage-water turned purple.



(a) (i) Sharna separated pieces of cabbage from the cabbage-water. Which method did she use?
Tick the correct box.

chromatography

condensation

filtration

freezing

(ii) Sharna wanted to find out if the purple cabbage-water contained more than one **coloured** substance. Which method did she use? Tick the correct box.

chromatography

condensation

filtration

freezing

- (b) Sharna mixed the purple cabbage-water with some other liquids. She wrote the colours of the mixtures in a table as shown below. Use the information in the table to answer parts (i) and (ii) below.

	Colour of cabbage-water mixed with liquid	Is the liquid acidic, alkaline or neutral?
Liquid 1	Red	Acidic
Liquid 2	Blue	Alkaline
Liquid 3	Purple	Neutral

- (i) Sharna mixed cabbage-water with colourless washing-up liquid. The mixture turned **blue**. What does this tell you about the washing-up liquid?

- (ii) Sharna then mixed cabbage-water with lemon juice. Lemon juice is **acidic**. What colour was the mixture?

- (c) What is the name of a chemical which changes colour when it is mixed with acids or alkalis? Tick the correct box.

filtrate

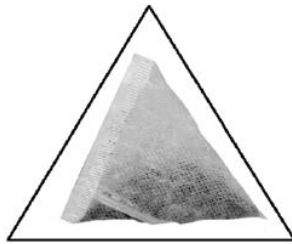
non-metal

indicator

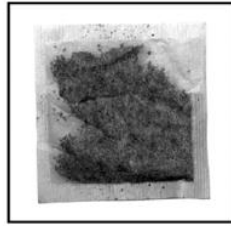
solution

Question 13 [4 marks]

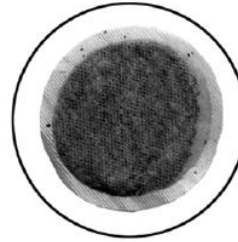
Tea bags are made in different shapes.



triangle



square



circle

Some pupils want to find out which shape of tea bag lets tea dissolve most quickly.

They make two plans for their investigation as shown below.

FIRST PLAN
We will use 3 tea bags and 3 beakers.

SECOND PLAN
Collect three beakers.
Collect three different tea bags.
Put one tea bag in each beaker.
Add 150 cm³ of water at 65°C.
Keep the temperature of the water the same.
Measure the time taken for the tea to dissolve.
Find out which is the quickest for making tea.

(a) How is the second plan better than the first plan?

Ben and Vicky drew a cross on some paper. They put each beaker, in turn, over the cross. They poured hot water into the beaker, dropped in the tea bag and watched the water change colour.



To see which shape of tea bag let the tea dissolve the quickest, they measured the time until the liquid was too dark for them to see the cross.

(b) How did the cross help to make their test more accurate?

They recorded their measurements in a table as shown below.

Shape of tea bag	Time taken until cross cannot be seen (minutes)
triangle	8
square	15
circle	10

(c) Which part of their investigation was recorded in the table?

Tick the correct box.

explanations

conclusions

results

plans

(d) Give the **three** shapes of tea bags in the order in which the tea dissolved.

Use the table above to help you.

quickest _____ slowest