

NAME:	SCIENCE TEACHER: (circle code)	9A
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SCIENCE

Year 9 Examination 2011

9A – 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 (e.g. kg or m) unless they are already provided.

For Teacher Use

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

Question One: In the laboratory [3 marks]

Look carefully at the drawing of a science lesson. The students are **not** carrying out their experiment in a safe way.

(a) Neatly circle **three** things they are doing which are **not safe**.

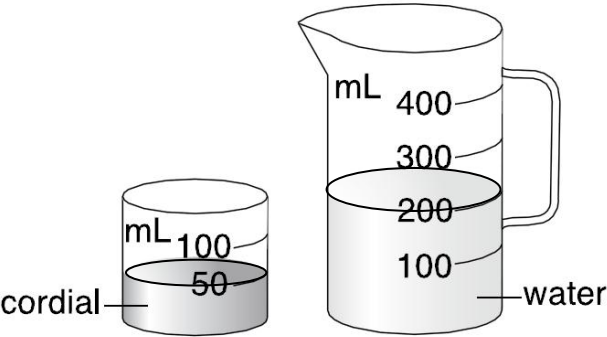


(b) For **one** thing you circled, explain

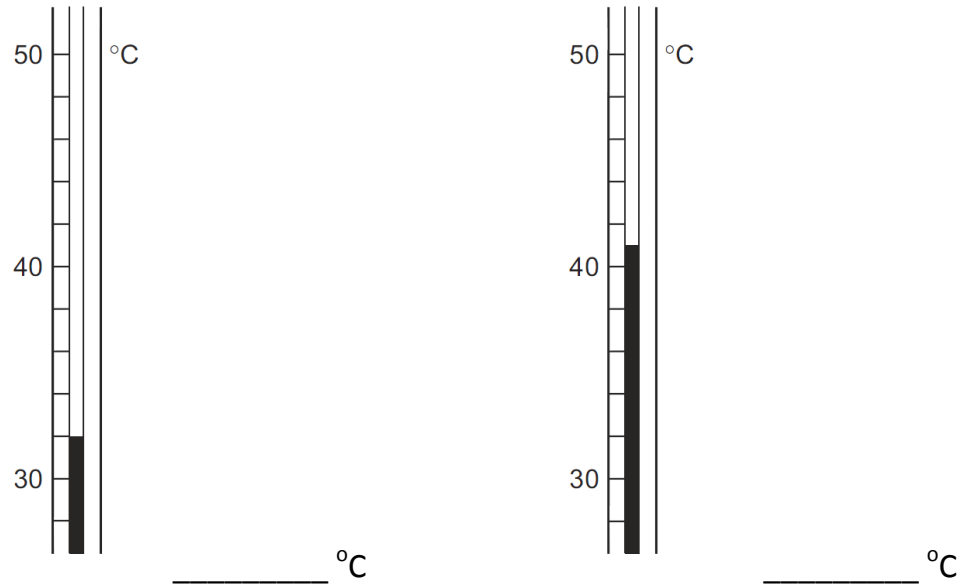
Why it is dangerous:
What the student should be doing instead:

Question Two: Measuring and graphs [7 marks]

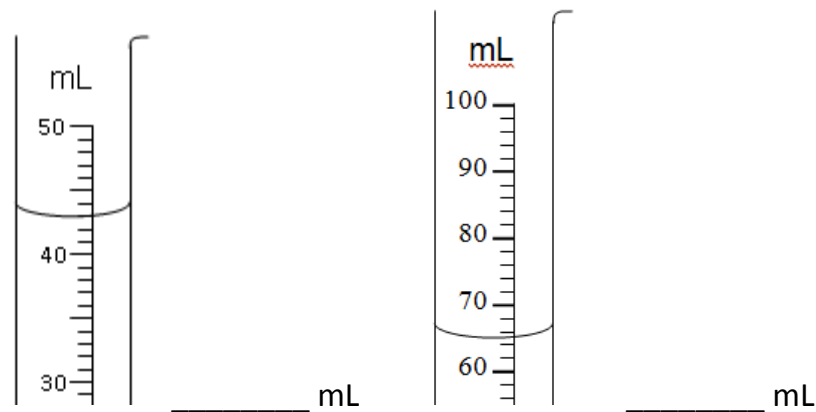
- (a) Measuring is important in Science.
- (i) Ari added cordial to water to make a jug of drink. What will be the volume of the drink in the jug when Ari has made the drink?
- _____ mL



- (ii) What temperatures are shown on the thermometers below?



- (iii) What volumes are shown in the measuring cylinders below?



- (c) Jay collected pond snails from the school pond. He measured the lengths of all their shells.

Jay made a chart of the lengths of **all** the shells he found.

range of lengths of shells (mm)	0-5	6-10	11-15	16-20	21-25	26-30
number of shells	I	I	I	III	IIII	I

- (i) What was the **most common range** of lengths of shells Jay collected? Circle your answer.

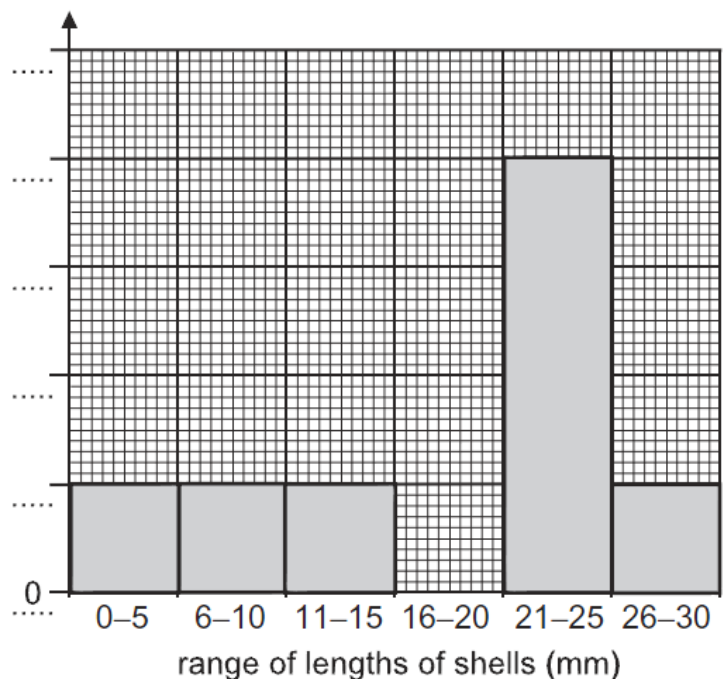
0-5 6-10 11-15 16-20 21-25 26-30

Jay drew a bar graph of his results.

- (ii) Add the missing numbers to the side of the bar chart labelled 'number of shells'.

- (iii) **On the bar chart**, draw the bar for the number of shells measuring 16-20 mm.

number of shells

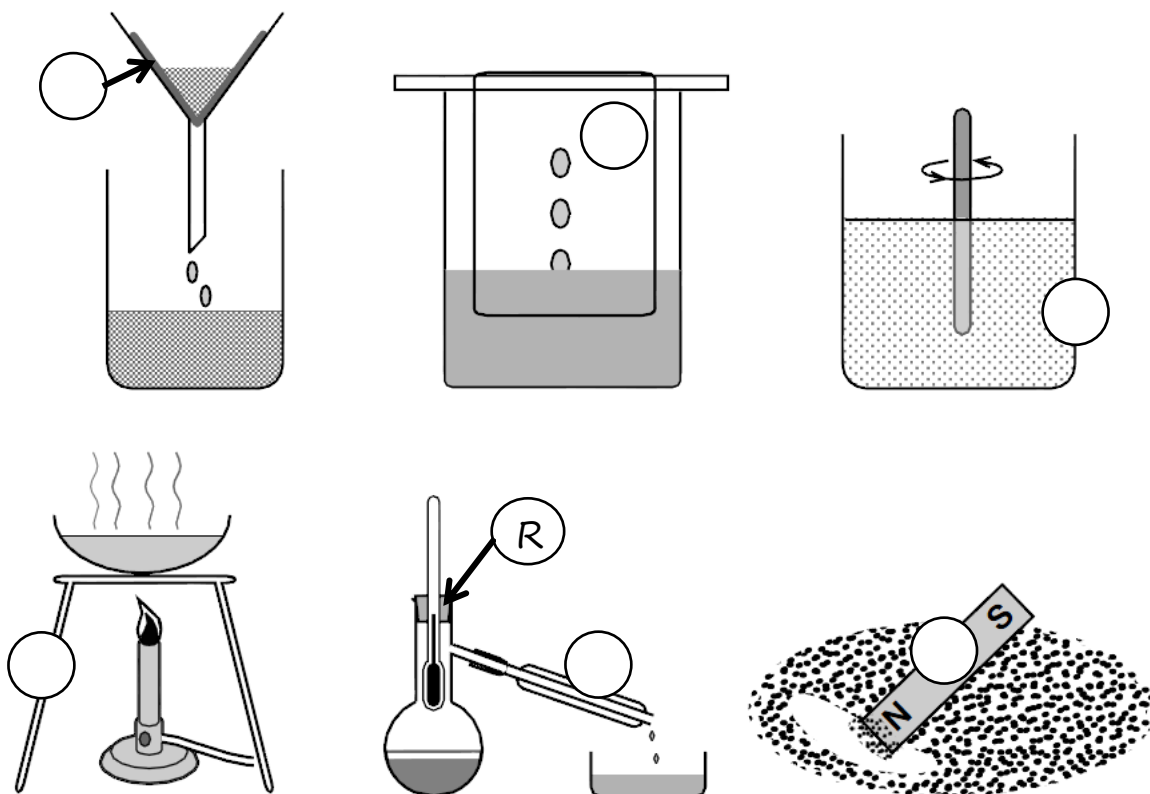


- (iv) Jay said "There are no snails bigger than 30 mm in the school pond". Explain if his conclusion is **true** or **false** or you **cannot tell**.

Answer
Reason

Question Three: Apparatus [3 marks]

- (a) Look at the diagrams below. The bung (stopper) is made from rubber, and has been labelled with a letter "R".
- (i) Use the letter P to show **one** thing that is made from paper.
 - (i) Use letter G to show **one** thing that is made from glass.
 - (ii) Use letter M to show **one** thing that is made from metal.



- (b) **Name** a piece of apparatus in these diagrams that could be made from glass **or** plastic.

- (c) A piece of apparatus is missing from this diagram opposite.
What is the **scientific symbol** for this missing piece of apparatus?



Question Four: The microscope [3 marks]



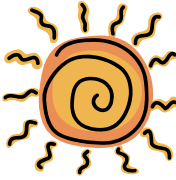


Label any **three** parts of the microscope using words from the box below

arm • eye piece • focus knob • lamp • nose piece • objective lens • stage

**Question Five: Living things. [6 marks]**

(a) Kami sees the things below while he is working in his vegetable patch.

Tick **three** boxes to show which of these things are living. (Pictures are not to scale)

				
water	tree	sun	bird	fly

- (b) Some students draw a food chain about living things they see in the garden. There is a mistake in their food chain. (Pictures are not to scale)



cabbage



caterpillar



bird



cat

What is the mistake in their food chain?

- (c) The students correct the mistake in the food chain.

Tick **ONE** box in **each row** of the table to show whether the animal is a **predator**, **prey** or **both**. Caterpillar has been done as an example.

Animal	Predator	Prey	Both
caterpillar		✓	
bird			
cat			

- (d)

- (i) Which word best describes the **cabbage** in the food chain? Tick **ONE** box.

☐

fertiliser

☐

organism

☐

consumer

☐

producer



- (ii) A cabbage has many leaves. Tick **ONE** box to show why leaves are important **to a cabbage plant**.

The leaves...

☐

attract insects like caterpillars

☐

collect pollen

☐

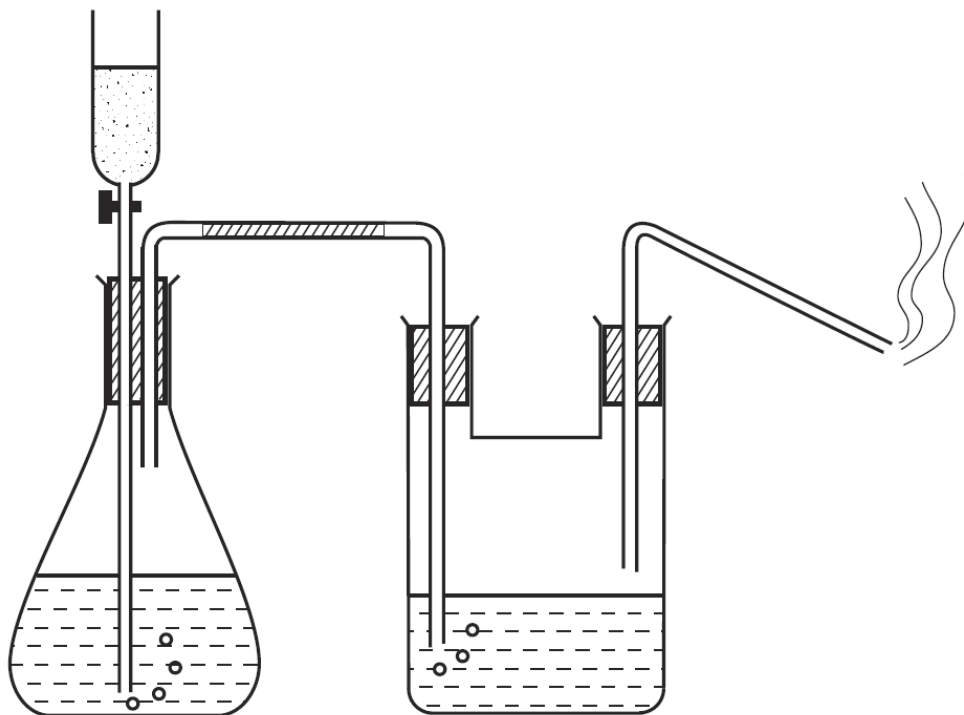
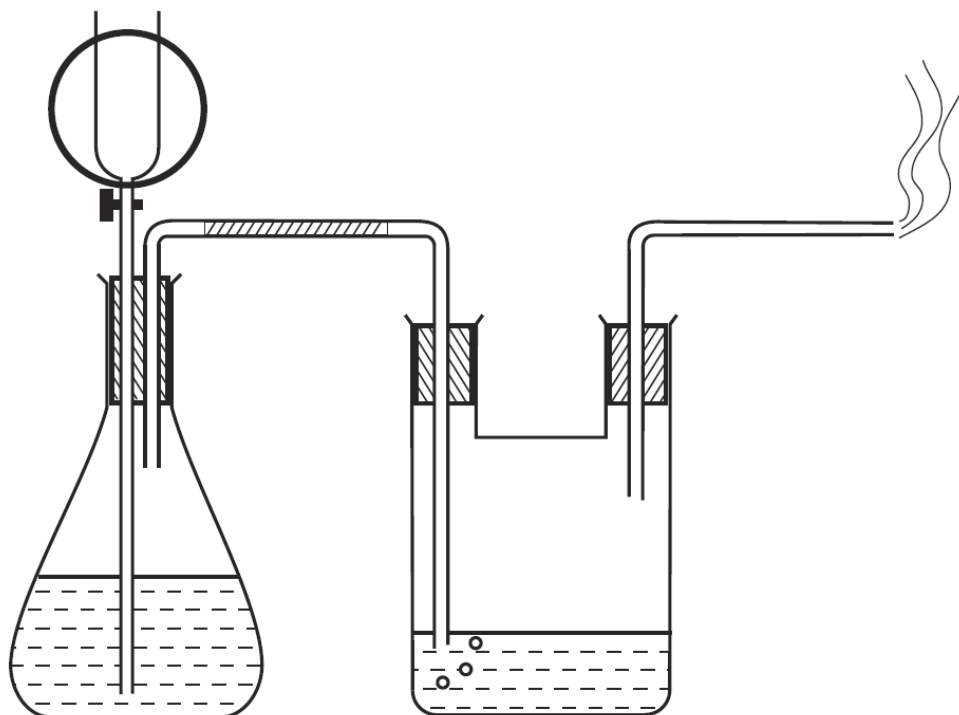
anchor the plant in the ground

☐

produce new materials for growth

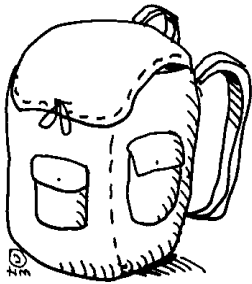
Question Six: Looking carefully [2 marks]


Look carefully at the two drawings of apparatus set up for an experiment. There are at least five differences between the Drawings A and B. One of these has been found for you. Draw a neat circle around **four** other differences on Drawing B.

DRAWING A**DRAWING B**

Question Seven: Science skills – Fair test experiments. [3 marks]


Some pupils investigated different materials used to make backpacks. Here are some of the questions they asked.






Aysha

How strong is each material?



Zoe

Which material is the best?



Shaun

Which material is the most hard-wearing?

(a) Which pupil asked a question that cannot be **investigated**? Give a reason for your answer.

Aysha Zoe Shaun (circle your answer)

Reason:

(b) Zara took four different backpack materials and investigated how waterproof they were.
She poured 100 mL of water through each material in turn.
She measured the volume of water that passed through each material in 30 minutes.



Give **one** other thing she must keep the same to make her test fair.

(c) The table below shows Zara’s results.

Material	Volume of water passing through each material (mL)
A	11
B	5
C	20
D	15

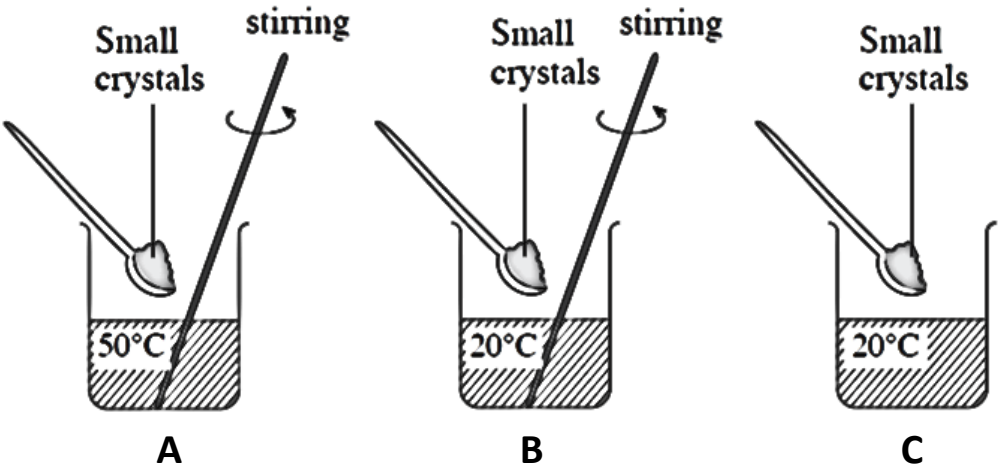
(i) Which material was the most waterproof? Circle your answer.

A B C D

(ii) Explain your answer.

Question Eight: Water. [4 marks]

(a) Look at the diagrams which show 10g of salt being added to beakers of water.

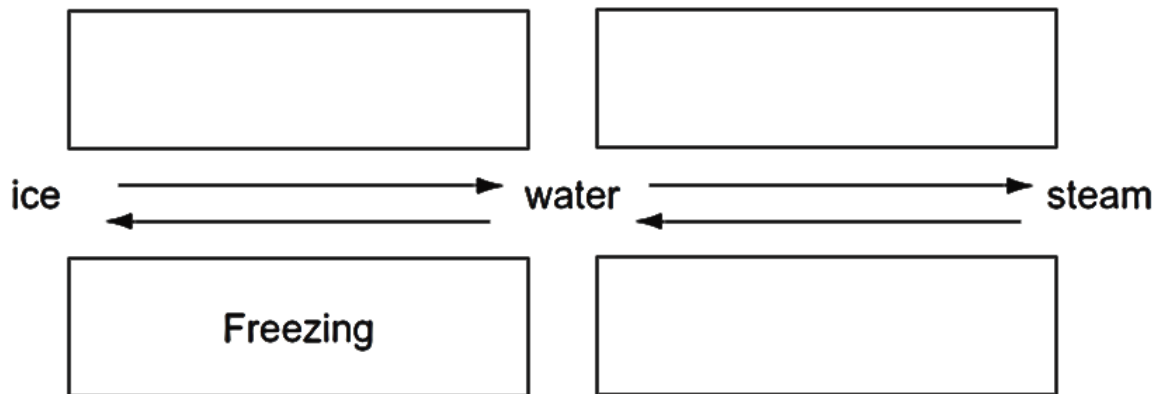


(i) The beaker where salt dissolves the fastest is _____

(ii) The beaker where salt dissolves the slowest is _____

- (b) Water changes to steam when it is heated. When water is cooled it eventually turns to ice. Complete the diagram below to name these changes of state. Choose from the words below.

● burning ● boiling ● condensing ● melting ● smoking ● solidifying ● steaming



Question Nine: Light and sound. [5 marks]

- (a) One sunny day, some students used a post to make shadows in their playground.
- (i) The post makes a dark shadow. Tick **ONE** box to complete the sentence below.
The post makes a **dark** shadow because it is...

☐ opaque

☐ smooth

☐ solid

☐ transparent

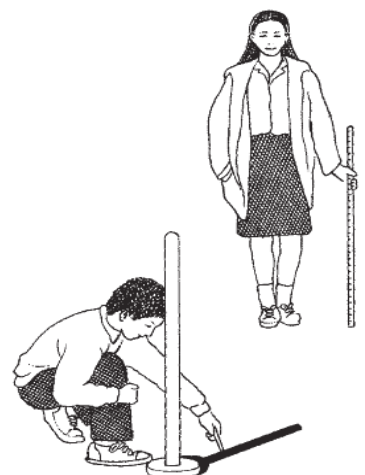
☐ tall

☐ black



The students drew round the shadow of the post every half hour from 9:30 until 12 noon. They measured the length of each shadow and recorded their results in this table:

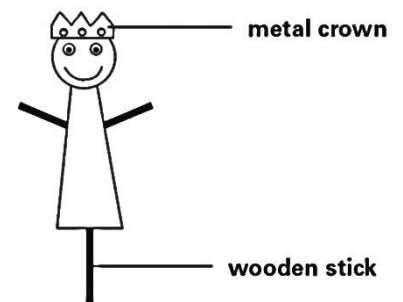
Time (am)	Length of shadow (cm)
9:30	146
10:00	130
10:30	116
11:00	109
11:30	106
12:00	103



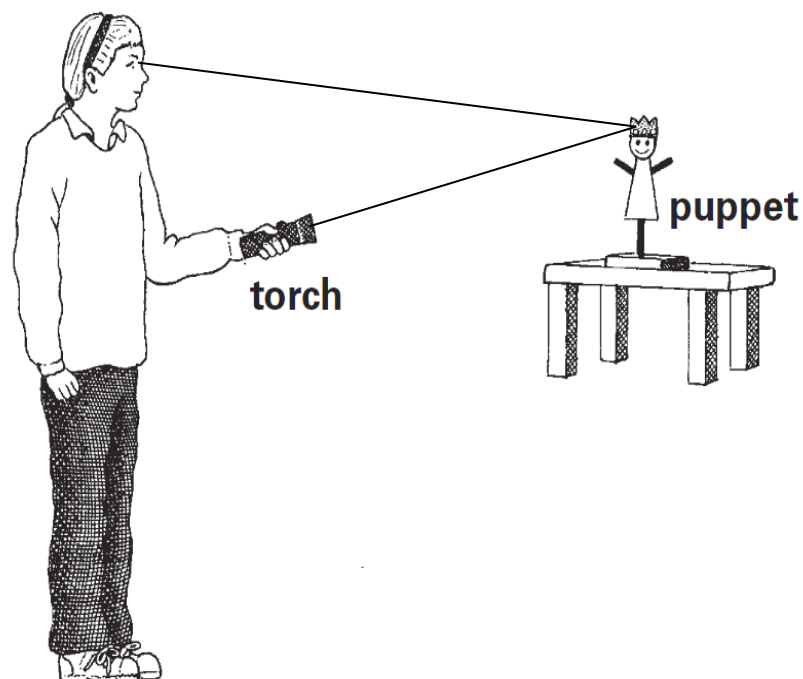
- (ii) What happened to the length of the shadow during the morning?

- (b) Emma makes a stick puppet. She draws a face on it. The puppet has a metal crown. When Emma shines a light on the puppet, the crown looks shiny.

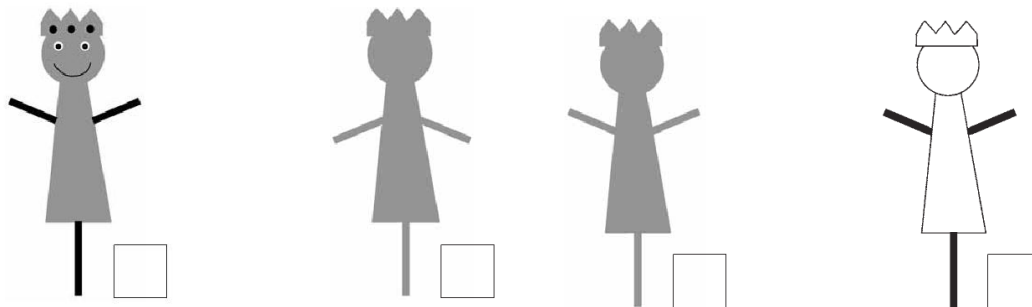
- (i) Why does the metal crown look shiny when the light is on it?



- (ii) Draw TWO arrows on the light rays to show how Emma sees the puppet's crown.



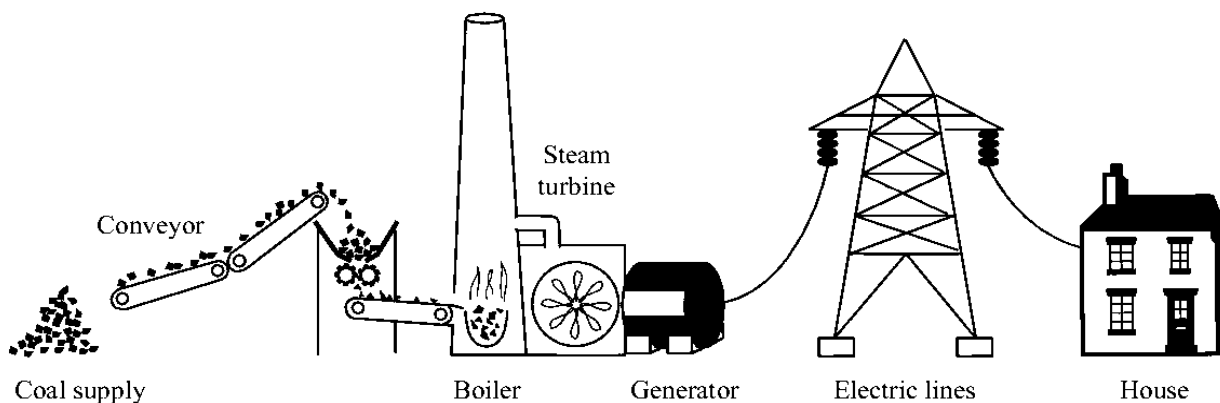
- (iii) When the light shines on the puppet, Emma can see a shadow of the puppet on the wall behind. Which of the following shows the correct shadow of Emma's puppet? Tick **ONE** box.



Question Ten: Energy and waves. [4 marks]

- (a) Fossil fuels are used in power stations to generate electricity.
 (i) State one disadvantage (problem) of using fossil fuels to generate electricity.

Look at the diagram below.



- (ii) Complete the energy transfer chain for this process. Circle **one word** from **each pair** in the boxes.

coal → boiler → steam turbine → generator

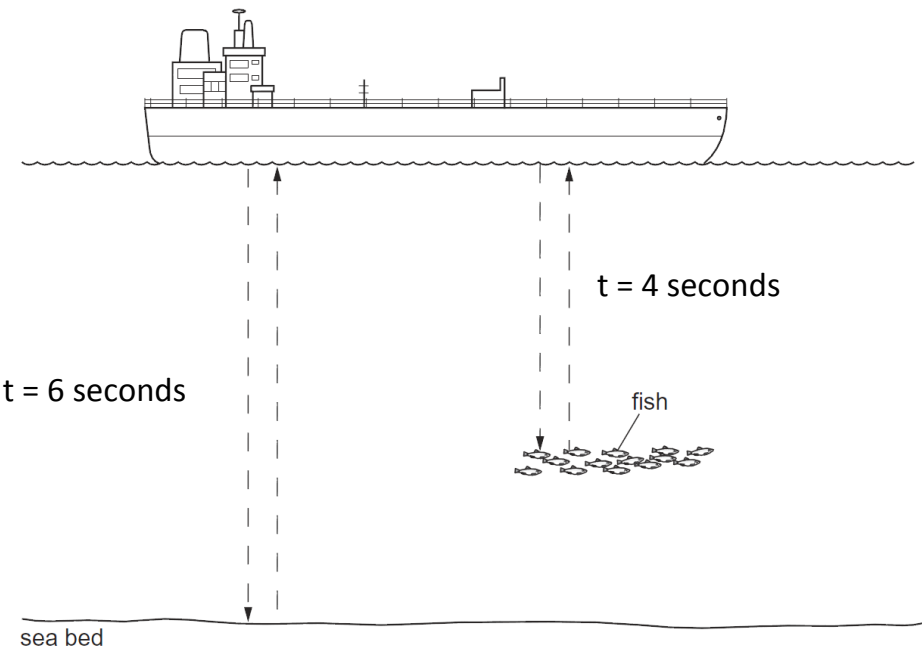
<i>chemical</i> <i>heat</i> energy	→	<i>steam</i> <i>heat</i> energy	→	kinetic (movement) energy	→	<i>electrical</i> <i>light</i> energy
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(b) The pictures below show a bathroom and a bedroom.



Why will voices or singing sound “more powerful” in the bathroom than in the bedroom?

(c) Ultrasound can be used by fishermen. On the picture, “t” is the time in seconds for the ultrasound to **leave and return** to the ship.



Why do you think that ultrasound is useful to the fishermen?

Only do this if you have finished the exam

J D W R R D N F V U H P Q Y J V O P F J
 C O P P E R O V I N M O I R O P U U O C
 N A A T N O I L E O N Q E G A U Z E O B
 V D B R I T T L E I N N S Q S O U N D N
 M M U B S Z A D M T R C U L I S S O F S
 Q J N Y A P R O D U C E R Q D U P A C U
 Y C S H B G F G B L X C H E M I C A L W
 Z Z E C T H E R M O M E T E R J V D I G
 N A N T N E R A P S N A R T D E Z N U F
 T F P E T O G V H A R D E S N E D N O C
 K K Y R N N I I K O T E N G U R S E E N
 F S I T E V J T P Y T R E P O R P G N N
 X O S S V Y Z A C H M R W T P B L O S K
 X L I W L S V T G E O V A R M A I R E W
 X U A S O E W I G V L D B M O T A D A Z
 M B P A S H L O I F E F L L C R L Y X R
 T L I O S C U N V R C B E A K E R H W J
 S E L C I T R A P T U B E R U T X I M R
 E A P U D A R L N R L R N F L A T E M Y
 R S O X C M T N E M E L E Z K F W K C J

ATOM
 BASIN
 BEAKER
 BRITTLE
 BUNSEN
 BURNER
 CABBAGE
 CARNIVORE
 CHEMICAL
 COMPOUND
 CONDENSE
 CONSUMER
 COPPER
 DISSOLVE

ELEMENT
 EVAPORATE
 FOOD
 FOSSIL
 FUEL
 GAUZE
 GRAVITATIONAL
 HARD
 HEAT
 HYDROGEN
 LIGHT
 LION
 MAGNESIUM
 MATCHES

METAL
 MIRROR
 MIXTURE
 MOLECULE
 OMNIVORE
 OPAQUE
 PARTICLES
 PREDATOR
 PREY
 PRODUCER
 PROPERTY
 REACTION
 REFLECTION
 RENEWABLE

SCAVENGER
 SOLAR
 SOLUBLE
 SOLUTION
 SOLVENT
 SOUND
 STRETCHY
 TEETH
 THERMOMETER
 TRANSPARENT
 TRIPOD
 TUBE
 WIND