


GRADE 9

2016

Student Name			
Gender		Date of Birth	
Subject	SCIENCE	Student ID	N0007
School Name	TOWHEED IRANIAN SCHOOL		
Grade	09	Section	
 168-S-N0007-09-1 3091			

## Science

### TEST INSTRUCTIONS

#### FILL IN YOUR DETAILS

Turn to your ANSWER SHEET and fill in your name, school, grade, section, today's date, your date of birth and gender.

#### ANSWERING QUESTIONS

Go to the SCIENCE ANSWER SHEET.

This test has **40 QUESTIONS**. Each question has four possible options.

Choose the BEST answer from the four options, **A, B, C** or **D**.

FILL in ONE circle on your answer sheet with a pencil.

If you make a mistake, erase the pencil mark and fill in a different circle.

You must colour the entire circle as shown below:

Correct response



Incorrect responses



Line



Very light pencil



Pen



Colored pencil

Marks are NOT deducted for incorrect answers.

**ALL ANSWERS SHOULD BE MARKED ON YOUR ANSWER SHEET ONLY.**

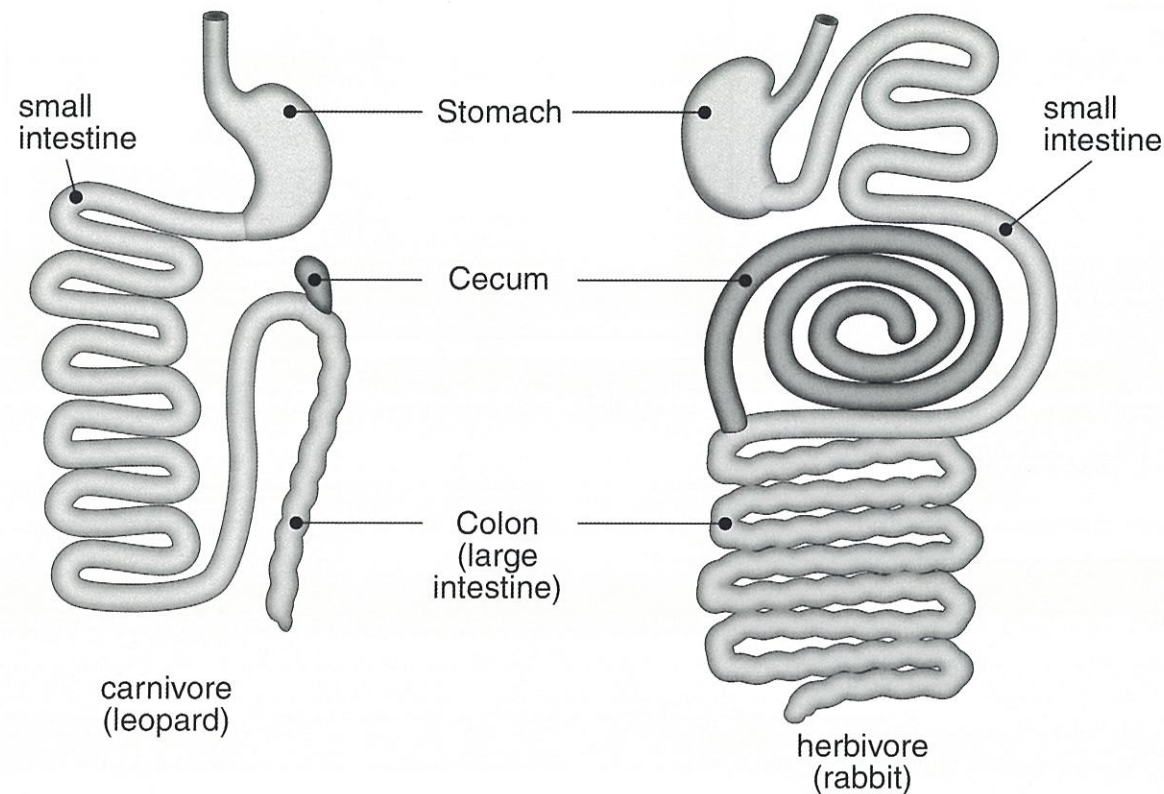
#### EQUIPMENT ALLOWED IN THIS TEST

You may use a 2B or B pencil for this test. You may NOT use a dictionary for this test.

#### TIME ALLOWED FOR TEST

The time allowed to complete this test is **60 minutes**

The diagram shows the digestive system of two animals.  
One of the animals is a carnivore, the other is a herbivore.  
Generally, if an animal's diet is difficult to digest, its digestive system will be complex.



- 1 Which is a correct comparison of the two digestive systems?
- A Herbivores have a shorter cecum than carnivores.
  - B Herbivores have a smaller stomach than carnivores.
  - C Herbivores have a longer large intestine than carnivores.
  - D Herbivores have a more coiled small intestine than carnivores.

- 2 Which statement is supported by the diagram?
- A Carnivores have a shorter life span than herbivores.
  - B Carnivores have a higher metabolic rate than herbivores.
  - C Animal tissues are digested more easily than plant tissues.
  - D Animal tissues contain greater amount of proteins than plant tissues.

- 3 What does the cecum do in the digestive process?
- A It releases bile into the small intestine.
  - B It absorbs nutrients from digested food.
  - C It secretes enzymes that help to dissolve glucose.
  - D It contains microorganisms that breakdown cellulose.

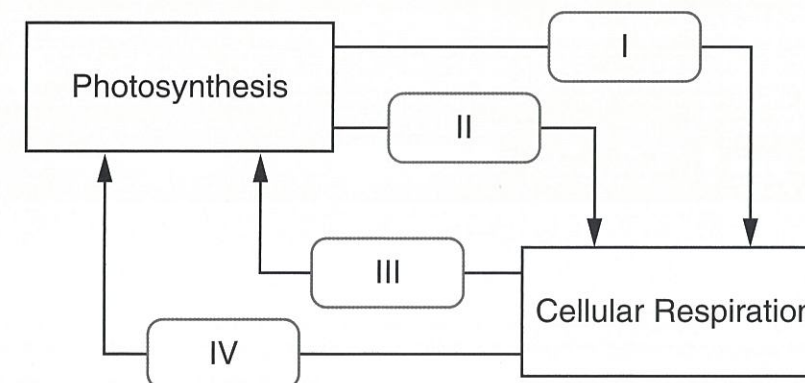
- 38 Which of these is most likely to react quickly with a metal?

- A water
- B liquid soap
- C vegetable oil
- D hydrochloric acid

- 39 Which device transforms chemical energy into kinetic energy?

- A a solar panel
- B a loudspeaker
- C a diesel engine
- D an electric motor

Cellulose is formed in plants from the products of photosynthesis.  
Photosynthesis and cellular respiration are linked chemical reactions.



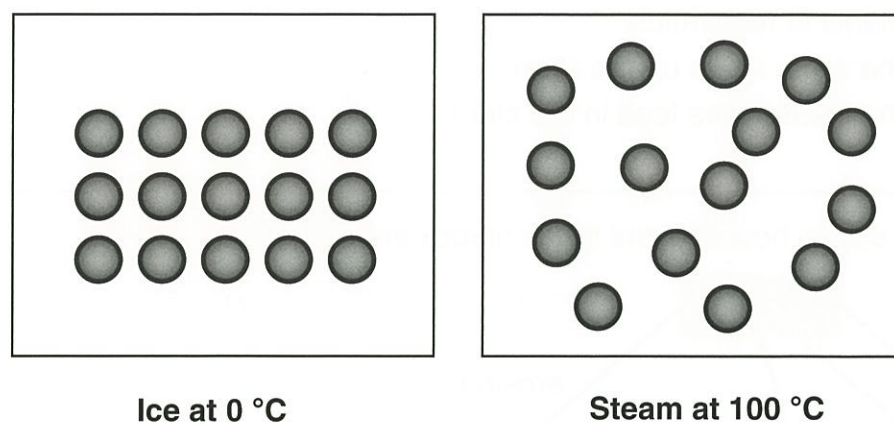
The chemical links between photosynthesis and cellular respiration

- 40 What are the names of substances I, II, III and IV in the diagram?

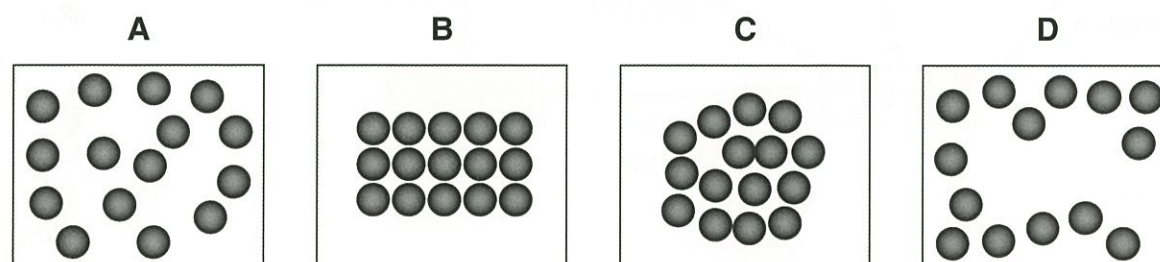
Choose the correct row.

	I	II	III	IV
A	carbon dioxide	water	oxygen	sugar
B	water	oxygen	sugar	carbon dioxide
C	oxygen	sugar	water	carbon dioxide
D	sugar	sunlight	carbon dioxide	water

The diagrams show the arrangement of water particles in ice and steam.



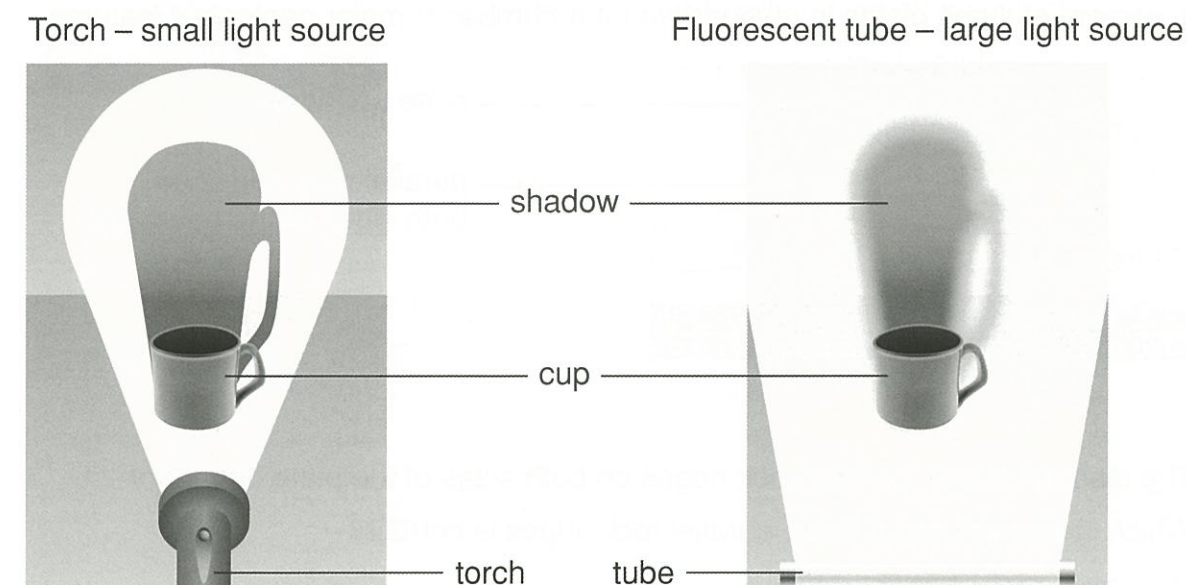
36 How are the water particles likely to be arranged at 10 °C?



37 At which temperature do the water particles have the most energy?

- A at 0 °C
- B at 10 °C
- C at 50 °C
- D at 100 °C

The shadow of a cup is formed using a torch and then by using a fluorescent tube.



4 What does the experiment show?

- A Only hollow objects can make a shadow.
- B Bigger sources of light produce bigger shadows.
- C Smaller sources of light produce sharper shadows.
- D Only dark objects can make a shadow.

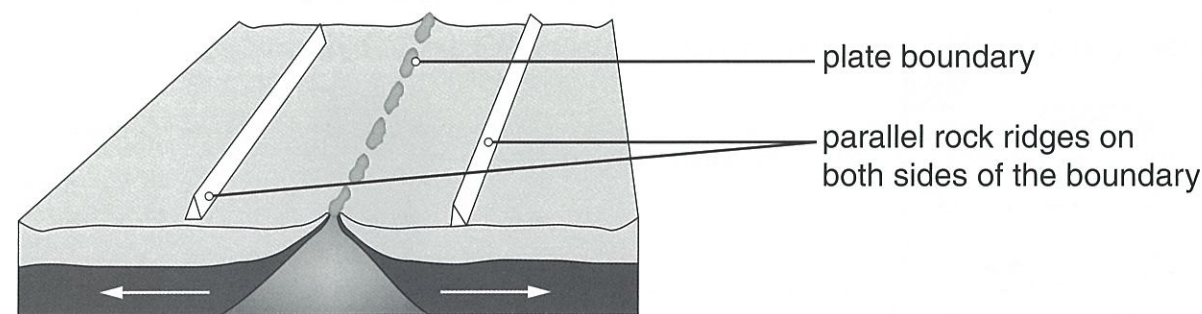
5 What must be kept the same to make the experiment fair?

- A colour of the cup
- B contents of the cup
- C length of time the light source is turned on
- D distance between the light source and the cup

6 What will most likely happen if the cup is moved closer to the torch?

- A The size of the shadow will increase.
- B The size of the shadow will decrease.
- C The colour of the shadow will change.
- D The shadow will not change in any way.

The crust of the Earth is broken into sections called tectonic plates.  
The movement of these plates is responsible for a number of major geological features.



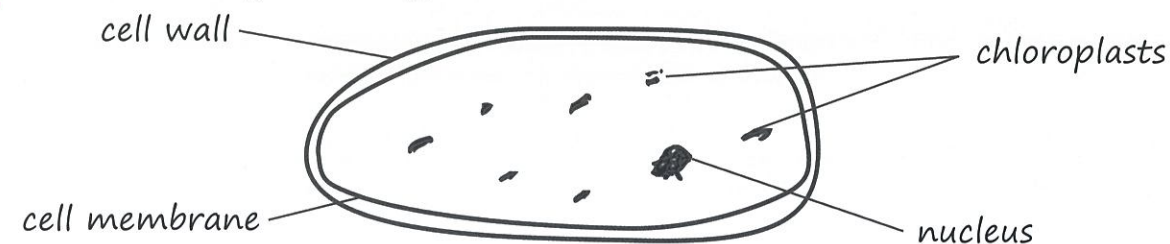
**7** The diagram shows parallel rock ridges on both sides of the plate boundary.  
Which statement about these parallel rock ridges is correct?

- A The ridges are of approximately the same age.
- B The ridges are exactly the same shape and height.
- C The ridges are formed from different types of rock.
- D The ridges contain fossils from different geological periods.

**8** What creates the forces that cause the plates to move?

- A gravity
- B ocean currents
- C the Earth orbiting the Sun
- D heat from within the Earth

**9** This is a drawing of which type of cell?

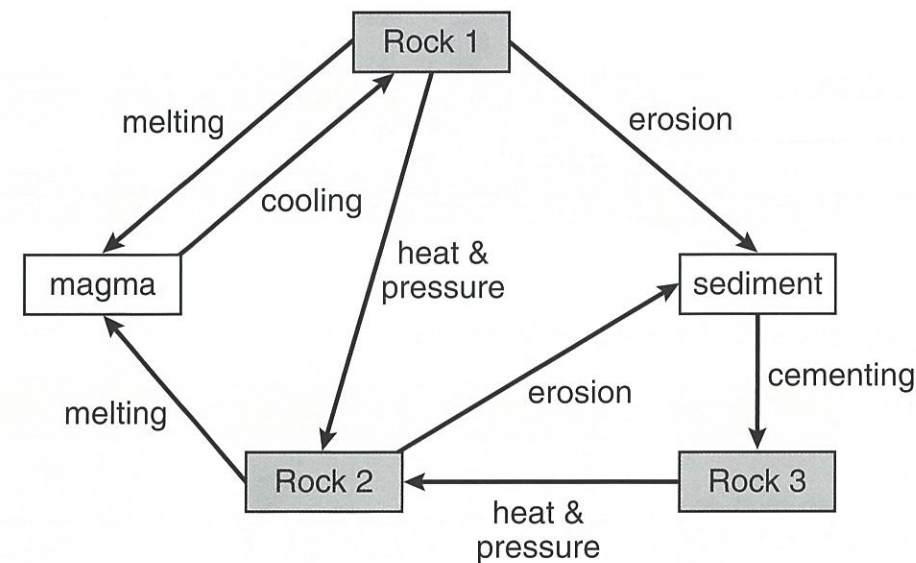


- A plant cell
- B fungal cell
- C animal cell
- D bacterial cell

**33** How does evaporation of water help plants?

- A It helps plants make food.
- B It helps plants in respiration.
- C It helps the water move up the stem.
- D It helps the plants store food in the stem.

The diagram below shows how different types of rock are formed.



**34** What are the rocks labelled 1, 2, and 3 in the diagram?

Choose the correct row.

	Rock 1	Rock 2	Rock 3
A	igneous	metamorphic	sedimentary
B	metamorphic	igneous	sedimentary
C	sedimentary	metamorphic	igneous
D	igneous	sedimentary	metamorphic

**35** What can be concluded from the diagram?

- A All three rocks are formed underground.
- B All three rocks need heat and pressure to form.
- C Rock 2 is formed due to erosion of other types of rocks.
- D Rock 3 cannot change into Rock 1 without first being melted.

A student put three plants with different types of leaves in three flasks of water. He recorded the volume of water in each flask before and after the experiment.



	Volume of water in the flask (ml)	
	Before the experiment	After the experiment
Flask 1	200	175
Flask 2	200	180
Flask 3	200	195

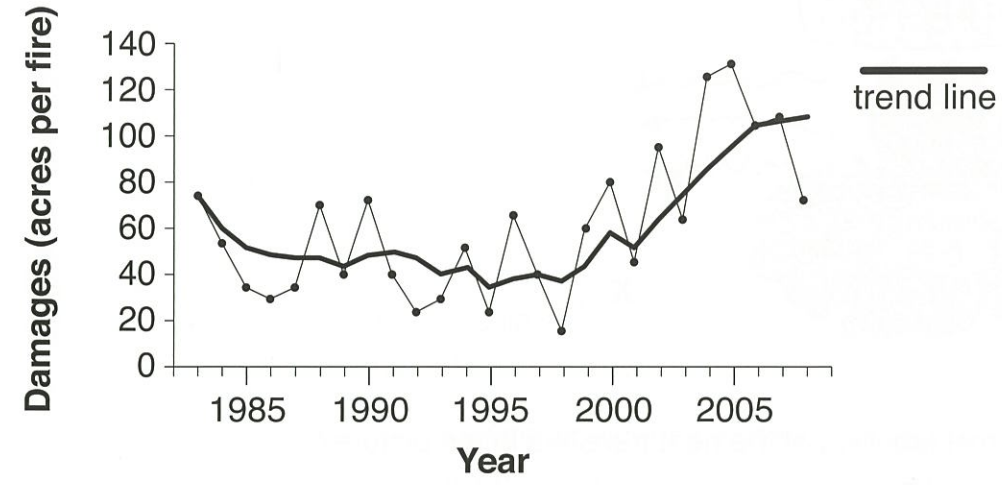
- 31 What can be concluded from the experiment?
- A Plants lose water through their stems.
  - B Plants with spines do not lose water.
  - C Most of the water evaporated from the flask.
  - D Leaves with more surface area lose more water.

- 32 Which of these factors can affect the amount of water lost from the flasks? Choose the correct row.

	The number of leaves on the stem of each plant	The temperature of the air around the leaves	The thickness of the plant's stem
A	yes	no	no
B	yes	yes	no
C	no	yes	no
D	no	yes	yes

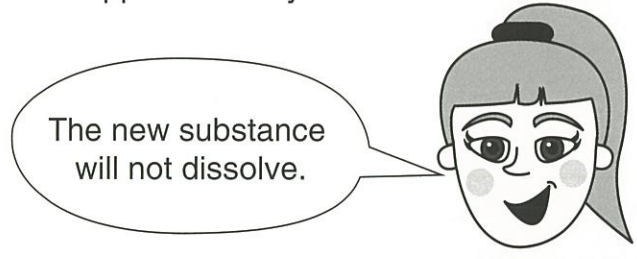
The graph below shows the average size of a wildfire for each year in the USA between 1983 and 2008.

Size of wildfires in the USA (acres), 1983 to 2008

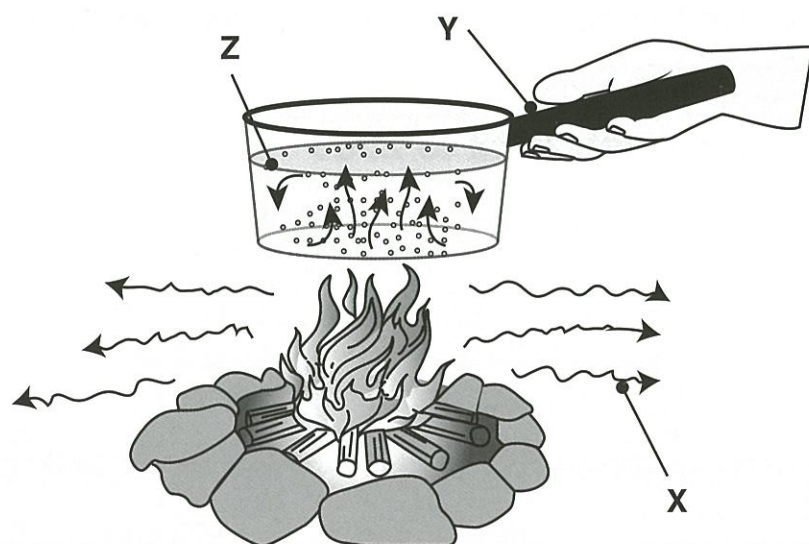


- 10 Which statement best describes the data in the graph?
- A The size of a fire in 2008 was greater than any of the fires of 1983.
  - B The average fire size is variable, but it seems to be increasing.
  - C Every fire in the 1980s was smaller than any fire in the 2000s.
  - D Years with fire sizes above the trend follow years with fire sizes below the trend.

Some powder is added by a student to a glass of water and mixed. The powder reacts and produces a new substance. The water appears cloudy.



- 11 Which of these is the best way to find out if the student is correct?
- A Stir more powder into the mixture to see if it becomes more cloudy.
  - B Heat the mixture gently while stirring and see if it becomes clear instead of cloudy.
  - C Stir the mixture and look for signs of a chemical reaction such as bubbling or colour change.
  - D Use a filter to separate the powder from the water, dry it and compare it to the original powder.



- 12 What is the correct labelling of the heat transfers in the picture?  
Select the correct row.

	X	Y	Z
A	convection	radiation	conduction
B	convection	conduction	radiation
C	radiation	convection	conduction
D	radiation	conduction	convection

- 13 Which substance is the poorest conductor of heat?

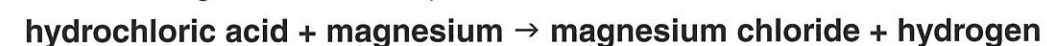
- A nitrogen
- B mercury
- C water
- D granite

- 14 Many heaters use convection to warm up a room.  
How does convection distribute heat in a room?

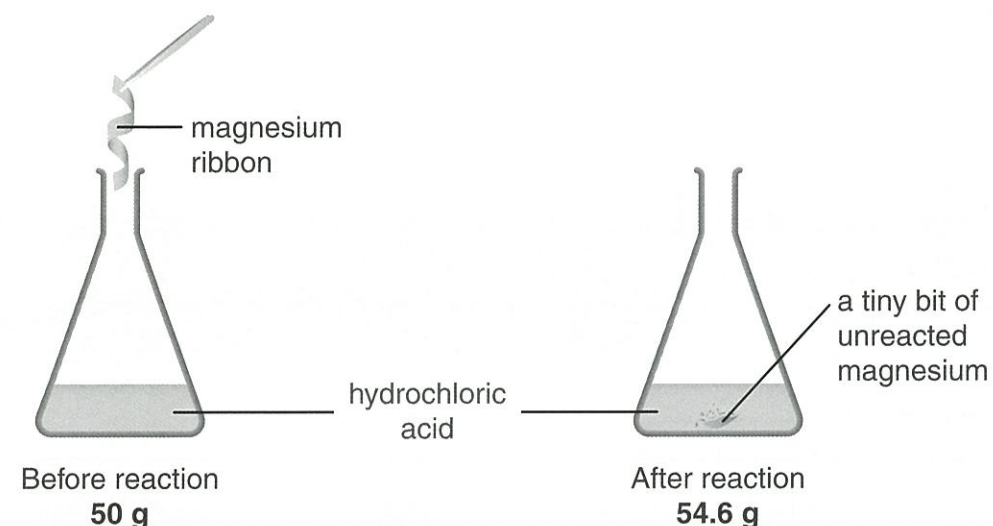
- A Heat is transferred through the floor and walls.
- B Warm air moves to displace cold air in the room.
- C Air molecules transfer energy to other air molecules.
- D Electromagnetic waves from the heater spread through the room.

A flask contains 50 g of hydrochloric acid. A student drops 5 g of magnesium ribbon into the flask.

The following reaction takes place:



After the reaction the flask weighs 54.6 g.



- 28 Why does the flask weigh less than 55 g?

- A The hydrogen produced has no mass.
- B All the magnesium did not react with the acid.
- C The hydrogen produced escaped during the reaction.
- D Dissolved magnesium has less mass than solid magnesium.

- 29 The student thinks that some magnesium did not react because there was not enough acid.

What can the student do to check if all the acid in the flask has reacted?

- A Shake the flask gently.
- B Add more acid to the flask.
- C Add more magnesium to the flask.
- D Cover the mouth of the flask with a stopper.

- 30 Which row shows evidence of a chemical reaction in the flask?

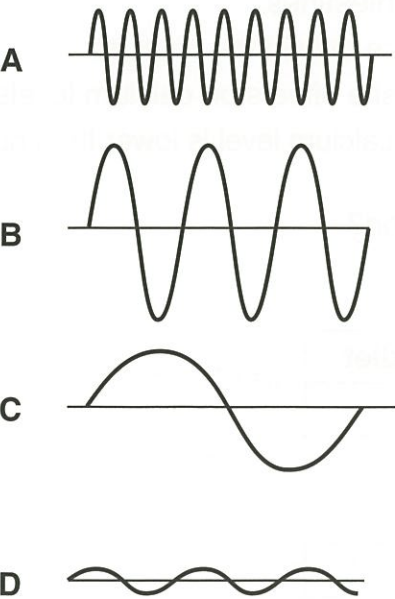
Choose the correct row.

	A gas is formed	The flask is hot after the reaction
A	no	no
B	no	yes
C	yes	no
D	yes	yes

A singer is able to break a glass using her voice.



- 25 What form of energy breaks the glass?
- A thermal
  - B kinetic
  - C electromagnetic
  - D chemical
- 26 How does the energy from the singer's voice reach the glass?
- A Air molecules travel in a line from the singer to the glass.
  - B Air molecules move along a wave from the singer to the glass.
  - C Pressure between air molecules is transferred to the glass.
  - D Energy moves up and down along a wave from the singer to the glass.
- 27 The sound of four musical notes was graphed on the same scale. Which note is the loudest?



The table shows some of the features of different types of volcano.

	Volcano type		
	Lava domes	Shield	Strata
Shape			
Type of eruption	Slow continuous eruption of rocky material with occasional explosive eruptions	Frequent low power eruptions	Minor separate eruptions and occasional explosive eruptions
Content of eruption	Rocky lumps and ash	Usually liquid lava	Ash, dust and hot gases

- 15 Lava is molten rock. What causes rock to become lava?
- A heat from inside the Earth
  - B pressure from inside the Earth
  - C chemical reactions inside the rock
  - D friction as the lava moves to the surface
- 16 A volcano violently erupts and generates a giant ash cloud. Which volcano could it be?
- A Shield
  - B Shield or Strata
  - C Strata or Lava dome
  - D Lava dome or Shield
- 17 Which geological feature is most often linked to volcanoes?
- A valleys
  - B deserts
  - C underground caves
  - D tectonic plate boundaries

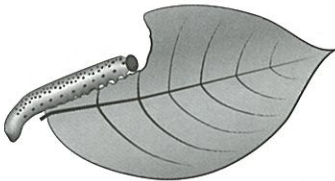
**18** An ore is a rock that contains a mineral.  
Which properties make a rock a suitable ore for extracting a mineral?  
Choose the correct row.

	The rock contains a high percentage of the mineral	The rock does not contain any other mineral	The mineral can be extracted easily from the rock
A	no	no	yes
B	no	yes	yes
C	yes	no	yes
D	yes	yes	no

**19** The first step in extracting the mineral from the ore is crushing.  
Why is this step important?

A The crushed ore is safer for workers to handle.  
B The ore reacts faster once it has been crushed.  
C The crushed ore is more stable at windy mine sites.  
D The crushed ore contains more mineral than large pieces of ore.

This caterpillar is feeding on a leaf. The chewed leaf material passes into its digestive system.



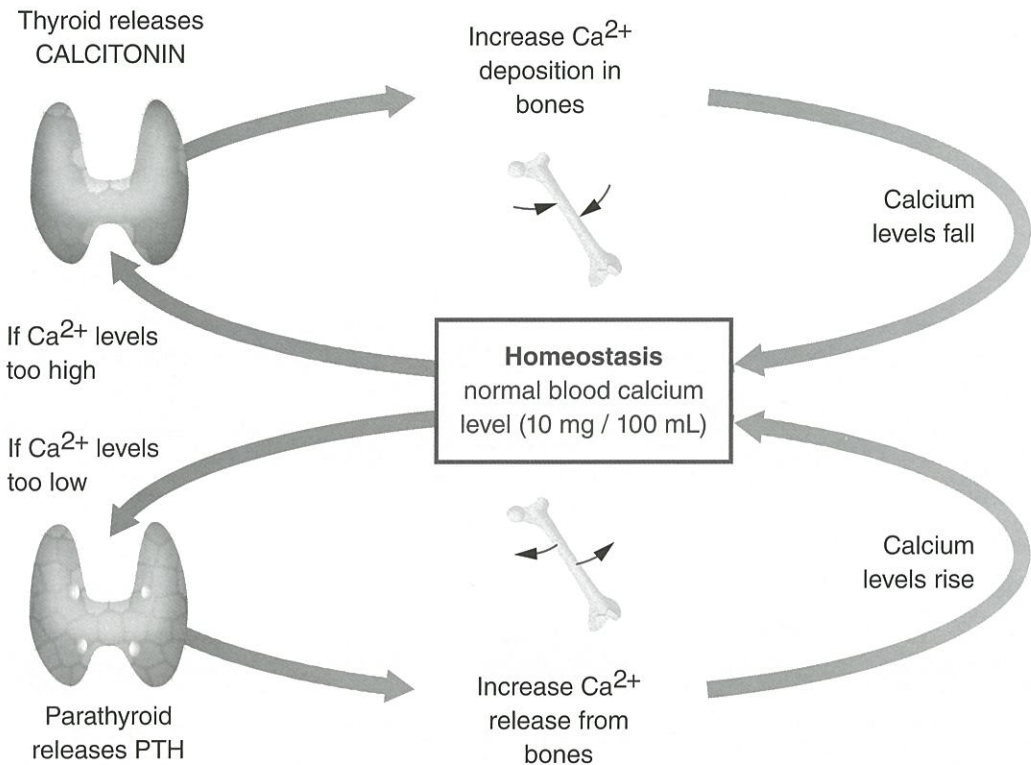
**20** What is the function of the digestive system in this caterpillar?

A to release energy from food  
B to transport food around the body  
C to convert the food into soluble particles  
D to store materials that are high in energy

**21** Most of the food material eaten by the caterpillar is cellulose.  
Where in plant cells is cellulose found?

A the walls  
B the nucleus  
C the cytoplasm  
D the chloroplasts

The human body regulates the blood calcium level through a process called 'homeostasis'.  
The diagram shows the details of the process.



**22** What would be the most likely blood calcium level of a person before the release of calcitonin?

- A 1 mg / 100 mL      B 5 mg / 100 mL      C 10 mg / 100 mL      D 15 mg / 100 mL

**23** What can be concluded from the diagram?

A Vitamin D inhibits the uptake of calcium in the intestines.  
B Absorption of calcium from the blood takes place only in the kidneys.  
C Parathyroid hormone and calcitonin have opposite effects on calcium levels.  
D Calcium deposition in bones occurs when blood calcium level is lower than normal.

**24** What can contribute to a low calcium level in the blood?  
Choose the correct row.

	High PTH levels	Low calcium in diet
A	no	no
B	no	yes
C	yes	no
D	yes	yes