

1. Characteristics and Classification of Living Organism

(Past Year Topical Questions 2010-2015)

May/June 2010 (11)

- 2 The diagram shows an arthropod animal.



Which features are characteristic of **all** arthropods?

- A jointed legs and segmented body
- B jointed legs and thorax
- C segmented body and wings
- D thorax and wings

Oct/Nov 2010 (11)

- 2 Which system is used for naming species?

- A binomial
- B conservation
- C dichotomous
- D natural selection

3 The table shows some characteristic features of four vertebrates.

Which vertebrate is a mammal?

	feature				
	scales	lays eggs	feathers	wings	hair
A	✓	✓	x	x	x
B	x	✓	x	x	x
C	x	✓	✓	✓	x
D	x	x	x	✓	✓

key

✓ = present

x = not present

May/June 2011 (11)

1 Which characteristic of living organisms can involve ingestion, absorption and assimilation?

- A excretion
- B growth
- C nutrition
- D respiration

2 The diagram shows four arthropods.



Pediculus ×20



Anopheles ×10



Dermacentor ×7



Carcinus ×0.5

How many of these arthropods are insects?

- A** 1 **B** 2 **C** 3 **D** 4

3 An organism has dry scales covering its body.

To which vertebrate group does it belong?

- A** amphibian
B fish
C mammal
D reptile

4 The diagram shows an animal.



Use the key to identify the animal.

- | | | |
|---|------------------------------|-----------------|
| 1 | has legs | go to 2 |
| | has no legs | go to 3 |
| 2 | has a shell | animal A |
| | has no shell | animal B |
| 3 | has one muscular foot | animal C |
| | has more than one foot | animal D |

Oct/Nov 2011 (11)

2 What is the correct order of arthropod groups, from those with most legs to those with fewest legs?

- A** arachnids → crustaceans → insects → myriapods
- B** crustaceans → myriapods → insects → arachnids
- C** insects → arachnids → myriapods → crustaceans
- D** myriapods → crustaceans → arachnids → insects

3 Which animal is an annelid?

- | | | |
|---|----------------------|-------------------|
| 1 | has legs | go to 2 |
| | has no legs | go to 3 |
| 2 | has six legs | organism A |
| | has eight legs | organism B |
| 3 | has a shell | organism C |
| | has no shell | organism D |

May/June 2012 (11)

- 1 A living organism, X, can make its own food, get rid of toxic materials and detect and respond to stimuli.

What **other** four processes must organism X carry out to stay alive?

- A excretion, growth, movement, sensitivity
 B excretion, growth, nutrition, respiration
 C growth, movement, reproduction, respiration
 D movement, reproduction, respiration, sensitivity
- 2 Which group of organisms has the following features?
- three pairs of jointed legs
 - three-part segmented body
 - one pair of antennae
- A arachnids
 B crustaceans
 C insects
 D myriapods
- 3 The table shows some characteristics of four different vertebrates.

Which vertebrate is a reptile?

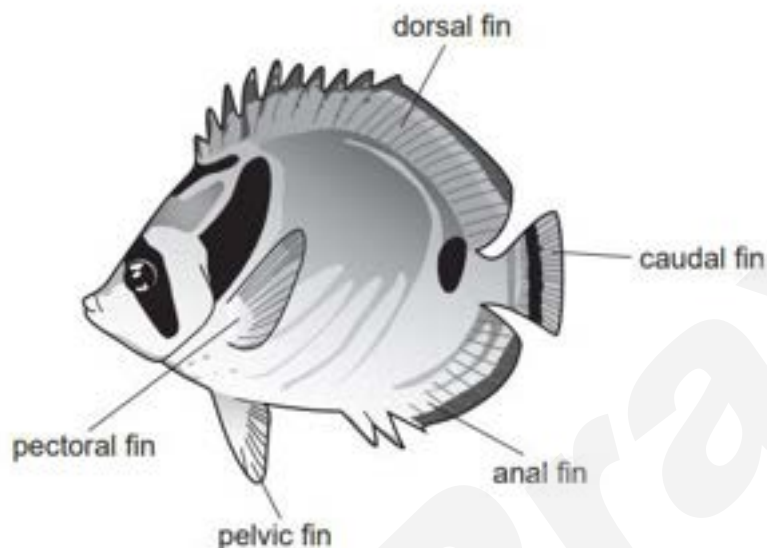
	fins	legs	scales	hair
A	✓	x	✓	x
B	x	✓	✓	x
C	x	✓	x	x
D	x	✓	x	✓

key

✓ = feature present

x = feature absent

4 The diagram shows a fish.



Use the key to identify the fish.

- 1 black stripe across the eye go to 2
no black stripe across the eye **A**
- 2 black stripe on caudal fin go to 3
no black stripe on caudal fin **B**
- 3 black spot below dorsal fin **C**
no black spot below dorsal fin **D**

May/June 2012 (12)

- 1 Which process in plant cells uses chlorophyll?
- A** growth
B nutrition
C movement
D respiration

2 The diagram shows the external features of an animal.



To which group does the animal belong?

- A annelids
 - B arthropods
 - C molluscs
 - D nematodes
- 3 Which vertebrate groups have scaly skin?
- A amphibians and fish
 - B amphibians and mammals
 - C fish and mammals
 - D fish and reptiles

Oct/Nov 2012 (11)

2 Which are characteristics of insects?

	have six legs	have two body sections
A	✓	✓
B	✓	x
C	x	✓
D	x	x

- 3 A student observed a vertebrate swimming in a pond. The animal's surface was smooth and hairless. It used its four legs to swim. At intervals, the animal came to the surface to take mouthfuls of air.

To which vertebrate class does this animal belong?

- A amphibians
 - B fish
 - C mammals
 - D reptiles
- 6 The picture shows an animal.

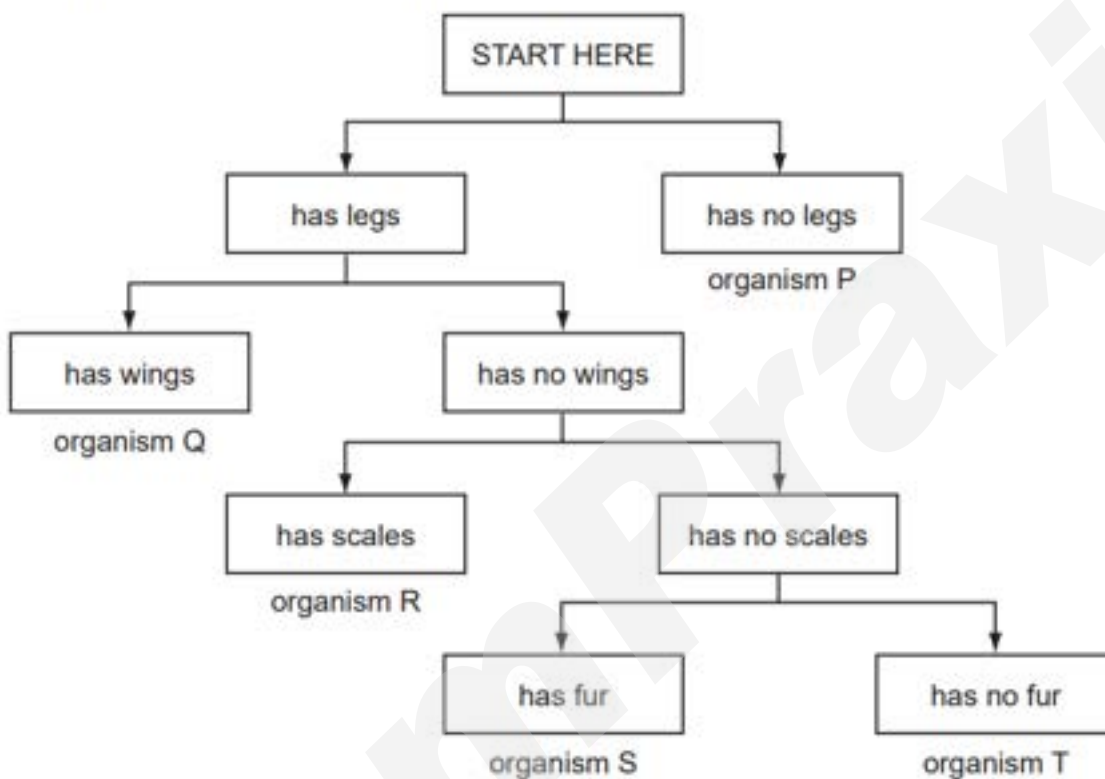


What is the name of this animal according to the binomial system?

- A *catus*
- B male African lion
- C *Panthera leo*
- D top African carnivorous cat

Oct/Nov 2012 (13)

3 The diagram shows a key for five vertebrates.



Which class of vertebrates does organism T belong to?

- A amphibians
- B birds
- C fish
- D reptiles

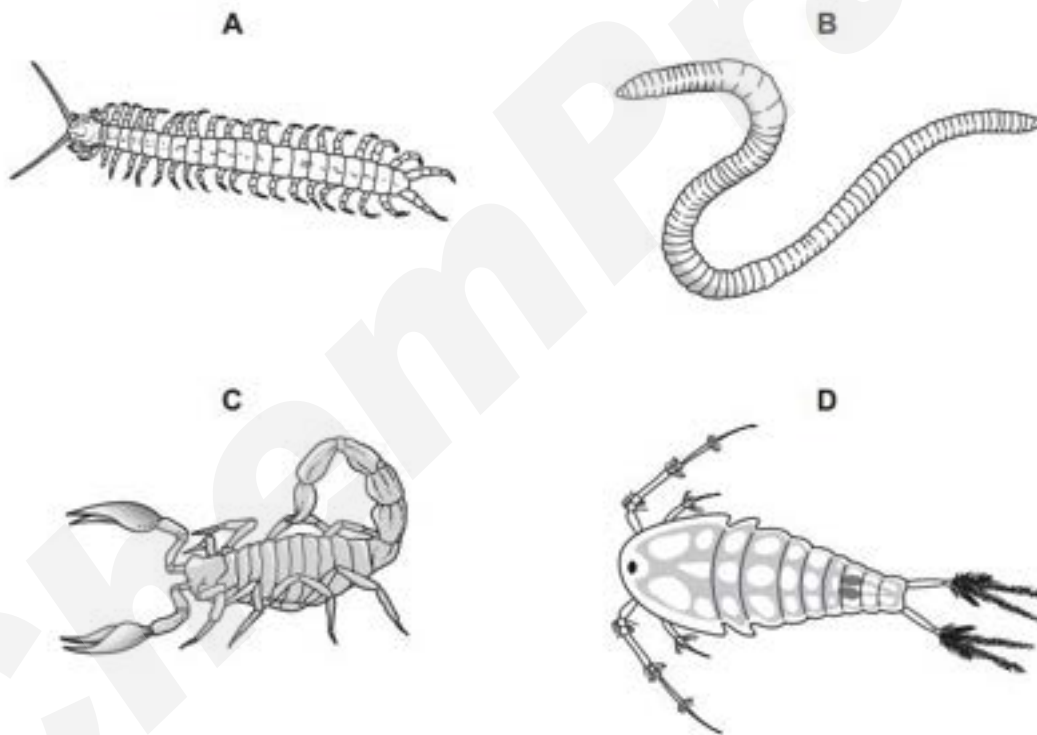
May/June 2013 (11)

1 Worms come to the soil surface after heavy rain.

Which characteristic of living organisms does this show?

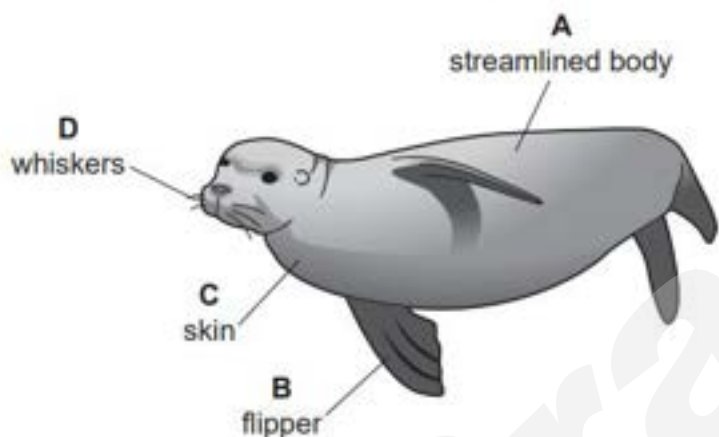
- A growth
- B nutrition
- C reproduction
- D sensitivity

2 Which animal is **not** an arthropod?



3 The diagram shows a sea lion.

Which labelled feature shows that this animal is a mammal?



4 The diagram shows an animal found in fresh water.

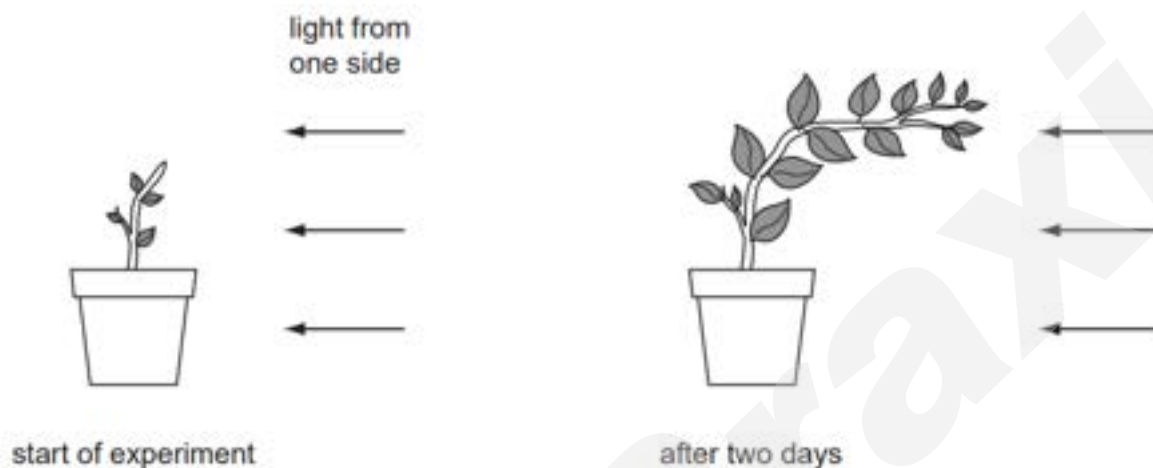


Use the key to identify the animal.

- 1 body divided into segments go to 2
- body not divided into segments go to 3
- 2 straight body animal **A**
- curved body animal **B**
- 3 has a shell animal **C**
- has no shell animal **D**

May/June 2013 (12)

- 1 The diagrams show a plant at the start of an experiment, and the same plant two days later.



Which characteristic of living organisms is **not** demonstrated by this experiment?

- A excretion
 - B growth
 - C movement
 - D sensitivity
- 2 An animal can swim, has a backbone, suckles young and breathes air.

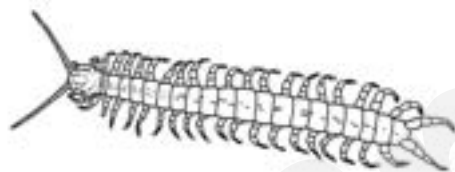
To which group does it belong?

- A amphibians
- B fish
- C mammals
- D reptiles

3 What is a feature of **both** insects **and** arachnids?

- A antennae
- B compound eyes
- C exoskeleton
- D six legs

4 The diagram shows an arthropod.



Using the key, identify this arthropod.

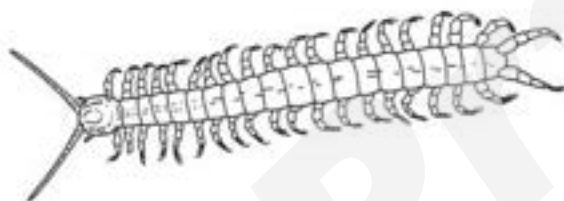
- | | | |
|---|--------------------------------------|----------|
| 1 | body segments clearly visible | go to 2 |
| | body segments not visible | go to 4 |
| 2 | body with many segments | go to 3 |
| | body with three distinct parts | go to 4 |
| 3 | antennae longer than the legs | A |
| | antennae shorter than the legs | B |
| 4 | three pairs of legs | C |
| | more than three pairs of legs | D |

Oct/Nov 2013 (11)

1 Which process provides the raw materials needed for tissue repair?

- A excretion
- B growth
- C nutrition
- D respiration

2 The diagram shows an arthropod.



How many pairs of jointed legs does this arthropod have?

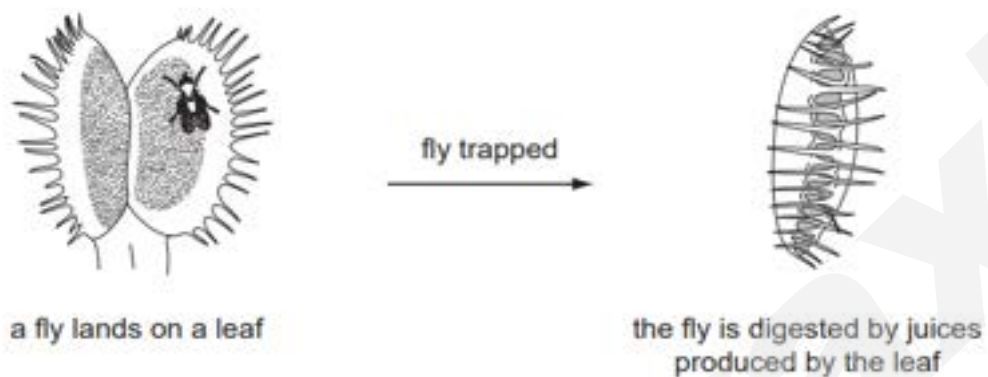
- A 2 B 20 C 21 D 40

3 Which group does **not** contain animals that are arthropods?

- A annelids
- B arachnids
- C crustaceans
- D insects

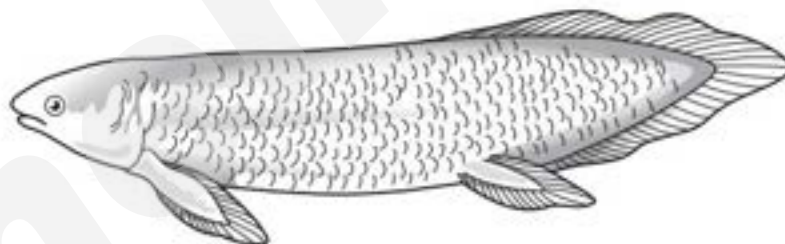
Oct/Nov 2013 (13)

- 1 The diagram shows how a plant, called a Venus fly-trap, reacts to a fly landing on it.



Which characteristics of living things are shown by the plant in the diagram?

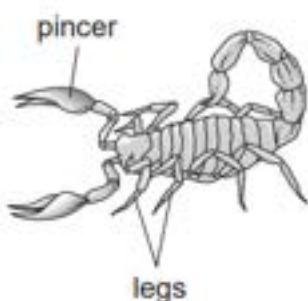
- A excretion and growth
 - B growth and sensitivity
 - C nutrition and reproduction
 - D nutrition and sensitivity
- 2 The diagram shows the external features of an animal.



To which class does it belong?

- A amphibians
- B fish
- C mammals
- D reptiles

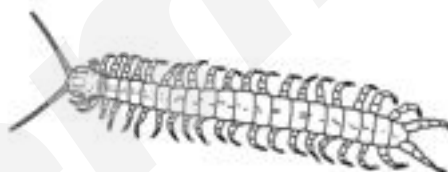
3 The diagram shows an arthropod.



To which group does it belong?

- A annelids
- B arachnids
- C insects
- D myriapods

4 The diagram shows a small animal.



Use the key to identify the animal.

- 1 has wings go to 2
- has no wings go to 3
- 2 has one pair of legs per segment **A**
- has two pairs of legs per segment **B**
- 3 has one pair of antennae **C**
- has two pairs of antennae **D**

May/June 2014 (11)

1 Why does the energy needed by a human increase during the first ten years of life?

- A Coordination and responses improve.
- B Energy is needed for gamete formation.
- C The body is growing.
- D The diet is more balanced.

2 Which feature is characteristic of both annelids and arthropods?

- A compound eyes
- B jointed limbs
- C segmented bodies
- D wings

4 The diagram shows an animal.



Use the key to identify the animal.

- | | | |
|---|----------------------------------|----------|
| 1 | wings present | go to 2 |
| | wings absent | go to 3 |
| 2 | one pair of wings visible | A |
| | two pairs of wings visible | B |
| 3 | three pairs of legs | C |
| | four pairs of legs | D |

May/June 2014 (12)

- 1 Growth is a characteristic feature of living organisms.

Which process provides the energy for growth?

- A excretion
B movement
C respiration
D sensitivity
- 2 The table shows the number of animals collected in a sample from some woodland and the groups to which they belong.

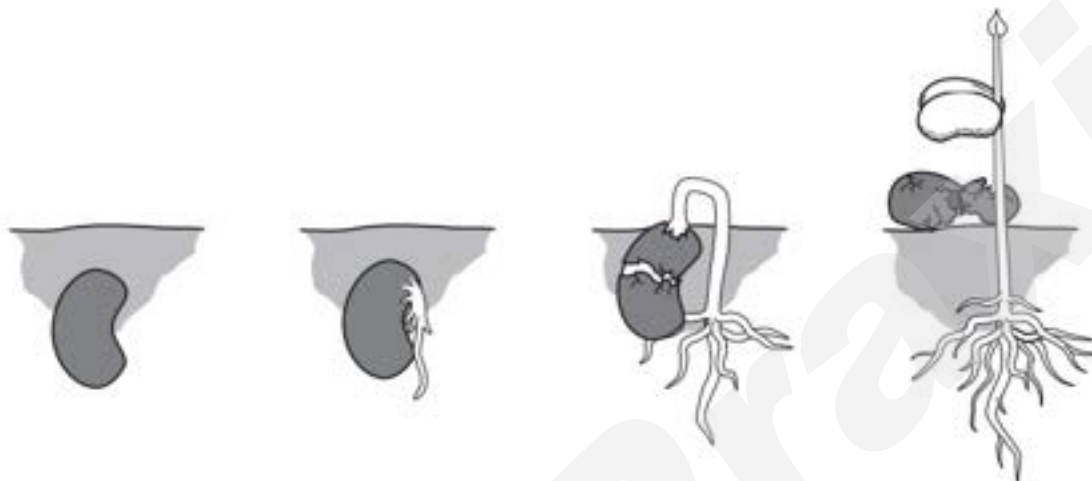
animal group	number in sample
annelids	8
arachnids	10
insects	80
molluscs	40
myriapods	7
nematodes	15

How many arthropods were collected?

- A 33 B 97 C 120 D 160

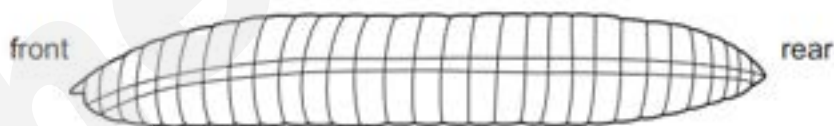
Oct/Nov 2014 (11)

- 1 The diagram shows how a seed changes after it is planted in well-watered soil.



Which characteristics of living things are demonstrated by this sequence?

- A growth and reproduction
 - B growth and sensitivity
 - C nutrition and reproduction
 - D nutrition and sensitivity
- 2 The diagram shows the body plan of an invertebrate animal.



To which group does the animal belong?

- A annelid
- B crustacean
- C insect
- D nematode

3 The diagram shows an animal.



Use the key to identify the animal.

- 1 front limbs with five fingers go to 2
front limbs with four fingers go to 3
- 2 skin with spots **A**
skin without spots **B**
- 3 tail with fins **C**
tail without fins **D**

28 What may be defined as 'an increase in dry mass'?

- A** growth
B nutrition
C reproduction
D respiration

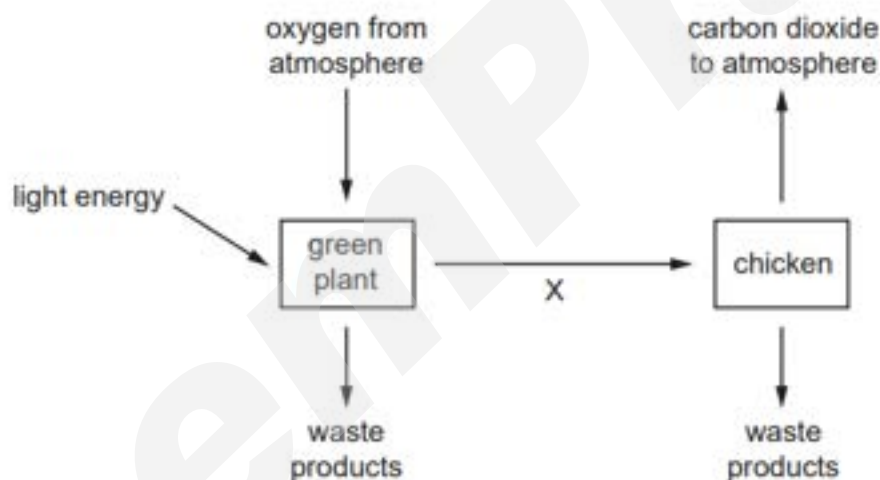
Oct/Nov 2014 (13)

1 Which characteristic do **all** living organisms show?

- A breathing
- B excretion
- C photosynthesis
- D tropism

May/June 2015 (11)

1 The diagram illustrates some of the processes carried out by living organisms.



Which characteristic of living organisms is represented by arrow X?

- A excretion
- B nutrition
- C respiration
- D sensitivity

2 What is a correct way of naming a species, according to the binomial system?

- A *Homo sapiens*
- B *Homo Sapiens*
- C human being
- D sapiens

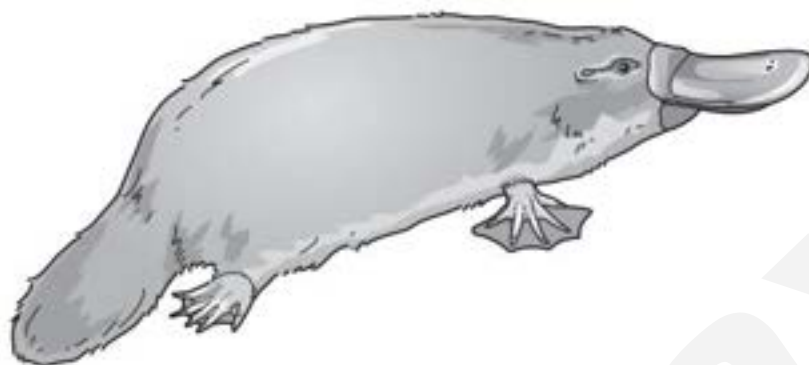
May/June 2015 (12)

2 The statements describe four different plants.

Which plant must be a monocotyledon?

- A The flowers are wind-pollinated.
- B The flowers each have five petals.
- C The leaves are large with a clear network of veins on them.
- D The leaves have parallel veins.

4 The diagram shows an animal.



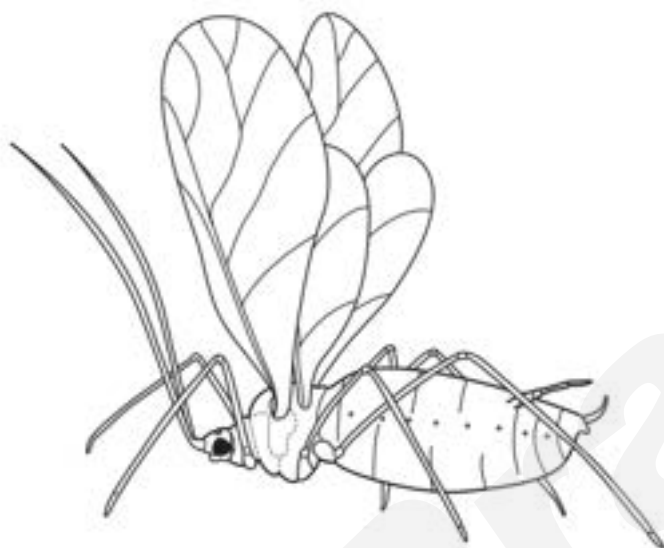
Use the key to identify this animal.

- | | | |
|---|---------------------------------|---------|
| 1 | body covered with scales | go to 2 |
| | body covered with hair | go to 3 |
| 2 | has a rounded bill | A |
| | has a pointed bill | B |
| 3 | has webbed feet | C |
| | does not have webbed feet | D |

May/June 2015 (13)

- 2 All fish, all birds and all mammals are
- A animals with internal fertilisation.
 - B carnivores.
 - C vertebrates.
 - D warm-blooded animals.

4 The diagram shows an animal.

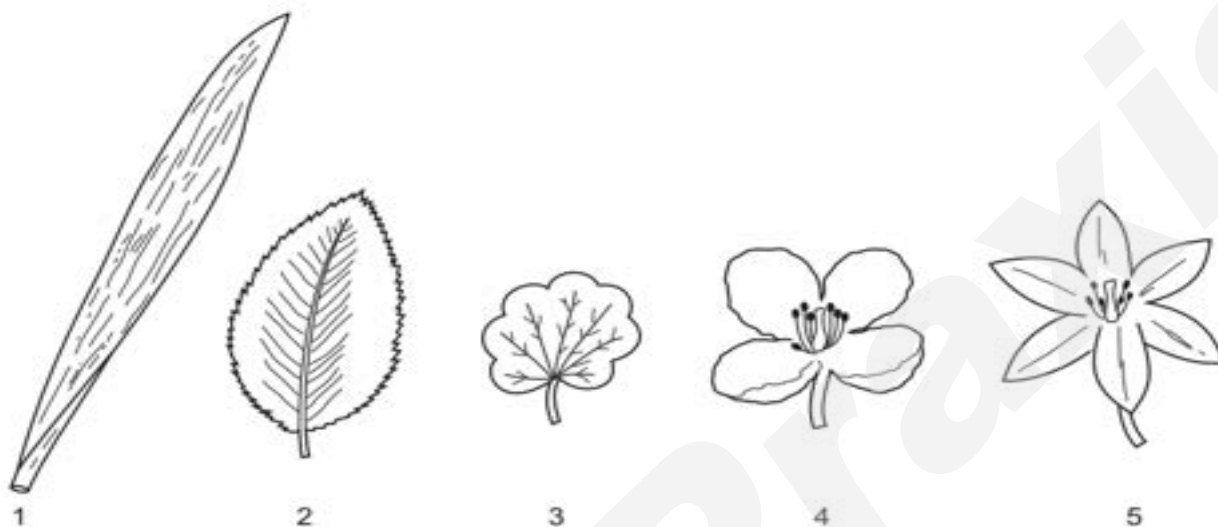


Use the key to identify the animal.

- | | | |
|---|--|----------|
| 1 | has two wings | go to 2 |
| | has four wings | go to 3 |
| 2 | has antennae much shorter than legs | A |
| | has antennae about the same length as legs | B |
| 3 | has feathery antennae | C |
| | has smooth antennae | D |

Oct/Nov 2015 (11)

2 The diagram shows some leaves and flowers of different plants.



Which are from monocotyledons?

- A** 1 and 3 **B** 1 and 5 **C** 2 and 4 **D** 2 and 5

3 The list shows the scientific names for eight animals, using the binomial system.

Alderia modesta

Arenicola cristata

Arenicola marina

Austrominius modestus

Bittium reticulatum

Botrylloides leachii

Botryllus schlosseri

Clypeostoma reticulatum

Which two animals are most closely related?

- A** *Alderia modesta* and *Austrominius modestus*
B *Arenicola cristata* and *Arenicola marina*
C *Bittium reticulatum* and *Clypeostoma reticulatum*
D *Botryllus schlosseri* and *Botrylloides leachii*

4 The diagram shows a flower seen from above.



Use the key to find the name of the family to which it belongs.

- | | |
|-----------------------|----------------------------------|
| 1 four petals | go to 2 |
| five petals | go to 3 |
| 2 two stamens | A <i>Scrophulariaceae</i> |
| six stamens | B <i>Brassicaceae</i> |
| 3 petals joined..... | C <i>Caryophyllaceae</i> |
| petals separate | D <i>Rosaceae</i> |

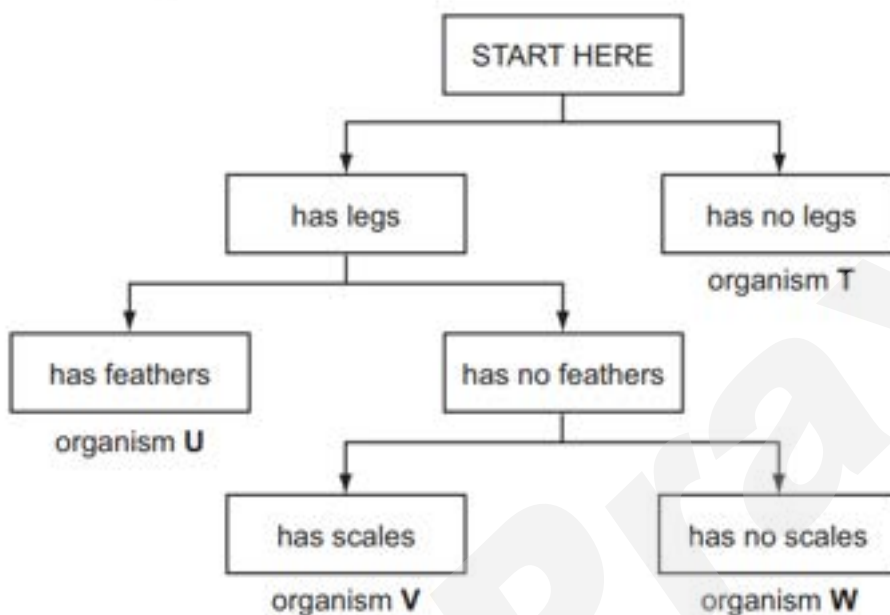
Oct/Nov 2015 (12)

1 Some lizards detach their tails when threatened by a predator.

Which characteristic is shown?

- A excretion
- B growth
- C reproduction
- D sensitivity

2 The diagram shows a key for five vertebrates.



Which class of vertebrates does organism **W** belong to?

- A amphibians
- B birds
- C fish
- D reptiles

3 The diagram shows an animal whose scientific name is *Rattus rattus*.



Which genus does it belong to?

- A mammal
- B *rattus*
- C *Rattus*
- D vertebrate

Oct/Nov 2015 (13)

1 What are the characteristics of bony fish?

	maintain constant body temperature	external ears present	jelly-covered eggs	scales
A	✓	✓	x	x
B	✓	x	✓	✓
C	x	✓	x	x
D	x	x	✓	✓

2 What are the features of the leaves of a plant that is a eudicotyledon (dicotyledon)?

	broad leaves	parallel veins
A	✓	✓
B	✓	x
C	x	✓
D	x	x

3 Many snakes that belong to the viper family are unusual in that they give birth to live young.

This is usually a characteristic of which vertebrate group?

- A** amphibians
- B** birds
- C** bony fish
- D** mammals

4 Use the key to identify which group is amphibians.

- | | | |
|---|------------------------|---------|
| 1 | hair present | mammals |
| | hair absent | go to 2 |
| 2 | feathers present | group A |
| | feathers absent | go to 3 |
| 3 | dry scaly skin..... | group B |
| | moist skin | go to 4 |
| 4 | four limbs | group C |
| | no limbs | group D |