Key Area 4   Energy in Ecosystems
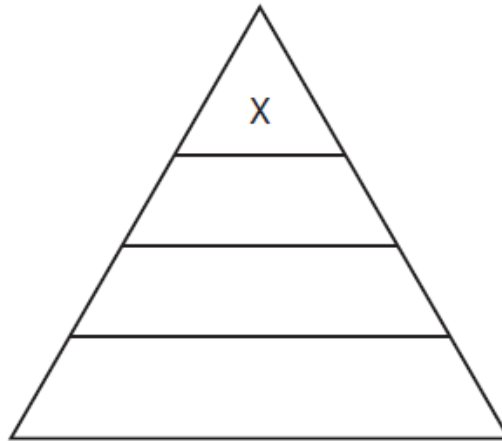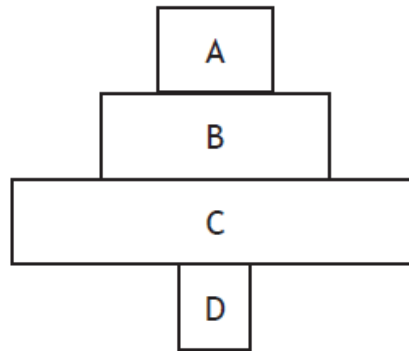
1.   The diagram represents a pyramid of energy.

There is less energy at level X in the pyramid because

A   there are fewer organisms at each level in the food chain

B   the organisms at level X are very small

C   energy is lost at each level in the food chain

D   energy is stored in each level and not passed on.

2.

On average, 90% of energy is lost at each energy transfer in a food chain.
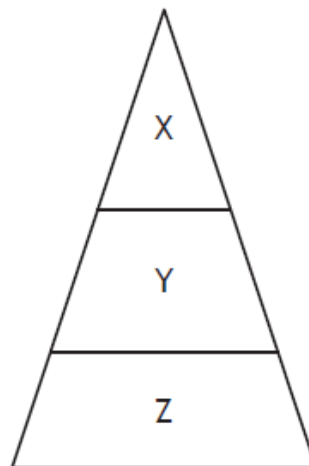
Which of the following is a cause of this energy loss?

A   Digested material

B   Cell repair

C   Movement

D   Growth

3. The diagram below shows a pyramid of numbers.
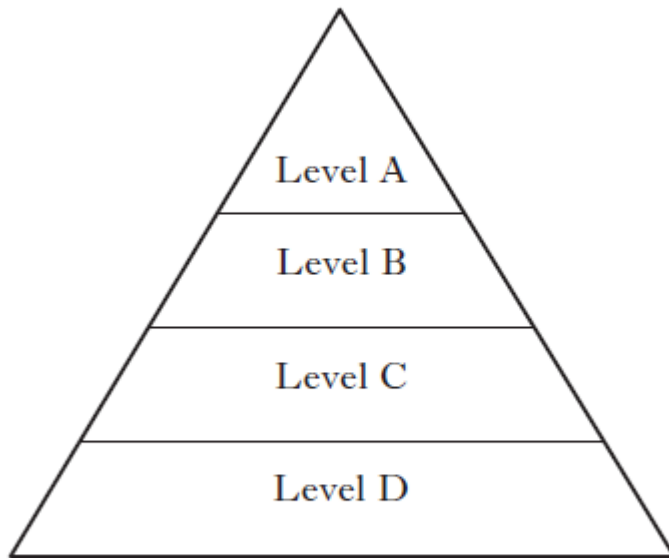

Which letter represents the producer?

4. The diagram below shows the pyramid of energy for a food chain.

There is a lot less energy at level X in the pyramid because

A   there are fewer organisms at this level
B   energy is stored at each level
C   energy is lost at each level
D   the organisms are bigger at this level.

5. The diagram below shows the levels in a pyramid of numbers.

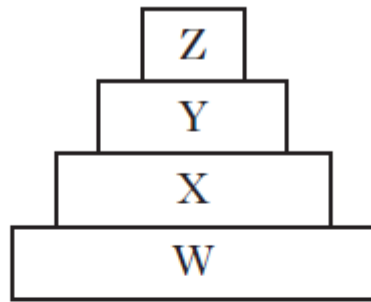Which level in the pyramid contains primary consumers?

6. The diagram, below shows the number of organisms at each level in a pyramid of numbers.
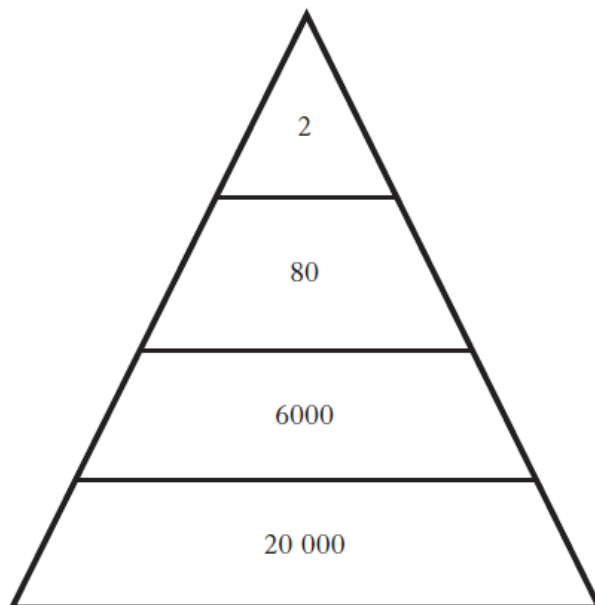
How many organisms are consumers?

A   2
B   82
C   6000
D   6082

7. The diagram below shows a pyramid of energy.

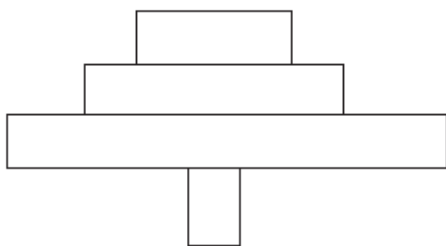X represents the total energy of

A producers

B primary consumers

C predators

D secondary consumers
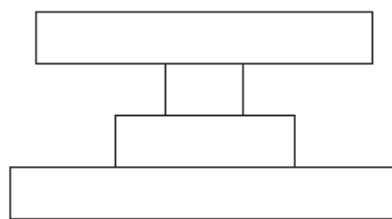
8.

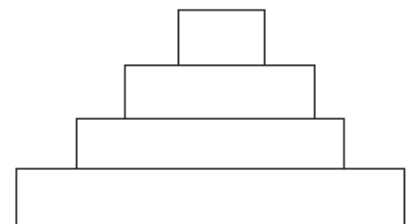(a) A food chain is shown along with three pyramids of numbers.

grass ⟶ zebra ⟶ lion ⟶ flea

Pyramid K   Pyramid L   Pyramid M

Identify the pyramid which represents the food chain shown.   1

Pyramid _____

8 (continued)

(b) This food chain can also be represented by a pyramid of energy.

State the meaning of the term pyramid of energy.   1

_____

_____

(c) State one way in which energy may be lost between stages in a food chain.   1

_____

9.

In an investigation, students estimated the population and biomass of some organisms found on part of a rocky shore.

The table below shows the results.

Organism	Population	Average mass of one organism (g)	Biomass of population (g)
Seaweed	220	500	110 000
Limpet	1 100		33 000
Crab	100	90	9 000
Gull	5	700	3 500

(i) Complete the table to show the average mass of one limpet.   1

Space for calculation

10.

A curlew gains an average of 165 kilojoules (kJ) of energy daily, by feeding on lugworms.

Select, from the following list, the value of the energy which is used for growth each day by the curlew.

Tick (✓) the correct box.   1

165 kJ   ☐

148·5 kJ ☐

16·5 kJ   ☐

0 kJ   ☐