

Content Domain	Main Topic	Cognitive Domain
LIFE SCIENCE	Ecosystems	Conceptual Understanding

## Galapagos Islands: effect of goats

When settlers came to live on the Galapagos Islands, they brought with them a number of new animals such as cats and goats. Write down one effect the introduction of cats and goats could have on the animals and plants already living on the islands.

A. One effect of **cats**:

B. One effect of **goats**:

## Overall Percent Correct

Singapore	74	▲
Australia	74	▲
Chinese Taipei	73	▲
Korea, Republic of	70	▲
Hong Kong, SAR	69	▲
Estonia	69	▲
New Zealand	68	▲
Malaysia	63	▲
England	62	▲
United States	60	▲
Hungary	58	▲
Russian Federation	58	▲
Netherlands	58	▲
Scotland	57	▲
Armenia	57	▲
Japan	54	▲
Slovak Republic	53	▲
Lithuania	51	▲
Sweden	48	○
Latvia	48	○
Jordan	48	○
Belgium (Flemish)	47	○
Palestinian Nat'l Auth.	45	○
Romania	45	○
<b>International average</b>	<b>45</b>	
Norway	44	○
Chile	41	○
Israel	38	▼
Egypt	37	▼
Slovenia	37	▼
Serbia and Montenegro	37	▼
Italy	36	▼
Indonesia	34	▼
Tunisia	33	▼
Bulgaria	32	▼
Bahrain	32	▼
Botswana	31	▼
Cyprus	27	▼
Macedonia, Republic of	25	▼
Philippines	24	▼
Moldova, Rep. of	22	▼
Lebanon	22	▼
Iran, Islamic Republic of	20	▼
Morocco	15	▼
Saudi Arabia	11	▼
South Africa	8	▼
Ghana	0	▼

Item Number: S032705B

## SCORING

## Correct Response

- Refers **only** to the goats eating plants (resulting in a reduction of the amount of plant life on the island).  
*Examples: The goats will eat all the grass on the island.*  
*It could lead to erosion if the goats clear the land by eating all the plants.*  
*Large pieces of grass will disappear as the goats eat it.*
- Refers to an effect of the goat on other animals (e.g., competition for food/habitat, as a food source for predators, etc.). [Note: may also refer to the goats eating plants.]  
*Examples: The animals that eat goats would have more food.*  
*They might become a source of food.*  
*The goats will eat up the plants and the populations that depend on plants will decrease.*
- Other correct.

## Incorrect Response

- Refers **only** to an effect on the goat with no explicit effect on other organisms.  
*Examples: Goats would have more babies.*  
*They would die because they don't have any food.*
- Other incorrect (including crossed out/erased, stray marks, illegible, or off task).  
*Examples: Goats might eat the cats.*

## Country average vs. International average:

Higher	▲
Not different	○
Lower	▼

## Galapagos Islands: effect of goats (continued)

Item Number: S032705B

### Student Responses

#### Correct Response:

When settlers came to live on the Galapagos Islands, they brought with them a number of new animals such as cats and goats. Write down one effect the introduction of cats and goats could have on the animals and plants already living on the islands.

B. One effect of goats:

Goats could eat all the vegetation, causing the other animals to not have food.

#### Incorrect Response:

When settlers came to live on the Galapagos Islands, they brought with them a number of new animals such as cats and goats. Write down one effect the introduction of cats and goats could have on the animals and plants already living on the islands.

B. One effect of goats:

horse + cow

Content Domain	Main Topic	Cognitive Domain
LIFE SCIENCE	Ecosystems	Factual Knowledge

Elements that make up animals and plants

Animals and plants are made up of a number of different chemical elements. What happens to all of these elements when animals and plants die?

(A) They die with the animal or plant.

(B) They evaporate into the atmosphere.

(C) They are recycled back into the environment.

(D) They change into different elements.

Item Number: S032682

**Correct Response: C**


Overall Percent Correct

Chinese Taipei	70	▲
Estonia	70	▲
Hungary	69	▲
Singapore	63	▲
Sweden	61	▲
United States	60	▲
Tunisia	55	▲
Australia	54	▲
Philippines	53	▲
New Zealand	52	▲
Japan	51	▲
Korea, Republic of	48	▲
Hong Kong, SAR	46	▲
England	45	▲
Romania	44	▲
Israel	44	▲
Italy	44	▲
Norway	42	○
Slovenia	40	○
Slovak Republic	40	○
Morocco	38	○
Netherlands	38	○
<b>International average</b>	<b>38</b>	
Macedonia, Republic of	36	○
Bulgaria	36	○
Scotland	34	○
Iran, Islamic Republic of	33	▼
Russian Federation	32	▼
Malaysia	32	▼
Chile	30	▼
Botswana	29	▼
Egypt	28	▼
Palestinian Nat'l Auth.	25	▼
Armenia	25	▼
Moldova, Rep. of	24	▼
Latvia	24	▼
Belgium (Flemish)	24	▼
Saudi Arabia	22	▼
Cyprus	22	▼
Indonesia	21	▼
South Africa	21	▼
Jordan	21	▼
Lithuania	20	▼
Lebanon	20	▼
Ghana	17	▼
Serbia and Montenegro	15	▼
Bahrain	14	▼

Country average vs. International average:	
Higher	▲
Not different	○
Lower	▼

Content Domain	Main Topic	Cognitive Domain
LIFE SCIENCE	Ecosystems	Reasoning and Analysis

### Community of mice, snakes and wheat plants



The diagram above shows a community consisting of mice, snakes and wheat plants.

What would happen to this community if people killed the snakes?

Item Number: S032202

### SCORING

Note: For full credit, responses must include an explicit statement of the effect on BOTH the mice population and the wheat plants. Partial credit is given for responses that refer to one but not both of these.

#### Correct Response

- States that mice (population) will increase AND wheat plants will decrease.  
*Examples: The population of mice would increase because there are no snakes. The increase in mice would then cause the amount of wheat plants to decrease. Then we would get more mice and less wheat plants.*
- States that the mice would eat more (all) of the wheat plants AND that the mice (population) will decrease as the wheat decreases. [May also refer to the initial increase in population of mice.]  
*Examples: Mice would eat all the plants, then the plants would die out, then the mice would not have anything to eat so then they would die. Mice would become overpopulated and eat all the wheat. Then all the mice would starve because there is no food left.*
- Other fully correct.

#### Partially Correct Response

- States **only** that the mice will increase. [No explicit mention of the effect on wheat.]  
*Examples: The number of mice would increase because there are no snakes to eat them. There would be lots of mice.*
- States only that the mice will eat more (all) of the wheat plants (or similar). [No explicit mention of the effect on mice.]  
*Examples: If people killed the snakes the mice would destroy all the wheat plants.*
- Other partially correct.

#### Incorrect Response

- Refers to an effect on the whole community (ecosystem) but too vague to interpret.  
*Examples: The whole community will be affected. The ecosystem would be unbalanced. Everything dies.*
- Other incorrect (including crossed out/erased, stray marks, illegible or off task).

### Overall Percent Correct

Singapore	78	▲
Malaysia	68	▲
England	57	▲
Chinese Taipei	55	▲
Estonia	52	▲
Australia	50	▲
Sweden	48	▲
Hungary	48	▲
Belgium (Flemish)	46	▲
Netherlands	45	▲
United States	44	▲
Scotland	42	▲
Slovak Republic	41	▲
Lithuania	41	▲
Iran, Islamic Republic of	40	▲
Jordan	39	▲
Russian Federation	38	▲
Korea, Republic of	38	▲
Hong Kong, SAR	37	○
Romania	37	○
New Zealand	35	○
Egypt	34	○
Armenia	34	○
<b>International average</b>	<b>33</b>	
Slovenia	33	○
Latvia	32	○
Serbia and Montenegro	32	○
Macedonia, Republic of	32	○
Japan	31	○
Norway	31	○
Indonesia	30	○
Israel	30	▼
Italy	27	▼
Moldova, Rep. of	26	▼
Tunisia	26	▼
Saudi Arabia	24	▼
Bulgaria	22	▼
Cyprus	18	▼
Chile	16	▼
Bahrain	16	▼
Palestinian Nat'l Auth.	16	▼
Morocco	16	▼
Philippines	16	▼
Lebanon	9	▼
Botswana	6	▼
South Africa	6	▼
Ghana	3	▼

#### Country average vs. International average:

Higher	▲
Not different	○
Lower	▼

Community of mice, snakes and wheat plants (continued)

Item Number: S032202

Student Responses

Correct Response:



The diagram above shows a community consisting of mice, snakes and wheat plants.

What would happen to this community if people killed the snakes?

The mice would become overpopulated and eat all the wheat plants.

Partially Correct Response:



The diagram above shows a community consisting of mice, snakes and wheat plants.

What would happen to this community if people killed the snakes?

If they killed the snakes, then the snakes wouldn't be able to eat the mice. Then the mice would eat up the wheat plants.

Community of mice, snakes and wheat plants (continued)

Item Number: S032202

**Student Responses** (continued)

**Incorrect Response:**



The diagram above shows a community consisting of mice, snakes and wheat plants.

What would happen to this community if people killed the snakes?

It wouldn't be a community anymore because who would eat the mice!

Content Domain	Main Topic	Cognitive Domain
LIFE SCIENCE	Human Health	Factual Knowledge

## Leafy vegetables important for human health

Eating leafy vegetables is important for human health. This is because leafy vegetables are a good source of which of the following?

- (A) protein
- (B) carbohydrates
- (C) minerals
- (D) fat

Item Number: S032637

**Correct Response:**

**C**

## Overall Percent Correct

Korea, Republic of	65	▲
Japan	65	▲
Slovenia	63	▲
Israel	62	▲
Chinese Taipei	59	▲
Estonia	58	▲
Hungary	57	▲
England	55	▲
Netherlands	53	▲
Singapore	52	▲
United States	48	▲
Macedonia, Republic of	46	▲
Belgium (Flemish)	46	▲
Italy	45	▲
New Zealand	44	▲
Latvia	42	▲
Malaysia	41	▲
Hong Kong, SAR	41	○
Bulgaria	41	○
Australia	40	○
Lithuania	40	○
<b>International average</b>	<b>38</b>	
Scotland	37	○
Romania	34	○
Egypt	34	○
Serbia and Montenegro	34	▼
Morocco	33	○
Sweden	33	▼
Moldova, Rep. of	32	▼
Norway	32	▼
Bahrain	30	▼
Palestinian Nat'l Auth.	29	▼
Philippines	28	▼
Lebanon	28	▼
Iran, Islamic Republic of	28	▼
Tunisia	28	▼
Russian Federation	28	▼
Jordan	25	▼
Chile	24	▼
Armenia	24	▼
Slovak Republic	24	▼
Botswana	23	▼
Saudi Arabia	20	▼
South Africa	20	▼
Ghana	19	▼
Indonesia	17	▼
Cyprus	9	▼

## Country average vs. International average:

Higher ▲  
Not different ○  
Lower ▼

Content Domain	Main Topic	Cognitive Domain
LIFE SCIENCE	Human Health	Reasoning and Analysis

## Transmission of cold in classroom

Scott went to school with a cold. Several days later, half of his classmates also had colds. What is one likely reason some classmates had colds but others did not?

Item Number: S022154

## SCORING

Note: To receive credit, responses must include some reference to transmission of 'germs' (viruses, bacteria, etc.), either explicitly or through a description of a method of transmission (sneezing/coughing, direct physical contact, etc.), or to defense mechanisms (immunity, resistance, etc.). A response that includes only a general reference to proximity without any description of a method of transmission will be scored as incorrect.

## Correct Response

- Refers explicitly to transmission of 'germs' (viruses, bacteria, etc.) from Salil to some classmates (or not to others).

*Examples: Some students were hanging around Salil with him sneezing his germs onto them.  
The ones exposed to the virus caught it.*

- Refers to some students having better defense mechanisms (immunity, resistance).

*Examples: Some of the students have just got over a cold.  
Some students' immunity was low because they went outside in the cold.*

- Refers to a specific method of transmission involving physical contact or exposure without mentioning germs explicitly (e.g. sneezing/coughing, shaking hands, drinking from same glass, breathing same air).

*Examples: He sneezed on the ones that got it.  
They touched something Salil touched.*

- Other correct.

## Incorrect Response

- Includes ONLY a general or vague response relating to proximity or "catching the cold" from Salil. [No explicit description of a method of transmission is given.]

*Examples: Some of his classmates did not like him so probably were not near him a lot.  
The ones who were his friends got it.  
The kids who sat by him caught the cold.  
Some caught it from Salil.  
Salil gave it to some of the class.*

- Other incorrect (including crossed out/erased, stray marks, illegible, or off task).

## Overall Percent Correct

Chinese Taipei	84	▲
Slovak Republic	78	▲
Hungary	75	▲
Singapore	73	▲
Romania	71	▲
Slovenia	70	▲
Estonia	69	▲
Hong Kong, SAR	68	▲
Latvia	68	▲
Palestinian Nat'l Auth.	68	▲
Belgium (Flemish)	67	▲
Lithuania	66	▲
Armenia	66	▲
Netherlands	65	▲
Norway	65	▲
Moldova, Rep. of	64	▲
Sweden	63	▲
Jordan	63	▲
United States	61	▲
Italy	60	▲
Korea, Republic of	57	▲
Iran, Islamic Republic of	57	○
Israel	56	○
Russian Federation	54	○
Bahrain	54	○
Egypt	54	○
Serbia and Montenegro	54	○
New Zealand	54	○
Bulgaria	53	○
Macedonia, Republic of	53	○
<b>International average</b>	<b>53</b>	
England	50	○
Chile	48	▼
Scotland	47	▼
Australia	46	▼
Malaysia	43	▼
Japan	43	▼
Indonesia	39	▼
Cyprus	37	▼
Saudi Arabia	37	▼
Philippines	34	▼
Morocco	31	▼
Lebanon	24	▼
Tunisia	18	▼
South Africa	13	▼
Botswana	10	▼
Ghana	6	▼

## Country average vs. International average:

Higher	▲
Not different	○
Lower	▼



Transmission of cold in classroom (continued)

Item Number: S022154

**Student Responses**

**Correct Response:**

Salil went to school with a cold. Several days later, half of his classmates also had colds. What is one likely reason some classmates had colds but others did not?

The classmates that are sick most likely had physical contact with Salil.

**Incorrect Response:**

Salil went to school with a cold. Several days later, half of his classmates also had colds. What is one likely reason some classmates had colds but others did not?

Germs stronger than other

Content Domain	Main Topic	Cognitive Domain
LIFE SCIENCE	Reproduction and Heredity	Conceptual Understanding

## Son inherits traits

A son can inherit traits

(A) only from his father

(B) only from his mother

(C) from both his father and his mother

(D) from either his father or his mother, but not from both

Item Number: S012026

<b>Correct Response:</b>	<b>C</b>
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## Overall Percent Correct

Netherlands	94	▲
United States	93	▲
Latvia	92	▲
Belgium (Flemish)	92	▲
Chinese Taipei	91	▲
England	91	▲
Hungary	91	▲
Norway	90	▲
Sweden	90	▲
Korea, Republic of	90	▲
Russian Federation	90	▲
Lithuania	89	▲
Romania	88	▲
Chile	87	▲
Slovak Republic	87	▲
Italy	87	▲
Hong Kong, SAR	86	▲
Scotland	86	▲
Israel	85	▲
Estonia	85	▲
Slovenia	85	▲
Bulgaria	83	▲
Moldova, Rep. of	83	▲
Cyprus	82	▲
Armenia	82	▲
Macedonia, Republic of	81	▲
Singapore	79	○
Australia	77	○
<b>International average</b>	<b>76</b>	
Serbia and Montenegro	75	○
New Zealand	73	○
Iran, Islamic Republic of	69	▼
Egypt	68	▼
Japan	65	▼
Lebanon	65	▼
Bahrain	64	▼
Morocco	63	▼
Philippines	60	▼
Jordan	60	▼
Tunisia	60	▼
Palestinian Nat'l Auth.	57	▼
Saudi Arabia	52	▼
South Africa	51	▼
Ghana	48	▼
Malaysia	47	▼
Indonesia	44	▼
Botswana	43	▼

Country average vs.  
International average:

Higher	▲
Not different	○
Lower	▼

Content Domain	Main Topic	Cognitive Domain
LIFE SCIENCE	Reproduction and Heredity	Conceptual Understanding

Traits transferred from generations

Traits are transferred from generation to generation through the

- (A) sperm only
- (B) egg only
- (C) sperm and the egg
- (D) testes

Item Number: S012039

**Correct Response: C**

**Overall Percent Correct**

Chinese Taipei	97	▲
Hong Kong, SAR	97	▲
Korea, Republic of	91	▲
Hungary	88	▲
England	88	▲
Sweden	87	▲
Netherlands	86	▲
Singapore	86	▲
United States	86	▲
Israel	85	▲
Scotland	83	▲
Estonia	83	▲
Belgium (Flemish)	83	▲
Chile	83	▲
Romania	80	▲
Slovak Republic	79	▲
Italy	79	▲
Malaysia	79	▲
Norway	78	▲
Latvia	77	▲
Bulgaria	76	○
Philippines	76	○
Japan	76	○
Slovenia	76	○
Bahrain	75	○
Russian Federation	74	○
<b>International average</b>	<b>74</b>	
Australia	73	○
Lithuania	72	○
Egypt	71	○
Armenia	71	○
New Zealand	70	○
Moldova, Rep. of	68	▼
Macedonia, Republic of	68	▼
Serbia and Montenegro	67	▼
Indonesia	67	▼
Morocco	66	▼
Tunisia	64	▼
Cyprus	63	▼
Palestinian Nat'l Auth.	62	▼
Jordan	57	▼
Botswana	57	▼
Saudi Arabia	52	▼
South Africa	52	▼
Iran, Islamic Republic of	50	▼
Ghana	50	▼
Lebanon	37	▼

Country average vs. International average:	
Higher	▲
Not different	○
Lower	▼

Content Domain	Main Topic	Cognitive Domain
LIFE SCIENCE	Reproduction and Heredity	Conceptual Understanding

Biological control of insect population

Why would male insects be treated to prevent sperm production?

Ⓐ To increase the number of female insects

Ⓑ To reduce the total population of insects

Ⓒ To produce new species of insects

Ⓓ To prevent insects from mating

Item Number: S022117

**Correct Response: B**

**Overall Percent Correct**

United States	71	▲
Australia	69	▲
Singapore	68	▲
England	67	▲
New Zealand	66	▲
Scotland	65	▲
Belgium (Flemish)	62	▲
Sweden	60	▲
Israel	59	▲
Slovak Republic	58	▲
Malaysia	57	▲
Netherlands	57	▲
Japan	54	▲
Korea, Republic of	53	▲
Hong Kong, SAR	52	▲
Bulgaria	52	▲
Hungary	50	▲
Lithuania	49	▲
Estonia	47	○
Norway	47	○
Botswana	46	○
Serbia and Montenegro	46	○
Chile	45	○
<b>International average</b>	<b>44</b>	
Italy	44	○
Chinese Taipei	44	○
Bahrain	42	○
Indonesia	42	○
Jordan	41	▼
Latvia	40	▼
Romania	39	▼
Slovenia	38	▼
Cyprus	37	▼
Macedonia, Republic of	34	▼
Philippines	33	▼
Russian Federation	32	▼
Palestinian Nat'l Auth.	31	▼
Armenia	29	▼
Ghana	28	▼
Egypt	27	▼
Iran, Islamic Republic of	27	▼
Moldova, Rep. of	25	▼
Tunisia	25	▼
Morocco	23	▼
South Africa	21	▼
Lebanon	19	▼
Saudi Arabia	17	▼

Country average vs. International average:	
Higher	▲
Not different	○
Lower	▼

Content Domain	Main Topic	Cognitive Domain
LIFE SCIENCE	Reproduction and Heredity	Factual Knowledge

## Fertilization in animals

Which of the following takes place during fertilization in animals?

- (A) production of sperm and egg
- (B) joining of sperm and egg
- (C) division of egg
- (D) development of embryo

Item Number: S032008

Correct Response:

**B**

## Overall Percent Correct

Hong Kong, SAR	88	▲
Lithuania	87	▲
Chinese Taipei	86	▲
Estonia	85	▲
Japan	85	▲
Korea, Republic of	83	▲
Belgium (Flemish)	82	▲
Hungary	78	▲
England	77	▲
Netherlands	75	▲
Latvia	75	▲
Russian Federation	74	▲
Israel	73	▲
Sweden	72	▲
Morocco	69	▲
Slovak Republic	69	▲
Bulgaria	68	▲
United States	67	▲
Scotland	67	▲
Tunisia	67	▲
Slovenia	66	▲
Australia	65	▲
Singapore	64	▲
Malaysia	63	○
<b>International average</b>	<b>60</b>	
Norway	60	○
Cyprus	57	○
New Zealand	56	○
Jordan	56	○
Italy	55	▼
Bahrain	54	▼
Serbia and Montenegro	53	▼
Palestinian Nat'l Auth.	50	▼
Indonesia	48	▼
Chile	47	▼
Macedonia, Republic of	47	▼
Egypt	47	▼
Armenia	46	▼
Romania	44	▼
Saudi Arabia	40	▼
South Africa	39	▼
Moldova, Rep. of	38	▼
Botswana	37	▼
Lebanon	37	▼
Philippines	31	▼
Iran, Islamic Republic of	22	▼
Ghana	19	▼

Country average vs.  
International average:

Higher	▲
Not different	○
Lower	▼

Content Domain	Main Topic	Cognitive Domain
LIFE SCIENCE	Structure, Function and Life Processes in Organisms	Conceptual Understanding

### Bodily process to prevent overheating

What processes take place in the human body that prevent it from overheating during exercise?

### Overall Percent Correct

Japan	86	▲
Korea, Republic of	85	▲
Australia	72	▲
United States	72	▲
New Zealand	69	▲
Scotland	69	▲
Estonia	67	▲
England	66	▲
Belgium (Flemish)	63	▲
Lithuania	61	▲
Latvia	61	▲
Netherlands	61	▲
Hong Kong, SAR	60	▲
Israel	59	▲
Italy	55	▲
Hungary	55	▲
Russian Federation	55	▲
Bulgaria	50	▲
Slovenia	48	▲
Singapore	48	▲
Sweden	47	○
Slovak Republic	45	○
Armenia	45	○
Moldova, Rep. of	44	○
<b>International average</b>	<b>44</b>	
Malaysia	42	○
Romania	42	○
Serbia and Montenegro	41	○
Norway	41	○
Chinese Taipei	39	▼
Chile	37	▼
Bahrain	35	▼
Iran, Islamic Republic of	32	▼
Saudi Arabia	31	▼
Macedonia, Republic of	29	▼
Jordan	29	▼
Palestinian Nat'l Auth.	24	▼
Egypt	20	▼
Indonesia	19	▼
Tunisia	18	▼
Philippines	18	▼
Botswana	17	▼
Cyprus	15	▼
South Africa	9	▼
Lebanon	7	▼
Morocco	6	▼
Ghana	6	▼

Item Number: S022152

### SCORING

Note: If perspiration or sweating is mentioned, score as correct, even if other correct responses such as increased blood flow to the skin are also included.

#### Correct Response

- Refers to perspiration (sweating) AND the cooling effect of evaporation.  
Examples: *When people sweat, it evaporates to cool them down.*  
*Sweating. When the sweat evaporates, it cools the skin.*  
*Perspiration cools you down when it evaporates.*
- Refers to perspiration (sweating), without explicitly mentioning the cooling effect of evaporation.  
Examples: *The body sweats.*  
*Perspiration keeps you from overheating.*  
*The perspiration cools you off and you don't stay hot.*
- Refers to increased blood flow to the skin.  
Examples: *The blood rushes to your face and cools you down.*
- Other correct.

#### Incorrect Response

- Refers only to drinking water to cool down.
- Refers to an effect of exercise but does not specifically address overheating and/or cooling.  
Examples: *The blood pumps faster.*  
*Breathing increases.*  
*Your body is working hard and using up more food energy.*
- Other incorrect (including crossed out/erased, stray marks, illegible, or off task).

#### Country average vs. International average:

Higher	▲
Not different	○
Lower	▼

Bodily process to prevent overheating (continued)

Item Number: S022152

**Student Responses**

**Correct Response:**

What processes take place in the human body that prevent it from overheating during exercise?

SWEAT

**Incorrect Response:**

What processes take place in the human body that prevent it from overheating during exercise?

one process in the human body to keep it from overheating is dehydration. if you drink enough water as you exercise than you don't get overheated or Dehydrated.

Content Domain	Main Topic	Cognitive Domain
LIFE SCIENCE	Structure, Function and Life Processes in Organisms	Conceptual Understanding

### Advantage of having two ears

What is the advantage of having two ears to hear with rather than one ear?

Item Number: S022160

### SCORING

Note: Credit is given for both higher-level responses referencing locating the source of sound as well as less sophisticated responses referencing hearing sounds from both sides and retaining hearing if one ear does not function.

#### Correct Response

- Mentions being able to locate the position, direction and/or distance of the source of sound.  
*Examples: By having two ears, you can actually tell where a sound came from.*  
*With two ears you could hear which direction a noise is coming from.*  
*With two ears you can judge the distance the sound is away from you.*  
*With two ears you can tell if the sound is near or far.*
- Mentions hearing sounds from both sides (direction) with no mention of locating the source.  
*Examples: You can hear on both sides of you.*  
*You can hear sounds from all around, not just one side.*  
*With two ears you can hear from more than one way.*
- Mentions that if hearing is lost in one ear, the other may still function.  
*Examples: In the result of being deaf in one ear, you have another one that is used.*  
*If you lost the hearing in one ear, the other one might still work.*
- Other correct.

#### Incorrect Response

- Gives only a general or vague response relating to how well one can hear.  
*Examples: You hear better.*  
*You can hear half as much with one ear.*  
*Two ears lets you hear a lot more.*  
*The volume is greater.*
- Mentions only that hearing is uneven/unbalanced with one ear.  
*Examples: If you had one ear, the sound would be uneven.*  
*Your hearing would be out of balance.*  
*You hearing gets balanced better with two ears.*
- Other incorrect (including crossed out/erased, stray marks, illegible, or off task).

### Overall Percent Correct

Sweden	70	▲
Netherlands	70	▲
New Zealand	64	▲
Australia	64	▲
England	62	▲
Belgium (Flemish)	61	▲
United States	58	▲
Scotland	56	▲
Hungary	55	▲
Slovenia	53	▲
Norway	52	▲
Lithuania	50	▲
Latvia	48	▲
Israel	41	▲
Estonia	41	▲
Singapore	40	▲
Jordan	37	○
Egypt	36	○
Korea, Republic of	35	○
<b>International average</b>	<b>34</b>	
Malaysia	33	○
Italy	32	○
Hong Kong, SAR	32	○
Chinese Taipei	30	▼
Palestinian Nat'l Auth.	30	▼
Macedonia, Republic of	29	▼
Cyprus	28	▼
Botswana	28	▼
Japan	27	▼
Bahrain	25	▼
Romania	25	▼
Russian Federation	23	▼
Chile	22	▼
Morocco	22	▼
Saudi Arabia	21	▼
Slovak Republic	21	▼
Armenia	20	▼
Serbia and Montenegro	20	▼
Moldova, Rep. of	19	▼
Iran, Islamic Republic of	19	▼
Bulgaria	16	▼
Philippines	15	▼
Lebanon	12	▼
South Africa	9	▼
Ghana	8	▼
Tunisia	7	▼
Indonesia	6	▼

#### Country average vs. International average:

Higher	▲
Not different	○
Lower	▼



Advantage of having two ears (continued)

Item Number: S022160

**Student Responses**

**Correct Response:**

What is the advantage of having two ears to hear with rather than one ear?

SO you can  
hear from either  
side of you

**Incorrect Response:**

What is the advantage of having two ears to hear with rather than one ear?

With two ears, you can hear twice as much  
and with one ear you can only hear half  
as much.

Content Domain	Main Topic	Cognitive Domain
LIFE SCIENCE	Structure, Function and Life Processes in Organisms	Factual Knowledge

## Organ NOT in abdomen

Which of the following organs is NOT situated in the abdomen?

(A) liver

(B) kidney

(C) stomach

(D) bladder

(E) heart

Item Number: S012001

<b>Correct Response:</b>	<b>E</b>
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## Overall Percent Correct

Chinese Taipei	94	▲
Hungary	83	▲
Netherlands	83	▲
Sweden	82	▲
Belgium (Flemish)	80	▲
Slovak Republic	78	▲
Bulgaria	77	▲
Macedonia, Republic of	77	▲
Lithuania	77	▲
Russian Federation	77	▲
Armenia	76	▲
Hong Kong, SAR	75	▲
Serbia and Montenegro	75	▲
Australia	74	▲
Latvia	74	▲
United States	73	▲
Estonia	71	▲
Romania	69	▲
Singapore	68	▲
Israel	67	▲
Cyprus	67	▲
England	67	▲
Chile	66	▲
New Zealand	65	▲
Scotland	63	○
<b>International average</b>	<b>60</b>	
Saudi Arabia	59	○
Bahrain	58	○
Japan	58	○
Korea, Republic of	52	▼
Jordan	51	▼
Norway	50	▼
Slovenia	48	▼
Egypt	48	▼
Indonesia	47	▼
Morocco	46	▼
Italy	45	▼
Philippines	45	▼
Tunisia	45	▼
Iran, Islamic Republic of	43	▼
Palestinian Nat'l Auth.	42	▼
Moldova, Rep. of	32	▼
Botswana	30	▼
Lebanon	26	▼
South Africa	26	▼
Malaysia	23	▼
Ghana	12	▼

Country average vs.  
International average:

Higher	▲
Not different	○
Lower	▼

Content Domain	Main Topic	Cognitive Domain
LIFE SCIENCE	Structure, Function and Life Processes in Organisms	Factual Knowledge

### Message from eyes to brain

When a person sees something, what carries the message from the eyes to the brain?

(A) arteries  
 (B) glands  
 (C) muscles  
 (D) nerves  
 (E) veins

Item Number: S012014

<b>Correct Response:</b>	<b>D</b>
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### Overall Percent Correct

Chinese Taipei	94	▲
Japan	93	▲
Hong Kong, SAR	93	▲
Korea, Republic of	92	▲
Netherlands	91	▲
Slovak Republic	87	▲
Belgium (Flemish)	86	▲
Hungary	86	▲
Singapore	85	▲
Lithuania	83	▲
Indonesia	81	▲
Russian Federation	81	▲
Sweden	81	▲
Slovenia	81	▲
England	81	▲
Australia	81	▲
Iran, Islamic Republic of	81	▲
United States	80	▲
New Zealand	80	▲
Macedonia, Republic of	79	▲
Estonia	79	▲
Bulgaria	79	▲
Serbia and Montenegro	79	▲
Malaysia	79	▲
Italy	78	▲
Moldova, Rep. of	78	▲
Latvia	75	○
Scotland	74	○
Saudi Arabia	74	○
Jordan	72	○
<b>International average</b>	<b>72</b>	
Bahrain	70	○
Romania	70	○
Israel	69	○
Armenia	67	▼
Tunisia	67	▼
Palestinian Nat'l Auth.	63	▼
Norway	59	▼
Philippines	58	▼
Egypt	57	▼
Botswana	56	▼
Cyprus	49	▼
Morocco	46	▼
Lebanon	44	▼
Chile	36	▼
South Africa	29	▼
Ghana	17	▼

### Country average vs. International average:

Higher	▲
Not different	○
Lower	▼

Content Domain	Main Topic	Cognitive Domain
LIFE SCIENCE	Structure, Function and Life Processes in Organisms	Factual Knowledge

Absorbtion of food into the blood stream

In humans, where does the absorption of food into the blood stream mainly take place?

(A) stomach  
 (B) mouth  
 (C) large intestines  
 (D) small intestines

Item Number: S032386

**Correct Response: D**

**Overall Percent Correct**

Singapore	71	▲
Japan	58	▲
Armenia	44	▲
Jordan	43	▲
Malaysia	42	▲
Slovenia	38	▲
Hong Kong, SAR	37	▲
Sweden	35	▲
Moldova, Rep. of	34	▲
Chinese Taipei	33	▲
Saudi Arabia	33	▲
Egypt	33	▲
Morocco	31	○
Belgium (Flemish)	30	○
Philippines	29	○
New Zealand	29	○
Korea, Republic of	29	○
Bahrain	29	○
Slovak Republic	28	○
<b>International average</b>	<b>28</b>	
Palestinian Nat'l Auth.	28	○
Netherlands	27	○
Australia	27	○
United States	27	○
Russian Federation	26	○
Ghana	26	○
Romania	25	○
Lithuania	25	○
Hungary	25	○
Lebanon	25	○
England	25	○
Indonesia	25	○
Botswana	23	▼
Italy	23	▼
Macedonia, Republic of	23	▼
Bulgaria	22	▼
Chile	22	▼
Tunisia	21	▼
Scotland	20	▼
Serbia and Montenegro	19	▼
Estonia	18	▼
Latvia	18	▼
Norway	18	▼
Israel	18	▼
Cyprus	17	▼
Iran, Islamic Republic of	13	▼
South Africa	10	▼

Country average vs. International average:	
Higher	▲
Not different	○
Lower	▼

Content Domain	Main Topic	Cognitive Domain
LIFE SCIENCE	Structure, Function and Life Processes in Organisms	Factual Knowledge

## Fish organ like human lung

Which of the following organs in fish has the same function as the human lung?

- (A) kidney  
 (B) heart  
 (C) gill  
 (D) skin

Item Number: S032607

Correct Response:

C

## Overall Percent Correct

Italy	91	▲
Korea, Republic of	90	▲
Hungary	85	▲
Russian Federation	84	▲
Netherlands	83	▲
Iran, Islamic Republic of	82	▲
Chinese Taipei	80	▲
Belgium (Flemish)	78	▲
Moldova, Rep. of	77	▲
Sweden	76	▲
Bahrain	76	▲
Bulgaria	76	▲
Hong Kong, SAR	75	▲
Slovenia	74	▲
Estonia	74	▲
Romania	72	▲
Slovak Republic	71	▲
Japan	68	▲
Morocco	68	▲
Israel	64	○
Jordan	64	○
England	64	○
<b>International average</b>	<b>63</b>	
Serbia and Montenegro	63	○
Saudi Arabia	63	○
Singapore	62	○
Lithuania	62	○
Egypt	62	○
Macedonia, Republic of	62	○
Malaysia	62	○
Australia	61	○
Latvia	61	○
Chile	60	○
United States	60	▼
Scotland	59	▼
Armenia	58	○
Palestinian Nat'l Auth.	56	▼
Norway	55	▼
Indonesia	54	▼
New Zealand	49	▼
Lebanon	45	▼
Tunisia	40	▼
Philippines	37	▼
South Africa	35	▼
Cyprus	25	▼
Botswana	23	▼
Ghana	18	▼

## Country average vs. International average:

Higher	▲
Not different	○
Lower	▼

Content Domain	Main Topic	Cognitive Domain
LIFE SCIENCE	Structure, Function and Life Processes in Organisms	Reasoning and Analysis

### How glasses/contact lenses work

Briefly explain how eyeglasses and contact lenses help some people to see more clearly.

Item Number: S022161

### SCORING

Note: Credit is given for higher-level responses that demonstrate knowledge of vision by describing how lenses modify the way light enters the eye and hits the **retina** or back of the eye (as well as less sophisticated responses based on helping eyes to focus, to see objects at different distances or to magnification).

#### Correct Response

- Mentions that glasses/contact lenses bend (refract) or focus light rays onto the **retina** (or back of the eye). [May use a diagram to show this.]  
*Examples: The glasses focus the light onto the retina.*
- Mentions the curvature (shape) of lenses (concave/convex) and/or bending of light by lenses. [Based primarily on the properties of lenses with no explicit mention of the focusing of light on the retina or back of eye.]  
*Examples: You can focus better because glasses bend the light into your eye.*
- Mentions that glasses/contact lenses help the eyes focus and/or allow (near-sighted/far-sighted) people to see images at a distance or close up.  
*Examples: Some people can see close up but need glasses in order to see things far away.  
Far-sighted people can only read with glasses that correct their close-up vision.  
Eyeglasses can help your eyes to focus more clearly on things.*
- Mentions that glasses/contact lenses magnify or enlarge (images).  
*Examples: They magnify.  
The magnification in the glasses make things more clear and bigger.  
The lenses make things look bigger.*
- Other correct.

#### Incorrect Response

- Gives only a vague reference to glasses/contact lenses helping people see more clearly or containing prescriptions (chemicals, special type/shape/thickness of glass, etc.) without further explanation of vision or how lenses work.  
*Examples: They make you see more clearly.  
If you are near sighted, you need glasses to help you see.  
Contacts help vision because of the prescription injected into them.  
Lenses are prescribed to fix eye problems.  
The lenses in glasses are made thick so you can see better.*
- Other incorrect (including crossed out/erased, stray marks, illegible, or off task).

### Overall Percent Correct

New Zealand	68	▲
Jordan	64	▲
Estonia	56	▲
England	56	▲
Bahrain	55	▲
Australia	55	▲
Armenia	54	▲
Moldova, Rep. of	53	▲
Latvia	52	▲
Korea, Republic of	52	▲
Russian Federation	51	▲
Palestinian Nat'l Auth.	50	▲
Netherlands	50	▲
Sweden	49	▲
Lithuania	48	▲
Hungary	48	▲
United States	48	▲
Scotland	48	▲
Norway	47	▲
Hong Kong, SAR	46	▲
Slovak Republic	44	▲
Singapore	44	▲
Chile	42	○
Israel	42	○
Slovenia	41	○
Egypt	39	○
<b>International average</b>	<b>39</b>	
Romania	37	○
Bulgaria	37	○
Malaysia	35	○
Belgium (Flemish)	34	▼
Japan	34	▼
Macedonia, Republic of	33	▼
Iran, Islamic Republic of	32	▼
Serbia and Montenegro	30	▼
Italy	30	▼
Chinese Taipei	28	▼
Indonesia	26	▼
Saudi Arabia	19	▼
Tunisia	18	▼
Cyprus	17	▼
Morocco	15	▼
Philippines	14	▼
Botswana	12	▼
South Africa	9	▼
Lebanon	6	▼
Ghana	5	▼

#### Country average vs. International average:

Higher	▲
Not different	○
Lower	▼

## How glasses/contact lenses work (continued)

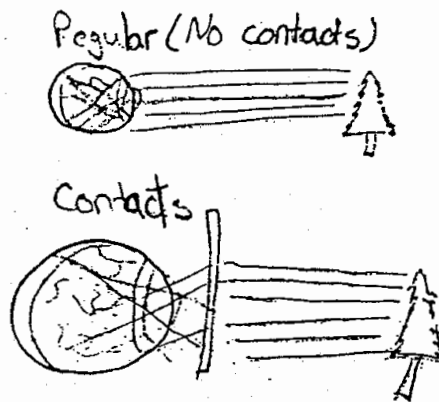
Item Number: S022161

## Student Responses

## Correct Response:

Briefly explain how eyeglasses and contact lenses help some people to see more clearly.

Eyeglasses and contact lenses bend the light rays so they hit the retina at the right angle to make them see clearly.



## Incorrect Response:

Briefly explain how eyeglasses and contact lenses help some people to see more clearly.

Glasses and contacts have prescriptions in them of what your eyesite percentage is, (Because you go to the eye-doctor to get tested.)

Content Domain	Main Topic	Cognitive Domain
LIFE SCIENCE	Types, Characteristics and Classification of Living Things	Conceptual Understanding

## Characteristics of animal groups

A person sorted some animals into the two groups listed on the table.  
Which characteristic of animals was used for the sorting?

- (A) Legs  
(B) Eyes  
(C) Nervous system  
(D) Skin

Group 1	Group 2
Humans	Snakes
Dogs	Worms
Flies	Fish

Item Number: S012028

Correct Response:

A

## Overall Percent Correct

Korea, Republic of	79	▲
Japan	76	▲
Australia	70	▲
New Zealand	68	▲
Chinese Taipei	66	▲
England	66	▲
Scotland	64	▲
Malaysia	63	▲
Hong Kong, SAR	62	▲
Estonia	62	▲
Slovak Republic	62	▲
United States	62	▲
Norway	60	▲
Singapore	59	▲
Netherlands	58	▲
Israel	57	▲
Latvia	56	▲
Sweden	54	▲
Belgium (Flemish)	53	▲
Hungary	49	▲
Russian Federation	48	○
Italy	47	○
Slovenia	46	○
<b>International average</b>	<b>45</b>	
Armenia	43	○
Cyprus	42	○
Moldova, Rep. of	41	○
Lithuania	40	▼
Bahrain	37	▼
Bulgaria	36	▼
Serbia and Montenegro	35	▼
Romania	33	▼
Macedonia, Republic of	32	▼
Palestinian Nat'l Auth.	31	▼
Tunisia	31	▼
Chile	31	▼
Saudi Arabia	26	▼
Morocco	25	▼
Egypt	25	▼
Jordan	24	▼
Indonesia	24	▼
Botswana	23	▼
Philippines	23	▼
Iran, Islamic Republic of	23	▼
South Africa	19	▼
Lebanon	19	▼
Ghana	11	▼

Country average vs.  
International average:

Higher ▲  
Not different ○  
Lower ▼



Content Domain	Main Topic	Cognitive Domain
LIFE SCIENCE	Types, Characteristics and Classification of Living Things	Conceptual Understanding

Cats most closely related to which animal

Cats are most closely related to which of the following animals?

(A) crocodiles

(B) whales

(C) frogs

(D) penguins

Item Number: S032595

<b>Correct Response:</b>	<b>B</b>
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### Overall Percent Correct

Japan	65	▲
Russian Federation	47	▲
Malaysia	46	▲
Singapore	43	▲
Bulgaria	42	▲
Moldova, Rep. of	41	▲
Chinese Taipei	40	▲
Italy	39	▲
Armenia	36	▲
Estonia	35	▲
Latvia	35	▲
Lithuania	33	▲
Hungary	32	▲
Slovenia	31	▲
Israel	31	▲
Hong Kong, SAR	28	○
Romania	27	○
Macedonia, Republic of	26	○
<b>International average</b>	<b>26</b>	
United States	25	○
Serbia and Montenegro	25	○
Korea, Republic of	25	○
England	25	○
Slovak Republic	24	○
Australia	22	▼
Botswana	22	▼
Iran, Islamic Republic of	21	▼
Philippines	20	▼
Belgium (Flemish)	20	▼
Lebanon	19	▼
New Zealand	18	▼
Chile	18	▼
Scotland	18	▼
Jordan	18	▼
Egypt	17	▼
Netherlands	17	▼
Bahrain	16	▼
Ghana	15	▼
South Africa	15	▼
Cyprus	15	▼
Saudi Arabia	15	▼
Palestinian Nat'l Auth.	14	▼
Sweden	13	▼
Norway	13	▼
Indonesia	8	▼
Morocco	0	▼
Tunisia	0	▼

### Country average vs. International average:

Higher	▲
Not different	○
Lower	▼