

Combined Science - Biology - KS4  
Homeostasis and Response

# Reflex Arcs

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**OAK**  
NATIONAL  
ACADEMY

# Independent Task - Conscious action or reflex action?

1. A student touches a hot pot, they quickly jump back in pain.
2. A student thinks carefully about what the answer is to this question.
3. A student decides to have a drink of water.
4. The water the student drank went down the wrong hole, they automatically begin to cough.



# Independent Task - Conscious action or reflex action?

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## **Reflex action**

2. A student thinks carefully about what the answer is to this question.

## **Conscious action**

3. A student decides to have a drink of water.

## **Conscious action**

4. The water the student drank went down the wrong hole, they automatically begin to cough.

## **Reflex action**



# Exam style question

A scientist conducted a study to investigate how the number of units of alcohol ingested impacts on the person's ability to react to a stimulus. The table below shows the results.

Describe the relationship between the number of alcohol units ingested and reaction time. **(2)**

<b>Number of alcohol units ingested</b>	<b>Reaction time in seconds</b>
0	1.1
1	1.4
2	2.0
3	2.8
4	4.1
5	5.2



# Answer - Exam style question

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**As the number of alcohol units ingested increase the reaction time increases**

**1**

**at an increasing rate**

**1**



# Decide if each of the following is a conscious action or a reflex action.

1. Deciding what to eat for lunch.
2. Choosing what book to read.
3. Blinking when dust flies into your eye.
4. The pupil in your eye constricting (getting smaller) in bright light.
5. Pulling your foot away when you step on something sharp.



# Exam style question

1a) A girl goes out for a walk and is stung by a stinging nettle. She pulls her hand back in surprise. Describe the nervous response the girl has to being stung. [6]

b) Name the first neurone that will receive this information. [1]

c) Describe how this information is transferred between two neurones. [2]



# Decide if each of the following is a conscious action or a reflex action.

1. Deciding what to eat for lunch. - **Conscious action.**
2. Choosing what book to read. - **Conscious action**
3. Blinking when dust flies into your eye. - **Reflex action**
4. The pupil in your eye constricting (getting smaller) in bright light. - **Reflex action**
5. Pulling your foot away when you step on something sharp. - **Reflex action**



# **Answer - Exam style question**

1a) A girl goes out for a walk and is stung by a stinging nettle. She pulls her hand back in surprise. Describe the nervous response the girl has to being stung. [6]

**Chemical sting is detected by the receptors in the skin;**

**Electrical impulse;**

**Is sent down the sensory neurone;**

**To the spinal cord/CNS;**

**Electrical impulse travels down motor neurone;**

**To the effector/arm muscles;**

**The muscles contract to pull the arm away.**



# Exam style question

b) Name the first neurone that will receive this information. [1]

**Sensory neurone**

c) Describe how this information is transferred between two neurones. [2]

**Neurotransmitter/chemical is released**

**And diffuses across a synapse**

