**Name and Advisory: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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| AUSTRALIAN CURRICULUM CONTENT DESCRIPTORS |
| **Science** |
| Multi-cellular organisms rely on coordinated and interdependent internal systems to respond to changes to their environment (ACSSU175) |

**Nervous System/Endocrine System**

*The HNS (Human Nervous system), the communication system that controls all parts of your body using electrical signals consists of the:*

1. Central Nervous System CNS: brain and spinal cord
2. Peripheral Nervous System PNS: Nerves that carry messages to the other parts of your body.

Endocrine system: Glands in your body produce and release hormones into your blood stream to create change in your body.

***Answer all questions in sentences!***

Station 1

**Brain Test**

Are you left or right brained?

The brain consists of 2 main halves, known as the ***cerebrum***. Each half is called the ***right or left cerebral hemisphere***. The right hemisphere controls the left side of your body and the left controls your right.

Take the following test to determine whether you are left or right brained.

<http://en.sommer-sommer.com>

Put your results in the following space and answer the questions from the website.

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1. What are the characteristics of people who mostly use the left-brain?

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1. What are the characteristics of people who mostly use the right-brain?

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1. Do you agree with the test? Explain why or why not.

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1. Go to the youtube clip - https://www.youtube.com/watch?v=lh4pdaWYu7A&spfreload=10

Complete the table below while viewing the video.

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| --- | --- | --- |
| Features of the Central Nervous System | Things the Central and Peripheral Nervous system have in common. | Peripheral Nervous System |
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|  |  |  |
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Station 2/3

*Is your blood pressure and heart rate connected?*

**Blood pressure and heart rate**

*Measure your blood pressure with the* ***Sphygmomanometer***

1. Sit quietly for 2 minutes. Do Not Talk!
2. Now take your resting blood pressure using the sphygmomanometer

Resting Blood Pressure ……………………………..

1. Now exercise for 2 minutes by stepping up and down on a step. (use the steps outside)
2. Now take you blood pressure using the same method.

Exercising blood pressure ………………………………….

Question: Suggest reasons why your blood pressure changes when exercising.

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**Heart Rate**

1. Sit quietly for 2 minutes. Do Not Talk!
2. Now take your resting heart rate and count the beats for 15secs
3. Multiply by 4 and record.

Resting Heart Rate ……………………………..

1. Now exercise for 2 minutes by stepping up and down on a step. (use the steps outside)
2. Now take you heart rate using the same method.

Exercising Heart Rate ………………………………….

*Question:*

*From your results, do you think your blood pressure and heart rate always connected? How could you improve your blood pressure and heart rate?*

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Station 4

**Fight or Flight Response – watch the video, look at the diagram and complete the activity below. (These are set up on the computers for you)**

<https://www.youtube.com/watch?v=JtSP7gJuRFE>

<https://www.boundless.com/physiology/textbooks/boundless-anatomy-and-physiology-textbook/endocrine-system-16/stress-161/the-fight-or-flight-response-806-5244/images/the-fight-or-flight-response/>

In the space below, use your own ***chart*** to show how the flight or flight response causes changes in the body.

Station 5

**Light in your eyes.**

1. Look at your friend’s pupils.
2. Ask them to shut their eyes for 1 minute.
3. Now shine a torch into one of your friend’s eyes.
4. Explain what has happened to your pupil after shutting your eye and after shining torch. Suggest why your body responds in this way.

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1. Explain where the message travels to activate the movement of the pupil. What system is working to control this action?

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Station 6

**Nerves:** *http://science.howstuffworks.com/life/inside-the-mind/human-brain/brain2.htm*

* Look at the slide of the ***nerve cell*** (neuron) and a ***muscle cell***.
* Record at least 2 differences you can observe between the cells.

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1. What does a ***sensory neuron*** do?

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1. What does a ***motor neuron*** do?

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1. Complete the Venn diagram for the similarities and differences between the different neurons.

Sensory Neuron

Motor Neuron

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Endocrine/Nervous System Marking Scheme** | | | | |
| **A** | **B** | **C** | **D** | **E** |
| Student compares the CNS with the PNS and sensory with motor neurons, suggesting a wide range of differences and similarities. | Student compares the CNS with the PNS and sensory with motor neurons, suggesting some differences and similarities. | Student compares the CNS with the PNS and sensory with motor neurons, suggesting a few differences and similarities. | Student records very few differences and similarities between the nervous systems and nerves. | No evidence = no score |
| Student devises a chart that identifies several hormones and nervous reaction to fear including the affect on various parts of the body. | Student devises a chart that identifies some hormones and nervous reaction to fear including the affect on some parts of the body. | Student devises a chart that identifies some of the hormones and nervous reaction to fear including some parts of the body. | Student mentions very little about the hormones and nervous reaction to fear and may or my not mention parts of the body. | No evidence = no score |
| Student explains how the body reacts using nerves and hormones to external changes in a wide range of ways and suggests valid reasons based on the functioning of the endocrine and nervous systems. | Student explains how the body reacts in a range of ways to external changes and suggests valid reasons. | Student explains how the body reacts to external changes in a few ways and may suggest some reasons. | Student has difficulty describing how the body reacts to external change. | No evidence = no score |