



Government of **Western Australia**  
School Curriculum and Standards Authority



# HUMAN BIOLOGY

GENERAL COURSE

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Marking key for the Externally set task

Sample 2016

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# Human Biology

## Externally set task – marking key

1(a) Write an hypothesis for this experiment. (1 mark)

Description	Marks
Distraction increases reaction time Or any reasonable hypothesis showing relationship between independent and dependent variables	1
<b>Total</b>	<b>1</b>

(b) i What is the independent variable? (1 mark)

Description	Marks
Distraction	1
<b>Total</b>	<b>1</b>

ii What is the dependent variable? (1 mark)

Description	Marks
Reaction time	1
<b>Total</b>	<b>1</b>

iii List **three (3)** variables that Lucy and Phillip kept the same. (3 marks)

Description	Marks
<b>Any 3</b> Ruler used Height dropped Method of timing Similar environmental conditions Type of distraction	1-3
<b>Total</b>	<b>3</b>

- (c) Write a step-by-step method describing how this experiment could be conducted, including equipment required. (10 marks)

Description	Marks
Equipment: ruler, stopwatch, test subject, form of distraction	1–3
Steps of method include: <b>Any 3</b> Variables to be kept the same (controlled) are mentioned in steps: distance dropped from hand, timer, environmental conditions, lighting, time period tested, etc.	1–3
Method of measuring dependent variable Implementation of independent variable	1–2
Recording of data in the table	1
Repeat trials	1
<b>Total</b>	<b>10</b>

- (d) Complete calculating the averages in the table. (2 marks)

Description	Marks
Braxton Average reaction time with distraction = $\frac{0.38 + 0.28 + 0.22}{3} = 0.293$	1
Rohan Average reaction time without distraction = $\frac{0.22 + 0.18 + 0.18}{3} = 0.193$	1
<b>Total</b>	<b>2</b>

- (e) Draw a graph showing the average results from the table. Put the students on the x-axis and the reaction time on the y-axis. (6 marks)

Description	Marks
Correctly draws columns	1
Labels axes with correct name and unit	1–2
Uses a suitable scale	1
Title appropriate, with both variables included	1
Key	1
<b>Total</b>	<b>6</b>

- (f) How could this experiment be improved to increase the reliability of the results? (2 marks)

Description	Marks
Conduct more trials	1
Increase number of students used	1
<b>Total</b>	<b>2</b>

- (g) What could Lucy and Phillip do to investigate the difference between a visual distraction and a noise distraction? (2 marks)

Description	Marks
Conduct trials which use sound as a distraction only and no vision	1
Conduct trials which uses visual distraction only and no sound	1
<b>Total</b>	<b>2</b>

2. Describe how the nervous system assists reactions. (5 marks)

Description	Marks
Stimulus received from receptor	
Sends message to brain	1
Brain processes information	1
Sends message back to effector	1
Muscles cause reaction	1
<b>Total</b>	<b>5</b>

3. Explain the difference between a reaction and a reflex action. (2 marks)

Description	Marks
<b>Any 2</b> Reflex arc is quicker than reaction Brain involved in reaction and not in reflex Reflex is involuntary	1–2
<b>Total</b>	<b>2</b>

4. Describe the nervous pathway of a reflex arc. (5 marks)

Description	Marks
Receptor → sensory nerve → interneuron → motor nerve → effector	1–5
<b>Total</b>	<b>5</b>