

<b>Lesson 4-4: Equilibrium in the Human Body</b>	
<b>Curriculum Expectations</b>	<ul style="list-style-type: none"> <li>• E3.8</li> <li>• E1.1</li> <li>• E1.2</li> </ul>
<b>Learning Goals</b>	<p><b>Learning Goals:</b></p> <ul style="list-style-type: none"> <li>• Investigate equilibrium systems at work within the human body</li> <li>• Explore how these systems can be disrupted and what the consequences are when equilibrium is lost</li> <li>• Discover ways that we can help our bodies maintain the different states of equilibrium when they are disrupted</li> </ul>
<b>Success Criteria</b>	<p>I know I have achieved the goals for this lesson when I can:</p> <ul style="list-style-type: none"> <li>• Describe equilibrium systems in the human body that act to maintain homeostasis.</li> <li>• Explain the consequences of equilibrium systems being disrupted in the human body.</li> <li>• Describe how people can act to help maintain homeostasis in the human body by affecting equilibrium systems.</li> </ul>
<b>Teacher Prep</b>	<ul style="list-style-type: none"> <li>• Preview video in activity 4-4A to make sure it loads.</li> <li>• Print out cards for Rates of Reaction Group Activity</li> </ul>

## Minds On

Goal: To review equilibrium and rates of reaction.

### 1. Equilibrium & Rates of Reaction Group Activity

#### Teacher Instructions:

- This is a group activity and groups of three or four students are ideal. Each group should have one set of the information cards which is dealt out between the members of the group. The cards are labelled with which part of the activity they are for; they can all be dealt out at the start and the students told to refer just to the cards for the part of the activity they are working on. They should not 'lay their cards out on the table' unless they are stuck.
- Cards which have an asterisk (\*) can be held back by the teacher initially and given to the students when or if they need help.
- The groups could produce one set of written answers which could be reviewed in the light of the *Discussion of answers* sheet by another group (with instructions to be positive in their comments).
- If you want to reuse the information cards it is helpful to reproduce them on different coloured card or paper.

#### Student Instructions

- You have been given some information cards. You can share this information with other members of the group (*ie* tell them about it), although you should not show other people in your group your cards. You will need to use the information cards for parts 1, 2 and 4. The cards are labelled according to which part of the activity they relate to.
- Use the information in the cards to help explain why  $K_c$  (the equilibrium constant) for a single step reaction  $A + B \rightleftharpoons C + D$  is equal to  $\frac{[C][D]}{[A][B]}$ .

## Action

**\*\*Refer to the Differentiation Resources link for additional practice worksheets, and to enrich your classroom teaching using different tools throughout the lesson. \*\***

### 1. 4-4A: Equilibrium in the Human Body

- Before watching the video lead a brief class discussion about equilibrium and how it may apply to the proper functioning of the human body.
- Watch the movie together as a class.
- Following the movie, review the content through discussion.
- Summarize the different systems in the body that maintain homeostasis and how this relates to the concept of equilibrium.

## Consolidation

### 1. 4-4C: Equilibrium in the Human Body

- Review the assignment page together as a class.
- Emphasize where marks are allocated.
- Remind students that answers should be thoroughly researched and presented using full sentences and scientific language.
- Review proper research techniques and citation expectations.
- OPTIONAL: you may choose to have each student present their assignment to the whole class once they are finished. This will help improve their communication and presentation skills.

### 2. Unit 4 Learning Log

- Ensure all students complete the learning log this is their opportunity to reflect on their learning from the unit and offer feedback to help improve their learning experience.

**\*\*Refer to Differentiation Resources for additional practice worksheets, and to enrich your classroom teaching using different tools. \*\***