**Teacher’s Copy**

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| Subject | Physics |
| Level | Upper Secondary |
| Strand | Waves |
| Topic | Light |
| Learning Outcome | * Draw ray diagrams to illustrate the formation of real images of an object by a thin converging lens |
| Pre-requisites | * Describe the action of a thin converging lens on a beam of light * Define the term focal length for a converging lens |

This learning object is an interactive quiz in which students

* use a pointing device/mouse to “construct” rays to find the location of the image formed by a thin converging lens
* describe the characteristics of the image formed
* associate real life applications of the lenses to the image characteristics and the object distances (greater than 2f, equal to 2f, between f and 2f, equal to f and less than f)

**Preparations before asking students to run the simulation on Human Digestive System:**

1. Internet access is required to run this quiz.
2. Download the an unzip the file
3. Click on index.html to start the quiz

**Suggested approach**:

* You may wish to use this quiz as an Assessment for Learning tool for students’ self-directed learning at home before the construction of thin converging lens ray diagrams is formally introduced in class.
* After students complete this quiz, they can respond to some questions in an online discussion forum such as
  1. What are some other applications of thin converging lens?
  2. For each of these applications, what would the characteristics of the images formed by the converging lens be?
  3. Why are these image characteristics be necessary for the application chosen?
  4. What are other interesting things about thin converging lenses would you like to find out about?
* Alternatively, you may use this quiz to check for students to check their own understanding after the completing the lesson on ray diagrams in class

This is a draft version of the quiz. If you have any suggestion or feedback, please email me at [nigel\_koh@moe.gov.sg](mailto:nigel_koh@moe.gov.sg)