# Lesson Plan

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| **Title:** Technical writing – Light and Mirrors 4 | **Date:** |
| **Learning objective/s:**   * To investigate angles of reflection | **Curriculum links:** |
| **Learning outcomes**  **I want evidence students can:**   * Measure angles accurately using a protractor * Record their results in a table * Explain how a periscope works | |
| **Notes on students who have exceeded the performance expected:** | **Action to be taken:** |
| **Notes on students who did not achieve the performance expected:** | **Action to be taken:** |
| **Essential vocabulary:**  Light, opaque, reflects, reflective, emits, mirror, periscope | **Possible misconceptions:** |
| **Cross curricular links:**  Science, literacy, numeracy | |
| **Teacher resources including ICT:**   * Introductory Presentation PowerPoint. | **Student’s resources including ICT:**   * Whiteboards & markers * Protractors * Mirrors * Torches with narrow slit card (See lesson 1) * Rulers * Periscope Worksheet * Angles Worksheet (optional) |

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| **Organisation and class management:** | **Teaching points:** | **Notes:** |
| **Introduction:**  Whole class discussion | * Using the powerpoint presentation, remind the students about how light reflects off mirrors and opaque objects allowing us to see the object from around corners. * Remind the students of our question at the end of session 3 about whether the angle of the mirror makes a difference. * Explain that today we shall be working in small groups to investigate that question. * Use the presentation to model how this should be done. |  |
| **Main phase:**  In small groups | * Provide all students with the worksheet to record their findings. * Provide each group with a protractor, a ruler, a whiteboard and pen, a mirror and a torch with a narrow slit card. * Students should investigate what angle the light reflects off the mirror at from a range of starting positions, e.g. if the light hits the mirror at 20 degrees, what angle does the reflected light beam leave the mirror at. NB: A worksheet is provided if you feel students might require additional support. * Students should then write a sentence about what they have discovered. * Show the students a picture of a periscope, followed by the diagram of how a periscope works. * What angle is the light being reflected at? So what angle must the mirror be set to? * Students should then be given worksheet and asked to draw on the light path and annotate the diagram with what is happening, including the angles of the mirrors. | Further information and lesson plans are available on the NSO Website, including a workshop looking at what causes day and night:  [https://www.schoolsobservatory.org/](https://www.schoolsobservatory.org/ discover/activities/daynight)  [discover/activities/daynight](https://www.schoolsobservatory.org/ discover/activities/daynight) |
| **Plenary/Conclusion:**  Whole class discussion | * Remind the students of the letter from session 1, have we solved the problem? * Explain that tomorrow we shall be writing a report to send to our mysterious friend! |  |