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| **Lesson Number: 28.2** |
| **Lesson Title: Reflecting telescope** |
| **Specification Reference** | **3.9.1.2** |
| **Learning Objectives** |
| Cassegrain arrangement using a parabolic concave primary mirror and convex secondary mirror.Ray diagram to show path of rays through the telescope up to the eyepiece.Relative merits of reflectors and refractors including a qualitative treatment of spherical and chromatic aberration. |
| **Opportunities for Assessment** |
| Drawing of the different ray diagrams and their accuracy |
| **Starter:** | Slide #1 can create some discussion about not plane mirrors and especially concave mirrors |
| **Main:** | Slide #2 brings together the discussion from the introduction – explain what a parabola is and link to maths A-LevelSlide #3 shows a simple example of how to focus light with a curved mirrorSlides #4 and #5 should be used to show the difference between a Newtonian and Cassegrain telescope; students may be asked to draw one and they need to concentrate on the minor differences and where the rays go. The addition of an eyepiece to make the final rays parallel is important.Slide #6 - #8 consider the differences between mirrors and lenses and the main advantages of mirrors. It also explains in more details spherical aberrations and shows a diagram of these in each circumstance |
| **Plenary:** | Slide #9 is a summary |

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| **Homework:** | Research the history of Newtonian and Cassegrain telescopes |
| **Differentiation / Extension / S&C** |
| Research the ability of large modern telescopes to bend and flex to remove atmospheric distortion |
| **Numeracy / Literacy** | **SMSC / Fundamental British Values** |
| None | Modern astronomy still using the telescope designs from many centuries ago |
| **RESOURCES:** |
| None |
| **Risk Assessment** e.g. CLEAPSS card reference |
| None |
| **Working Scientifically (HSW)** |
| None |

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Slide #1 – JerzyGorecki via pixabay

Slides #2, #4, #5 – Wikipedia (Public Domain)

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