 Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| Use ray diagrams to model how light passes through lenses and transparent materials. | | | | |
| Know  1 | |  | Apply  2 | |
| Ideas | |  |  |  |
| K1 | When a light ray meets a different medium, some of it is absorbed and some reflected. For a mirror, the angle of incidence equals the angle of reflection. The ray model can describe the formation of an image in a mirror and how objects appear different colours. |  | A1 | Use ray diagrams of eclipses to describe what is seen by observers in different places. |
| A2 | Explain observations where coloured lights are mixed or objects are viewed in different lights. |
| A3 | Use ray diagrams to describe how light passes through lenses and transparent materials. |
| K2 | When light enters a denser medium it bends towards the normal; when it enters a less dense medium it bends away from the normal. Refraction through lenses and prisms can be described using a ray diagram as a model. |  | A4 | Describe how lenses may be used to correct vision. |
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| Skill | |
| K3 | Construct ray diagrams to show how light reflects off mirrors, forms images, and refracts. |  | A5 |  |
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| Facts | |
| K4 | Light travels at 300 million metres per second in a vacuum. |  |  |  |
| K5 | Different colours of light have different frequencies. |  | A6 |  |
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| Key words | |
| K7 | **Incident ray:** The incoming ray. |  |  |  |
| K8 | **Reflected ray:** The outgoing ray. |  |  |  |
| K9 | **Normal line:** From which angles are measured, at right angles to the surface. |  |  |  |
| K10 | **Angle of reflection:** Between the normal and reflected ray. |  |  |  |
| K11 | **Angle of incidence:** Between the normal and incident ray. |  |  |  |
| K12 | **Refraction:** Change in the direction of light going from one material into another. |  |  |  |
| K13 | **Absorption:** When energy is transferred from light to a material. |  |  |  |
| K14 | **Scattering:** When light bounces off an object in all directions. |  |  |  |
| K15 | **Transparent:** A material that allows all light to pass through it. |  |  |  |
| K16  K19 | **Translucent:** A material that allows some light to pass through it. |  |  |  |
| K17 | **Opaque:** A material that allows no light to pass through it. |  |  |  |
| K18 | **Convex lens:** A lens that is thicker in the middle which bends light rays towards each other. |  |  |  |
|  | **Concave lens**: A lens that is thinner in the middle which spreads out light rays. |  |  |  |
| K20 | **Retina:** Layer at the back of the eye with light detecting cells and where image is formed. |  |  |  |
| 3 | Extend |  |  |  |
| E1 | Use a ray diagram to predict how an image will change in different situations. |  | E5 |  |
| E2 | Predict whether light will reflect, refract or scatter when it hits the surface of a given material. |  |  |  |
| E3 | Use ray diagrams to explain how a device with multiple mirrors works. |  |  |  |
| E4 |  |  |  |  |
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