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| **Lesson Plan:** |

**Prescribed learning outcomes**

**B2** use ray diagrams to analyse situations in which light reflects from plane and curved mirrors

**B3** analyse situations in which light is refracted

**Big Ideas**

1. Pictorially and physically manipulate light. This means being able to position mirrors and lenses to re-direct and focus light.
2. Differentiating virtual and real images by meaning, from calculations, and ray diagrams.
3. Explain the consequences when waves interact with each other and with objects with different penetrance

**Material and equipment needed**

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| laptop | projector | 1 videos | optics package | lens/mirrors | flashlight |
| powerpoint | notes prepared |  |  |  |  |

**Assessment Plan:**

**Formative -** Inquiry questions discussed in class and worksheet handed in this class or next class

**Hook and Introduction**

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| **Time** | **Activity** | **Teaching notes** | **Assessment** |
| 10:15-10:20 | * News/Ridge's video | * Ridge's video |  |

**Development**

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| **Time** | **Activity** | **Teaching notes** | **Assessment** |
| 10:20-10:40am | * White board groups | * Divide class into 5 groups, 5 scenarios that we didn't cover last class * Collect white boards with drawings after 5-7m * Go over each scenario to check for misunderstandings | * Hold up white boards |
| 10:40-10:55 | * Concave lens | * f and C positions * 1 scenario * Qualities: smaller/bigger, inverted/upright, real, virtual * Try one example - circulate and have 1 student to come up and draw | * Student try an example |
| 10:55-11:05 | * Lens/Mirror equation + magnification | * 1/f = 1/do + 1/di * Magnification equation: M = -hi/ho = do/di * Table of when f, d, and h are negative/positive | * See below |
| 11:05-11:20 | * Have class try 1-2 example on white boards | * Convex mirror  f = 5cm, do = 3cm, ho = 4cm Find hi * Call for 2 white board examples |  |

**Closure**

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| **Time** | **Activity** | **Teaching notes** | **Assessment** |
| 11:20-11:35am | * Bill Nye | Video, if have time can show PhET simulation  Unit test: April 9th  Quiz next class - ray diagrams, thin lens equation, magnification |  |