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| **Lesson Plan:** |

**Learning objectives**

1. Understand the difference and give examples of vectors and scalars
2. Understand and apply the vectors with signs relative to the origin and a directional frame of reference
3. Understand and apply the concept of uniform motion in calculating displacement covered from average velocity
4. Interpret and draw conclusions from position time graphs

**BIs**

1. Describe, interpret, calculate, experiment, and graph relationships between displacement, velocity, and acceleration given a storyline
2. Appreciate the importance of units and dimensional analysis
3. Understand the importance of direction in vector quantities and apply this in realistic situations

**PLOs**

**C6** explain the relationship of displacement and time interval to velocity for objects in uniform motion

**Skills developed to meet development goals**

1. Critical thinking
2. Collaborative skills
3. Asking questions
4. Leadership
5. Self-directed learning

**Material and equipment needed**

- Backward solving problem sheet

- Downloaded videos to show

- Projector

- Laptop

**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** |
| 5 min | * Check in with students on how the proposal went | * Students go straight into working on the activity before they have to hand it in | * N/A |

**Development**

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| **Time** | **Activity** | **Teaching notes** | **Assessment** |
| 20 min | * Work on inquiry proposal as group before handing it in | * Make sure to collect the proposals because students need to understand the content for the backwards problem solving portion | * Inquiry handout proposal |
| 45 min | * Group work: backwards problem solving | * Students work in groups of ~3 and work out the problems as they can refer back to their textbooks to learn the content * Tell the students that it might be a good idea to take some notes because the class will come together to collaboratively take notes together * Teacher walks around after ~30mins to check student progress. If the students find it too easy, have groups join together and compare their notes from the exercise. | * Students hand in problem solving sheet at the end of the day |

**Closure**

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| **Time** | **Activity** | **Teaching notes** | **Assessment** |
| 10 min | * Video to summarize what they did | Check in with the students to see how they find the exercise. If it is too hard for them, they might need more guidance on the next backwards problem set to help start them off.  **https://www.youtube.com/watch?v=G0yXTxaCluU** | **HWK**  1) Hand in their response for the backwards problem solving  2) Create one question with the answer key. See if you can come up with a challenging question (hint: graphing is a good start). |

**Useful links:**

Mechanics 1.1: Displacement, Average Velocity

**https://www.youtube.com/watch?v=G0yXTxaCluU**

Other videos by the same Youtube channel:

https://www.youtube.com/channel/UCNkVBE3C9PU9zR0vo\_k6YtA