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| **Lesson Title : Traffic Flow** | **Unit #:****1** | **Lesson #:****1** | **Activity #:****1** |
| **Activity Title: Wait Time** |

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| **Estimated Lesson Duration:** | **2 days** |
| **Estimated Activity Duration:** | **1 day** |

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| **Setting:** |  |

Honors Algebra I class; activity will take place in my classroom.

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| **Activity Objectives:** |

Students will be able to:

1. Describe, define and provide examples of wait time
2. Identify the factors that impact wait time
3. Hypothesize how wait time might be explained mathematically
4. Generate essential questions about wait time

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| **Activity Guiding Questions:**  |

Students will be asked the following questions to guide them through this activity:

* When do you typically have to wait?
* What are the factors of you having to wait?
* Is there a limit to acceptable wait time?
* Why is waiting so important to you?
* Is there a mathematical formula for acceptable wait time?

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| **Next Generation Science Standards (NGSS)**  |
| **Science and Engineering Practices (Check all that apply)**  | **Crosscutting Concepts (Check all that apply)** |
| ☒ Asking questions (for science) and defining problems (for engineering) | ☐ Patterns |
| ☐ Developing and using models | ☐ Cause and effect |
| ☐ Planning and carrying out investigations | ☐ Scale, proportion, and quantity |
| ☐ Analyzing and interpreting data | ☐ Systems and system models |
| ☐ Using mathematics and computational thinking | ☐ Energy and matter: Flows, cycles, and conservation |
| ☐ Constructing explanations (for science) and designing solutions (for engineering) | ☐ Structure and function.  |
| ☐ Engaging in argument from evidence | ☐ Stability and change.  |
| ☐ Obtaining, evaluating, and communicating information  |  |

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| **Ohio’s New Learning Standards for Science (ONLS)** |
| **Expectations for Learning - Cognitive Demands (Check all that apply)** |
| x Designing Technological/Engineering Solutions Using Science concepts **(T)** |
| ☐ Demonstrating Science Knowledge **(D)** |
| ☐ Interpreting and Communicating Science Concepts **(C)** |
| ☐ Recalling Accurate Science **(R)** |

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| **Common Core State Standards -- Mathematics (CCSS)** |
| **Standards for Mathematical Practice (Check all that apply)** |
| ☐ Make sense of problems and persevere in solving them | ☐ Useappropriate tools strategically |
| ☐ Reason abstractly and quantitatively | ☐ Attendto precision |
| ☒ Construct viable arguments and critique the reasoning of others | ☐ Look for and make use of structure |
| ☒ Model with mathematics | ☐ Look for and express regularity in repeated reasoning |

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| **Unit Academic Standards (NGSS, ONLS and/or CCSS):** |

**CCSS.Math.Practice.MP4 Model with mathematics.**

**CCSS.Math.Practice.MP3 Construct viable arguments and critique the reasoning of others.**

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| **Materials**: (Link Handouts, Power Points, Resources, Websites, Supplies) |

Powerpoint presentation of lesson

Video with link to A Day Made in Glass

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| **Teacher Advance Preparation:** |

 I need to have a powerpoint ready and link for video ready to use. I am going to let students choose their own groups for discussion.

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| **Activity Procedures:** |

The powerpoint presentation gives an outline of activity procedures. The procedures include:

1. Begin class with video—A Day Made of Glass produced by Corning
2. Group discussion on the video; students will be asked to reflect on the following questions
	1. What impressed you most in this video?
	2. How far away do you feel this technology is from making into our homes?
	3. What type of technology are anxiously waiting for? What have you waited for?
	4. What has impeded your wants/needs for the latest technological gadgets?
	5. When have had to wait the longest?
3. Students will then work in pairs and search the internet to find 3 images of wait time to share with the class. These images will be posted in their shared notebooks.
4. Groups will share their images with the entire class.
5. Teacher will use Think-Pair-Share to get students to generate essential questions about wait time.

**Formative Assessments:** Link the items in the Activities that will be used as formative assessments.

Students will be assessed as they answer questions to the video and when they share their images from the internet regarding wait time. Images should be directly related to wait time. Students will also be assessed when they present their essential questions; these questions should directly meet the objectives of the lesson.

**Summative Assessments:** These are optional; there may be summative assessments at the end of a set of Activities or only at the end of the entire Unit.

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| **Differentiation:** Describe how you modified parts of the Lesson to support the needs of different learners.Refer to Activity Template for details. |

Students who need extra time to reflect on wait time and to generate questions will be given the extra time and they will have the opportunity to email the teacher before the challenge is presented.

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| **Reflection:** Reflect upon the successes and shortcomings of the lesson. |

The students really enjoyed the video. Their responses to the reflection questions were what I expected--they all want the latest version of the i-phone. I will definitely use the video again though the only problem was it was difficult to keep the students directed towards the idea of wait time. After watching the video they wanted to talk more about technology (i-phone, i-pads, 3-D televisions) and not about how technology helps minimize our wait time in different service lines (grocery stores, amusement parks, airports, traffic lights). Next year I would like to use a follow-up a video that shows how technology has improved in relationship to driving cars (ie. Driver-less cars, rear/side view sensors, etc.). Another idea is to contact someone in the Krogers corporation that might be able to speak to the class on the methods they used to minimize wait time in the checkout lines.