**Pop-Out Essential Question:** *What makes a person a scientist or engineer?*

There is a lot of debate about what characteristics make a scientist or engineer. History typically tells us that certain, popular people are scientists/engineers. Are they the only scientists/engineers in the world? In this pop-out, we are going to consider what you believe makes a scientist/engineer, explore case studies of varied scientists and engineers, and evaluate what scientists or engineers have in common to determine who is a scientist or an engineer. In this unit, you learn about Isaac Newton and how his work helped us understand gravity. However, there are many other people whose work contributed to how we understand other parts of motion and collisions. This pop-out helps us better understand the variety of people who have contributed to the science behind motion and collisions.

**Engage**

Individually,

1. Take a few minutes to think about a scientist or engineer. Consider these questions: What does a scientist or engineer look like? What does a scientist or engineer do? What tools does a scientist or engineer use? Using the box below, draw a scientist or engineer in their environment. You may use words to supplement the drawing. Be as descriptive as you can.

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| --- |
|  |

1. With your partner, take turns sharing what you drew and wrote. How did each person describe a scientist or engineer? Are there similarities or differences in your drawing and your partner’s drawing?
2. Using information from your class discussion, complete the following table:

|  |  |
| --- | --- |
| **What is a scientist and what do they do?** |  |
| **What is an engineer and what do they do?** |  |

**Explore**

With your group,

1. Read your group’s case study. Use the annotation strategies provided by your teacher as you read. Questions to keep in mind while you’re reading: What are unique characteristics about this person? What did they do to contribute to science? Is this person a scientist or engineer?
2. As you learn from your case study, please record your analysis in the chart below. You will use this to make a presentation about your scientist or engineer:

|  |  |  |
| --- | --- | --- |
| **Person** | **Information** | **What contributions did they make to scientific advancement?** |
|  | ***Where did they do their work?***  ***What kind of work did they do?***  ***What was their personality like?***  ***What did they look like?***  ***Where did they come from?*** | ***What work did they do that we use today?***  ***What work did they do that relates to motion or collisions?*** |
| **Is this person a scientist or engineer?**  **What characteristics make this person a scientist or engineer? What did they do that makes them a scientist or engineer?** | |

**Explain**

With your group:

1. Prepare a 1-2 minute informative presentation that shares what you learned about your case study. Your presentation needs to include information you gathered from your case study. You may use chart paper, google slides, or whatever presentation materials are available to enhance your presentation.
2. Present to the other groups. Remember, each presentation should be 1-2 minutes.
   * Use your public speaking skills while presenting. Make sure to share all of the information your group gathered.
3. While an audience member, use active listening skills and take notes in the tables below of what you learn from each presentation.

|  |  |  |
| --- | --- | --- |
| **Person** | **Information** | **What contributions did they make to scientific advancement?** |
|  | ***Where did they do their work?***  ***What kind of work did they do?***  ***What was their personality like?***  ***What did they look like?***  ***Where did they come from?*** | ***What work did they do that we use today?***  ***What work did they do that relates to motion or collisions?*** |

|  |  |  |
| --- | --- | --- |
| **Person** | **Information** | **What contributions did they make to scientific advancement?** |
|  | ***Where did they do their work?***  ***What kind of work did they do?***  ***What was their personality like?***  ***What did they look like?***  ***Where did they come from?*** | ***What work did they do that we use today?***  ***What work did they do that relates to motion or collisions?*** |

**Elaborate:**

1. With your group, decide whether each case study is about a scientist or engineer. Provide detailed support for your answer. Use the notes you’ve taken and what you’ve learned about the other group’s case studies to help you. Complete the appropriate box below for each of the two people.

|  |  |
| --- | --- |
| **Person** |  |
| **Is this person a scientist or engineer?**  **What characteristics make this person a scientist or engineer? What did they do that makes them a scientist or engineer?** | |

|  |  |
| --- | --- |
| **Person** |  |
| **Is this person a scientist or engineer?**  **What characteristics make this person a scientist or engineer? What did they do that makes them a scientist or engineer?** | |

**Evaluate and Reflection**

Individually, think about and answer the following questions. We will discuss these questions as a class.

1. At the beginning of this pop-out, you wrote and drew what came to mind when you pictured a scientist or engineer and what he or she does. Look back at your answer: after reading a case study and learning from your peers, what would you add, subtract or change?
2. At the beginning of this pop-out, the class created a definition of a scientist and an engineer. Look back at your answer. After reading a case study and learning from your peers, what would you add, subtract or change about your definitions?
3. Based on what you discovered in this pop-out, think about your own life. Do you believe you are a scientist or engineer? Do you see yourself becoming a scientist or engineer? Why or why not?
4. What do you envision when you think of a scientist or an engineer? What makes a person a scientist or engineer? How do we know?