

**8th Grade Science Unit 2: Traveling Through Space
Project Organizer**

Unit Essential Question: *What forces keep the parts of our solar system together and how can we use this knowledge to plot a telescope route through space?*

You will be developing a model of the solar system and proposing the best route a new telescope should take through space. After each task, you will return to the table below to organize what you learn as you go through the unit. By the end of the four tasks, you will have all this information to use for your culminating project. For each activity, be sure to include answers to **ALL** the questions provided.

<p>Lift-Off Task: Our Solar System</p>	<p>You will be launching a new telescope into our solar system, so we need to know what is out there. What do you think our solar system consists of?</p>
<p>Task 1: A Sun-Earth-Moon Model</p>	<p>In order to plan a route through the solar system for the new telescope, you will need to know what it looks like. The best way to imagine what it looks like is to create a model. To prepare you to construct a full solar system model, you have practiced this skill by creating a Sun-Earth-Moon system model. In the process, you have discovered the solar system science behind many things you experience on Earth!</p> <ul style="list-style-type: none"> <input type="checkbox"/> Draw a sketch of your Sun-Earth-Moon model with labels. <input type="checkbox"/> Use your model to describe at least two of the phenomena explored in this task. <input type="checkbox"/> What are the limitations of the model you have drawn? In other words, how does it not accurately represent the Sun-Earth-Moon system?

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<p>Task 2: A Solar System Model</p>	<p>To plan a route for the new telescope, you will need to know more than just the Sun-Earth-System and more than just a list of total parts; you will need a specific layout. Draw a sketch of your class solar system model, including where the new telescope needs to arrive.</p> <ul style="list-style-type: none"> <input type="checkbox"/> In captions, explain the scale you used for your assigned planet within the model. <ul style="list-style-type: none"> ○ What data did you use? ○ How does it compare to other planets in the solar system model?

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<p>Task 3: Gravity in the Galaxies</p>	<p>Even though you already have the layout of the solar system, you now know that these objects don't just remain stationary...they move because of gravity! Based on what you've learned about mass, gravity, and motion, draw a potential route for the new telescope on the sketch you made in the Task 2 section above. Then in this section:</p> <ul style="list-style-type: none"><input type="checkbox"/> Explain why the solar system is laid out the way it is: what is the role of gravity in the solar system?<input type="checkbox"/> Use your model and data from the task to explain how gravity might affect the new telescope as it moves through space.<input type="checkbox"/> Justify your route by explaining why you stay farther away from some planets, but not others.
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<p>Task 4: Invisible Forces</p>	<p>We need to protect the new telescope from solar wind as it travels through space. Scientists say that the new and best protection is to create a magnetic field around the telescope. But how do we do this? Use what you have learned to make some recommendations for a protective magnetic field.</p> <ul style="list-style-type: none"> <input type="checkbox"/> How will we know a magnetic field has been created? We can't see them, so what evidence is there that magnetic fields exist? <input type="checkbox"/> What kinds of factors affect the strength of magnetic fields? <ul style="list-style-type: none"> o What questions did you have to investigate to find out this information? <input type="checkbox"/> Research magnetic fields on different planets. Based on what you learned about the arrangement of objects and potential energy, how might the telescope be affected as it passes these different planets?
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