**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?*

**Overall Unit – All Tasks**

* Unit 2, Task Cards Student Version, Lift-Off and Tasks 1 through 4
* Culminating Project Student Task Card
* Project Organizer
* Projector with Audio (for video or images, whenever needed)

**Lift-Off Task (2 days)**

Per Student

* Task Card Student Version: Lift-Off
* Post-Its (Optional)
* Task Card Student Version: Culminating Project
* Project Organizer

Per Group

* Poster paper and markers

Whole Class

* Computer and Projector (for images)
* Poster paper and markers
* \*See Instructions in Lift-Off for other optional materials to use for the class concept map

**Task 1 (6 days)**

Per Student

* Task Card Student Version: Task 1
* Project Organizer

Per Station

* Station Cards 1 - 5: two - three per station
* Stations 1, 2, and 5: Computers/tablets (Make sure interactives/videos work)
* Station 3: Styrofoam ball with embedded toothpick and light source (ex: lamp)

Per Group

* Styrofoam Balls of varying size
* Skewers/Toothpicks
* Light sources of varying brightness
* Rubber band
* Marker
* Device with video capabilities

**Task 2 (4 days)**

Per Student

* Task Card Student Version: Task 2
* Project Organizer

Per Group

* Varied materials to make planet models, such as:
  + Clay
  + Styrofoam spheres
  + Cotton
  + Balloons
  + Construction Paper of different colors
  + Paint and Brushes
* String or Twine
* Rulers (with cm)
* Labels
* Markers

Whole Class

* Light source, such as a standing lamp
* Extension cord, if necessary

**Task 3 (5 days)**

Per Student

* Task Card Student Version: Task 3
* Project Organizer

Per Pair

* Computers or tablets

Per Group

* Computers or tablets
* Rope or string
* Labels (1 per group)
* Marker

Whole Class

* Computer and Projector, if modeling any of the simulations

**Task 4 (4.5 - 6.5 Days)**

Per Student

* Task Card Student Version: Task 4
* Project Organizer

Per Station

* Station Cards 1-4 (2 copies for each station)
* Station 1
  + 2 Bar magnets
  + Various objects of different materials, some magnetic and some not
* Station 2
  + Paper clip
  + Piece of Thread
  + Tape
  + Small bar or horseshoe magnet
* Station 3
  + Ziploc Bag
  + 3x5 index cards
  + Iron filings
  + Paper Clip
  + 2 Bar Magnets
* Station 4
  + 5 feet insulated copper wire
  + 6-volt battery
  + D-size battery
  + Large iron nail
  + Paper clips

Per Group

* All materials from the Explore (one set of all materials for each group)

Whole Class

* Projector and Computer

**Culminating Project (7-8 days)**

Per Group: Solar System Class Model

\*There are many different options of materials for students to build the planets for the class-wide scale model. We recommend use of any inexpensive, everyday objects to represent the different-sized planets. Students can even bring in materials from around their house! Some options of materials are below:

* Clay
* Spheres of different sizes (try a craft store for Styrofoam balls, plastic balls, etc.)
* Balloons
* Cotton
* Construction Paper of different colors
* Paint and Brushes
* String or Twine – needed to measure out distances from the sun
* Light Source (Large Lamp) – needed to represent the sun
* Rulers (with cm)
* Optional: magnets if they want to create a telescope model

Per Student: Pitch Presentation of Telescope Route

* Computers with presentation software
* Device with recording capabilities (Ex: phone, tablet, etc)
* Poster Paper
* Markers

**Unit 2 Pop-Out (3 days)**

Per Student

* Student Version: Unit 2 Pop-Out
* Unit 2, Pop-Out Scenario

Per Group

* Computer
* Video Camera