**Unit Essential Question:** *What are the effects of an asteroid collision and how can we prevent a future one?*

**Overall Unit – All Tasks**

* Unit 1, Task Cards Student Version, Lift-Off and Tasks 1 through 3
* 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

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

**Task 1 (5 days)**

Per Student

* Task Card Student Version: Task 1
* Project Organizer

Per Station

* Resource Cards 1 – 5 (2-3 copies per station)

**Task 2 (5 days)**

Per Student

* Task Card Student Version: Task 2
* Project Organizer

Per Group

* Stack of 40 pennies (Earth)
* Heavy marble or ball (asteroid *Etiam*)
* A track for *Etiam’s* trajectory (pipe insulation tubing, cut in half lengthwise)
* Risers (4 textbooks)
* Ruler
* String
* Balls of varying mass (Recommended: <http://www.arborsci.com/physics-balls>, but if not, use marbles of different size and mass)
* Foam
* Rubberbands
* Popsicle sticks
* Plastic spoons
* Tape

Per Pair

* Tablets/Computers
* Headphones (Optional)

Whole Class

* Projector and Speakers

**Task 3 (4-5 days)**

Per Student

* Task Card Student Version: Task 3
* Project Organizer

Per Group

* Resource Cards 1-3 (1 copy of each per group)
* Computers or Tablets (1 per group)

Whole Class

* 2 shallow pans or trays with edges
* Sand (to fill pans with)
* Two balls of different mass, but same size (we recommend a Styrofoam or wood ball and a steel ball – see the following website for examples: <http://www.arborsci.com/physics-balls>)
* Projector and Speakers

**Culminating Project (11 days)**

Per Group: News Segment

* Same materials from Task 2 to run tests of all solutions
* Poster Paper or Computer Graphics Program (Ex: Google Drawing)
* Color pencils/pens or computer graphics
* Video camera or phone with recording capabilities
* Computers

Per Student: News Article

* Paper or Online platform for writing newspaper article
* Computers (Optional)

**Unit 1 Pop-Out (2.5 days)**

Per Student

* Student Version: Unit 1 Pop-Out
* Case Studies (Assigned By Group)

Per Group

* Presentation materials: computers OR posters and markers