***Man of Steel***

(2013, Rated PG-13)

EQ: What factors affect the way gravity acts on objects?

[Superman's First Flight](https://www.youtube.com/watch?v=VlINHSnUx9k)

Synopsis: With the imminent destruction of Krypton, their home planet, Jor-El (Russell Crowe) and his wife seek to preserve their race by sending their infant son to Earth. The child's spacecraft lands at the farm of Jonathan (Kevin Costner) and Martha (Diane Lane) Kent, who name him Clark and raise him as their own son. Though his extraordinary abilities have led to the adult Clark (Henry Cavill) living on the fringe of society, he finds he must become a hero to save those he loves from a dire threat.

Cinema Science Focus: Kal-El is the “last son of Krypton.” He comes to Earth and finds that he has powers beyond those of humans including super strength and the ability to fly in defiance of Earth’s gravity. It’s explained to us that the differences in magnitude (and color) of Krypton’s sun versus our own are the cause of these abilities. But let’s assume that everything we know about gravitation is true and that the radiation of energy from the nearest sun has no relevance in this case. Develop a lesson, investigation, or demonstration that models the effects that gravitation has on objects. Make an argument that there are legitimate scientific ways to overcome gravity in order to theoretically “leap tall buildings in a single bound” or even fly, as Superman can.

Concepts to Master:

* Force
* Gravity
* Gravitation
* Distance and Gravity
* Mass and Gravity
* Newton’s Law of Gravitation

Vocabulary: mass, weight, gravity, gravitation

Possible Resources:

* TedEd “If Superpowers Were Real: Flight” (Joy Lin)
* Scientific American “10 Sciencey Stats on the Man of Steel” (by Kyle Hill)
* CK-12.org “Newton’s Law of Gravity” Read
* CK-12.org “Why You Weigh Less at the Equator” Real World
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

