

Topic: Blast the Meteor

Teacher Information

Time Allowance

45 min.

Background

This game is similar to the game "Battleship" but uses a map grid. Each set of two players should sit facing each other with a low visual shield (like a book) propped up between them. After the students have played the original game provided, allow them to create their own meteor fields and play again. Number and size of meteors may vary. Encourage the students to decide on boundaries for these.

Materials

meteor game sheets
graph paper
pencils

Preparations

1. Instruct students on how to read a graph with X and Y coordinates.
2. Explain importance of using a graph to locate stars.
3. Discuss the relationship between a map of Earth and map of stars.
4. Pass out student page(s) and materials.
5. Allow students to complete activities.

Blast the Meteor

Student Worksheet

Player A

1														
2														
3														
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18														
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	1	2	3	4	5	6	7	8	9	10	11	12	13	14

Blast the Meteor

Student Worksheet

Player B

1														
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Star Wars: Battle of Visual Magnitude Teacher Page

Background:

When astronomers discuss the brightness of stars, planets and meteors, they often refer to "magnitudes." Magnitudes were introduced by the ancient Greeks who looked at the sky and divided the stars they saw into six brightness groupings. They ranked the brightest stars as 1st magnitude, and the dimmest stars as 6th magnitude. Stars of intermediate brightness were ranked 2nd, 3rd, 4th, or 5th magnitude, where larger numbers denote dimmer stars.

This method of describing the brightness of stars and planets is still in use today. Of course, the ancient Greeks had no telescopes, and so could only see stars as dim as 6th magnitude. Today we can see stars with ground-based telescopes fainter than 22nd magnitude. That's a dim star! There are also objects in the sky brighter than 1st magnitude. For example the star Vega has a magnitude of zero. The planet Jupiter has a magnitude of -3. The full moon has a magnitude of -13, and the Sun comes in at a blazing -27! Negative magnitudes mean that the object is very bright.

When astronomers observe a meteor, they try to estimate its brightness by comparing it to other objects in the sky. If a meteor is as bright as Jupiter, it has a magnitude of -3. If it's as bright as the full moon and casts shadows on the ground, it has a magnitude of -13.

The magnitude scale is logarithmic. So is the human eye. To the ancient Greeks, who looked at the stars with their eyes and nothing else, a sixth magnitude star appeared to be 6 times dimmer than a 1st magnitude star. Nowadays astronomers can use precision instruments to measure the brightness of stars. They've discovered that if two stars differ by one magnitude, then the brighter star is actually 2.5 times more intense than the dimmer one. Even though the magnitude scale is not a linear one, it's very useful when you're observing the sky with the naked eye.

This is a highly motivational means of familiarizing students with an intrinsically confusing but important scale.

Materials:

activity sheet for each student
set of cards for each pair of students

Preparation:

1. copy card page on cardstock, then cut apart (optional: color and/or laminate cards)
2. Distribute the activity sheet and read the description of the activity.
3. Pass out the cards and review the values.
4. Do a sample "battle."
5. Let them play!

Student Name_____

Team Name_____

Star War: Battle of Visual Magnitudes

Scientists say that the Yukon fireball had a visual magnitude of -26. Huh? That means it was nearly as bright as the Sun. "Magnitudes" are a system that astronomers use to describe the brightness of stars, planets, and meteors.

Depending on the time of year, one of the brightest stars in the night sky is Arcturus. It gets a rating of 0 (zero!). That is bright. The North Star, Polaris, is not as bright. It is rated 2. A very faint meteor that can only be barely seen with the naked eye (no telescopes!) gets a rating of 5. The bright Sun shines down at magnitude -27.

Get the idea? Smaller numbers mean brighter stars. Negative numbers mean really bright stars!

You can become familiar with the magnitude scale by using the "Star Wars" cards to play war! You will need to pay close attention to the scale. A star with a negative magnitude is much brighter than a zero or a two!

Play the same way that war is played. If you have trouble with a partner that is trying to wait until you flip your card before he/she flips hers, try this; both of you chant "One, Two, Peekaboo!" and both flip the cards as you say peekaboo. The person who flips the brightest card takes possession of both cards. If you both flip the same magnitude, each person lays one card face down and then flips a second card face up, the winner takes all six cards. Have fun!