

Journey into Space: Gravity, Orbits, and Collisions

Asteroid Chart

Like any careful scientist, you'll want to record your results along the way. Use the chart below to keep track of what happens to the asteroid each time you change its speed and angle.

Write "C" if the asteroid collides with the Sun's fiery surface, "O" if the asteroid gets pulled into the orbit around the Sun, and "E" in the box if the asteroid escapes from the solar system and shoots out into space. Each time, watch to see if the asteroid intersects with Earth's orbit. If it does, add an "X" in the box next to the outcome.

Then record if the asteroid crosses Earth's orbit for each combination.

	Slower V=22 km/s	Faster V=26 km/s
1°		
10°		
45°/30°		

Now think about what happened each time you changed the asteroid's angle and velocity. Can you explain why these results occurred?



SCIENCE EXPLORATIONS

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After you complete the challenges, answer these questions to think about what you learned.

1. Describe the effect of velocity on an asteroid's path. Imagine two asteroids approach a massive object at the same or similar angles, but one is traveling much faster.

How do you think their paths might be different?

2. Describe the effect of angle on an asteroid's path. Imagine two asteroids approach a massive object at the same speed, but from two different angles.

How do you think their paths might be different?

3. To learn more about the force of gravity, refer to the Scientist's Top Tips. Imagine the Sun doubled in mass.

How would that affect its gravitational pull?

What effect would a more massive Sun have on asteroids in its path?