Lesson 5: Orbits and Gravity in Space

MARBLE ORBIT IN A BOWL

Week 5

INVESTIGATION QUESTION

What two forces must work together to keep an object in orbit?

HYPOTHESIS

Hint: try writing it as "If _____, then _____, because _____."

DATA TABLE — Marble Speed vs. Orbit Height

Trial	Push (light / med / hard)	Orbit Location (low / mid / high)	Time Stayed (sec)	Notes

GRAPH — Push Strength vs. Orbit Height

Plot your results. Label both axes.

↑ Orbit Height

← Push Strength (light / medium / hard) →

MODEL COMPARISON

What does each part of the marble model represent in real space?

In the Marble Model…	This Represents in Real Space…

ANALYSIS

1. What happened as the marble slowed down? What does this tell you about a real satellite slowing down?

2. An orbit requires two things working together at the same time. What are they?

3. Math: If you weigh 90 lbs on Earth, what would you weigh on the Moon (1/6 gravity)? _____ lbs Your mass would be: (the same / different) — circle one.

CONCLUSION

If gravity disappeared, an orbiting object would:

If forward motion stopped, an orbiting object would: