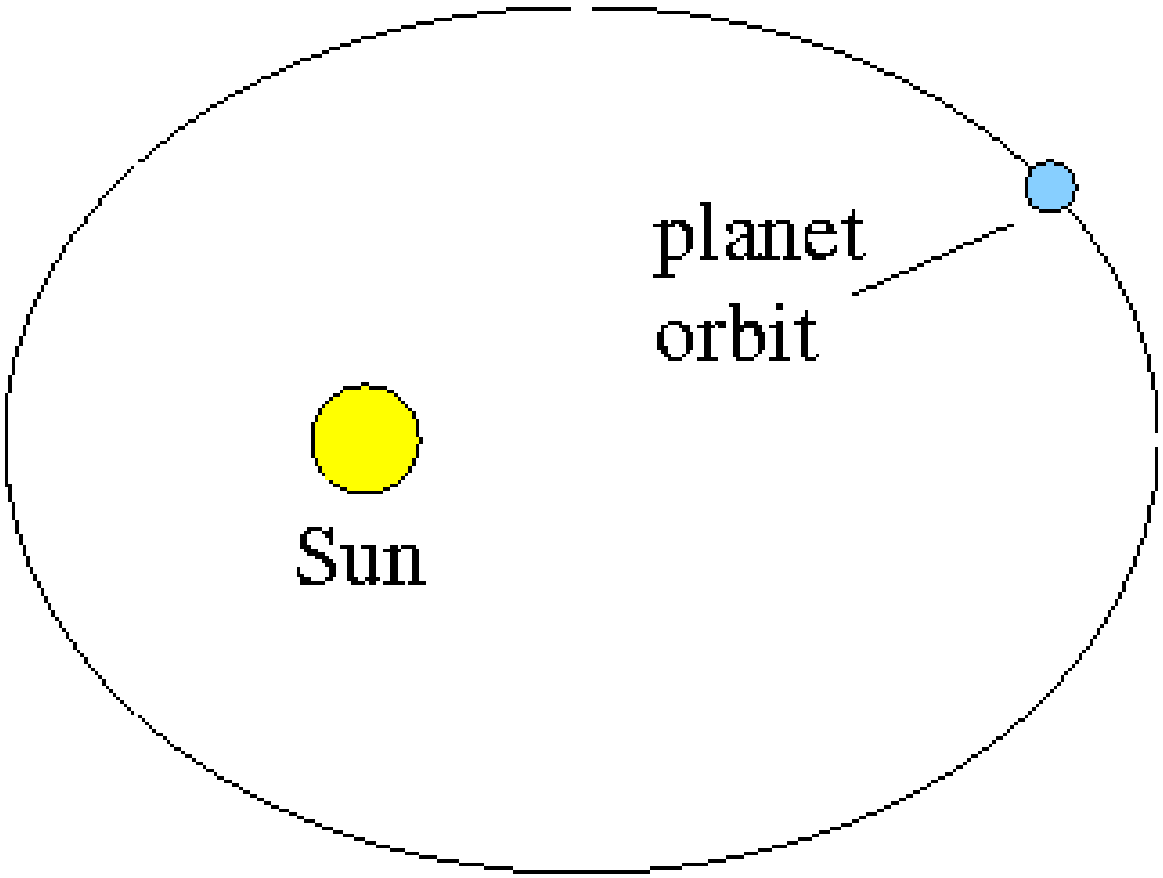
Section 4: Orbits and Effects

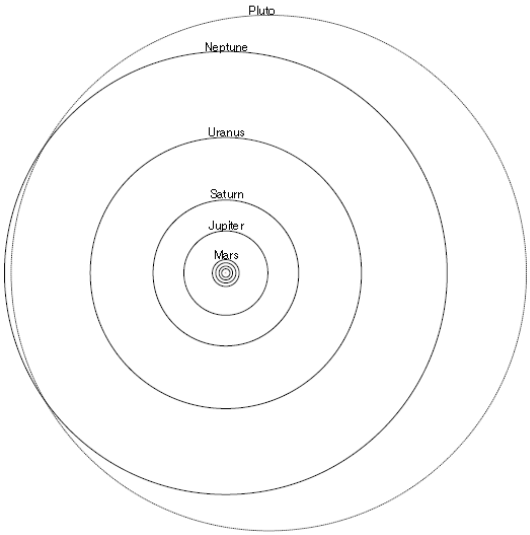


Section 4 Question: What effects does the shape of an orbit have on planets' characteristics?

What do you See?
(Picture)

What do you think?

This is a diagram of the Solar System. Draw and label one example orbit for a meteoroid, an asteroid, a KBO and a comet.



What do you think now?

Ellipse Drawings:

Focus Question A: What is the shape of the orbits of the planets in our solar system around the Sun?

Predictions:

Data:

Ellipse	Major Axis Length (L) (cm)	Distance between Foci (d) (cm)	Eccentricity E = d/L
AB			
CD			
EF			
GH			
IJ			

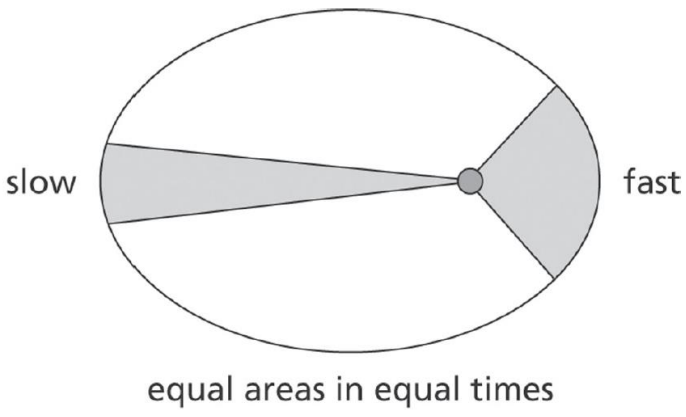
Explanation:

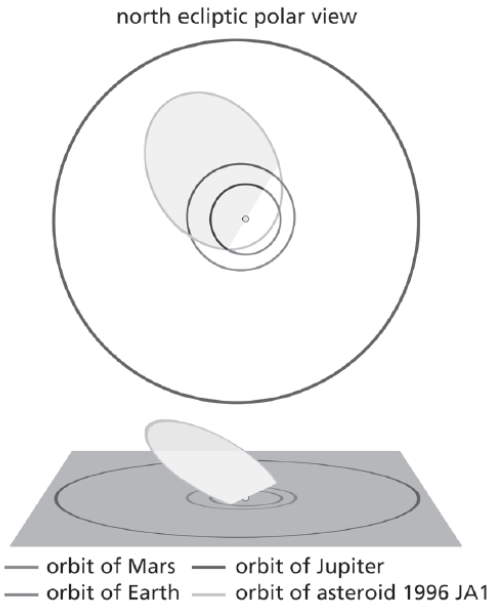
Focus Question B: How might changes in the shape of Earth's orbit affect the climate over long periods of time?
Predictions:
Observations:
Claim:
Evidence:

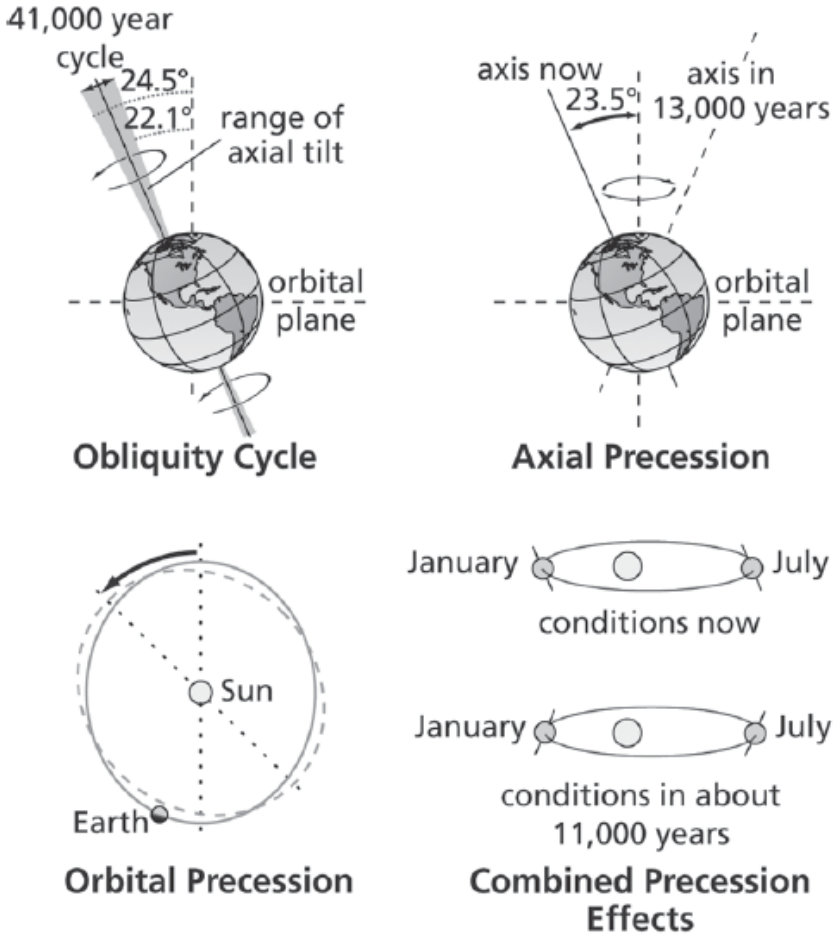
RETURN TO WDYTN

DIGGING DEEPER

Kepler's Laws	
• Kepler's three laws describe the orbits of astronomical objects. • Comets and asteroids have orbits that are highly elliptical and can be inclined relative to earth's orbit. • Earth's orbit (and orbits of most planets in our solar system are nearly circular)	In your own words, describe each of Kepler's Laws Kepler's first law Kepler's second law Kepler's third law





Other Orbital Properties	
• Obliquity and precession characteristics of Earth's orbit changes over long time scales. • Changes in precession affect the relationship between Earth's axis and the Sun. • 10,000 years from now winter will arrive on June 21st.	

Chapter 1, Section 4 E.B.C.
Orbits and Effects

Name:_____
Period:_____

Question (2)		
Claim 1 (2)		
A. Supporting Evidence (3)	B. Supporting Evidence (3)	
Claim 2 (2)		
A. Supporting Evidence (3)	B. Supporting Evidence (3)	
Analysis (6)		

	Claim *A statement or conclusion that answers the original question/problem.*	**Evidence** *Scientific data that supports the claim. The data needs to be appropriate and sufficient to support the claim.*	**Analysis** *A justification that connects the evidence to the claims. It shows why the data counts as evidence by using appropriate and sufficient scientific principles and vocabulary*.
0	Does not make a claim, or makes an inaccurate claim.	Does not provide evidence, or only provides inaccurate or vague evidence.	Does not provide an analysis, or only provides an irrelevant analysis.
1	Makes an accurate but vague or incomplete claim.	Provides vague evidence and does not include specific data.	Repeats evidence and links it to claim, but does not include specific scientific principles.
2	Makes accurate and complete claim.	Provides correct evidence but does not include specific data.	Connects all evidence to the claims using scientific principles or vocabulary but not both.
3		Provides correct evidence and includes specific data.	Connects all evidence to both claims using scientific principles and vocabulary.

CHECKING UP: Page 49, 1 through 4 (2 points each)

____
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1.

2.

3.

4.

On the line GH on the ellipse you created for your investigate, draw Earth at its closest position to the Sun (label this perihelion) and its farthest position away from the Sun (label this aphelion). At which position is the Earth traveling the fastest in its orbit? The slowest? Explain. (5 points)