HOW TO EVALUATE THEORIES

This summarizes the info on page 123 of the ITB flip-book (but interactive search feature lists it as page 133).

A theory about something that occurred in the past can never be “proven” because we can’t go back in time and make observations. The best we can do is use what we know about the present to make logical guesses, or “inferences” about what might have happened in the past.
Since we can’t “prove” a theory, we can only say that we have <u>more</u> or <u>less</u> confidence that a theory is true. What makes us have more confidence in one theory over another?

1) ________________________________

Does the theory violate any known physical laws? (observable laws such as gravity, motion, heat transfer, etc.)

2) ________________________________

How many starting assumptions are needed?
How many NEW questions arise as a result of the theory?

3) ________________________________

This is often said to be the “currency” of science. How will the theory hold up when new information comes along? The more shocking or bizarre the prediction seems, the more punch it will have when it comes true.

**BONUS: If the theory can shed light on mysteries that lie outside the bounds of the initial proposal, the theory gains even more credibility. (Ex: rotation of the atmosphere of Venus, pg. 128)

PREDICTIONS USING INITIAL CONDITIONS

	Hydroplate Theory	C/G evolution
We might find pockets of water under the crust of the earth.	______	______
We should expect to find heavier elements closer to the core.	______	______
The temperature should become consistently hotter the deeper we go.	______	______
Radioactivity will be evenly distributed throughout the planet.	______	______
We should find a noticeable boundary line between crust and mantle.	______	______
We should find approx. the same # of craters in all geological layers.	______	______
Craters will be found only on the surface.	______	______
	______	______