Thanks! If you would like to complete this problem again, you can leave and come back to this page, or use your browser's refresh button.

The question was:

You've done some thinking about difficulty, discrimination and guessing levels. In this problem, you'll put these together as you match world geography questions with item response curves.

Note: This is not how test-makers assign curves to questions in practice – we'll learn a little bit more about that later on. However, a matching exercise can help us think about how guessing level, difficulty, and discrimination are reflected in features of the curve.

For the purposes of this exercise, assume that test takers are more likely to know which country has more earthquakes than why earthquakes occur.

Hints:

- Think about the guessing level. If a multiple choice question has 3 answers, what's the chance of getting it correct if you guess at random? How would that be reflected in the item response curve?
- Once you narrow down the possible curves due to guessing level, consider the relative difficulty of the questions. Are some harder than others? How would that affect the curve?
- Now think about discrimination. For example, suppose we wanted to discriminate between people with slightly above average ability and slightly below average ability. What would a question that was more discriminating look like? How would this be reflected in the item response curve?

Match each of the 5 IRT curves below with the following problems:

1) Why do certain regions experience more earthquakes?

- Hot, dry weather in the region, combined with the presence of desert or ocean, causes conditions for earthquakes.
- The presence of a fault, a meeting of two different tectonic plates of the earth, causes conditions for earthquakes.
- It's a matter of chance; earthquakes occur at random in all geographic regions.

2) Which country has historically experienced more earthquakes?

- Japan
- Germany
- Brazil

3) According to modern convention, how many oceans are there in the world?

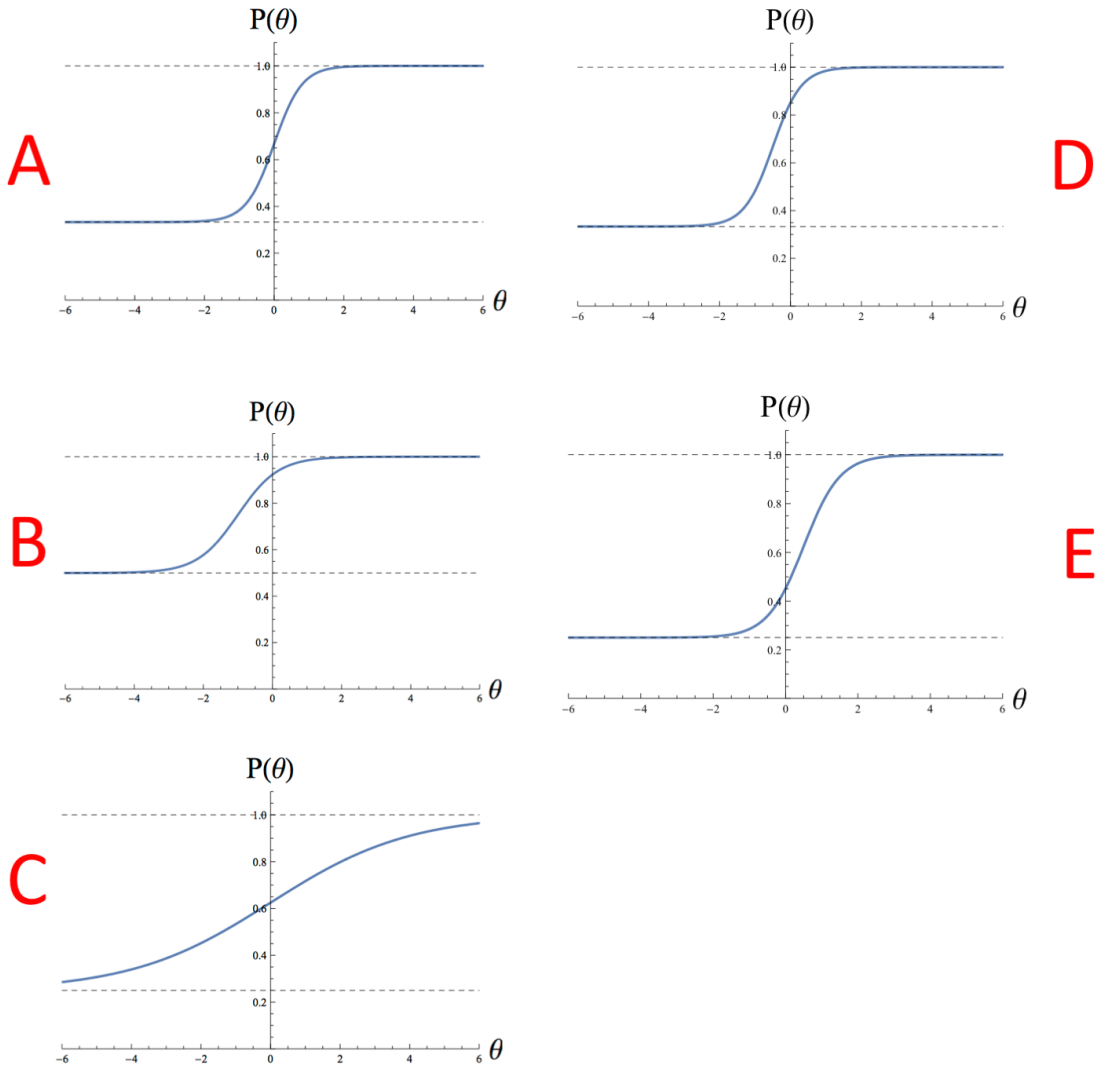
- 3
- 4
- 5
- 6

4) How many planets are closer to the sun than the earth is?

- 1
- 2
- 3
- 4

5) True or False: Volcanos only exist on dry land.

- True
- False



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The IRT curve on Graph A best matches problem...

4) How many planets are closer to the sun than the earth is?

The IRT curve on Graph B best matches problem...
You Selected:

5) True or False: Volcanoes only exist on dry land.

✔ Correct

The IRT curve on Graph C best matches problem...
You Selected:

2) Which country has historically experienced more earthquakes?

✖ Incorrect

The IRT curve on Graph D best matches problem...
You Selected:

1) Why do certain regions experience more earthquakes?

✖ Incorrect

The IRT curve on Graph E best matches problem...
You Selected:

3) According to modern convention, how many oceans are there in the world?

✔ Correct

The correct pairings of graphs and questions are: A-1, B-5, C-4, D-2, E-3. This is discussed in the next video.

We can look at guessing level to narrow down the possible choices for a question.

For example, Question 5 has 2 choices only, so the guessing level is 1/2. There is only one graph with an asymptote at y = 1/2, choice B.

Questions 1 and 2 have 3 choices, so the guessing level is 1/3. This means they must correspond to graphs A and D since only those graphs have a horizontal asymptote at y = 1/3.
If we assume someone is more likely to know where earthquakes occur than why they occur, then Question 2 is easier than Question 1 so the corresponding item response curve for Question 2 should be to the left of the one for Question 1. Thus Question 1 matches with A and Question 2 matches with D.

Questions 3 and 4 have 4 choices, so the guessing level is 1/4. This means they must correspond to graphs A and D since only those graphs have a horizontal asymptote at y = 1/4.
Since we are interested in world geography knowledge, Question 3 about oceans is likely to be more discriminating than Question 4 about planets. Thus we expect the curve for Question 3 to increase more steeply, as in graph E.