

Model Detective

Read closely to find what a science model can and cannot show.

5.1.e.ii "developing and using models identify limitations of models"

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline what a model can help people study, circle each limitation of a model, and number two ways scientists can improve or use models wisely.

Testing a Moon Model

- ① Scientists often use models to study things that are too small, large, slow, or dangerous to examine directly. A model can be an object, drawing, computer program, or set of ideas. For example, a foam ball model of the Moon, Earth, and Sun can help a class test why the Moon seems to change shape during a month.
- ② The foam balls are useful because students can move them and see how positions affect the lighted part of the Moon. Yet the balls may not be the right sizes or distances from one another. The model also cannot show clouds, the bright sky, or a person's exact view from Earth. These limits matter when students explain what people actually see.
- ③ Scientists state a model's limits so others know how to use it wisely. They may add labels, change the scale, or use a second model for a different question. A computer model can show measured sizes and distances, but it still may leave out weather or local conditions. Comparing a model with observations helps scientists decide which claims the model can support.

2 ANSWER WITH EVIDENCE Use the passage

1 What question can the foam ball model help a class test?

2 Name two limits of the foam ball model.

3 Why do the limits of a model matter?

4 According to the passage, what are two ways scientists can improve a model or use models wisely?

3 YOUR TURN Your own words

Choose a science topic you want to study. Describe a model you could use, explain one thing it could help you learn, and state two limits of that model.

PART 1 • READ AND MARK

Underline what a model can help people study, circle each limitation of a model, and number two ways scientists can improve or use models wisely. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What question can the foam ball model help a class test?	It can help test why the Moon seems to change shape during a month.
2	Name two limits of the foam ball model.	The balls may not have the correct sizes or distances. The model also cannot show clouds, the bright sky, or a person's exact view from Earth.
3	Why do the limits of a model matter?	Limits matter because students need to explain what people actually see and know which claims the model can support.
4	According to the passage, what are two ways scientists can improve a model or use models wisely?	Scientists can add labels, change the scale, use a second model for a different question, or compare a model with observations.

PART 3 • YOUR TURN (SAMPLE ANSWER)

To study erosion, I could use a tray of soil and pour water over it. This model could help me see how moving water carries soil downhill. It would not show a real hill's plants or weather, and the tray would be much smaller than a real landscape.

Accept equivalent evidence-based answers from the passage for Questions 1 through 4. For the open task, accept any reasonable science model that includes a use and two realistic limits.