INNER, ROCKY PLANETS IN ACTION STUDENT PAGE

Are you ready to be an astronomer? You have been chosen to help others better understand the inner, rocky planets of our solar system.

Your challenge is to make the inner, rocky planets of your model move around the Sun using your Ozobot! Like many scientists, you will follow a process to explore, observe, and answer questions along the way.

1. FOCUS QUESTION:

How can a model teach others about the revolution of the inner, rocky planets around the Sun?

2. BACKGROUND KNOWLEDGE:

A. The names of the inner, rocky planets are

_____

_____

B. _____ has the _____ revolution because it is closest to the sun.

C. _____ has a revolution slower than

_____ but faster than _____.

D. _____ has a revolution slower than

_____ but faster than _____.

E. _____ has the _____ revolution because it is the furthest rocky planet from the sun.

3. HYPOTHESIS:

Think about what you predict your model will show others about the rocky planets. My model will show

_____

_____

_____

4. TEST:

Use a timer to track how long it takes your bot to move all the way around the Sun as each planet.

- First, put your bot on the Color Code that best demonstrates the speed the planet moves around the Sun.
- Next, put your bot in the dotted circle on the path that best demonstrates the location of the planet from the Sun and start the timer.
- Stop the timer when the bot gets back to the dotted circle. Record your results in the Data table on the back.

DATA:

Name of Planet	Color Code Used	Path Used	Time of Revolution *(minutes/seconds)*

Speed Color Codes: Slow R BK R | Cruise G BK G | Fast B BK B

BONUS:

Work with friends to show all four planets in action! Put a different bot on each dotted circle at the same time.

5. CONCLUSION:

Did your model accurately show what you learned about the revolution of the inner, rocky planets?

_____

Why or why not? _____

_____

_____

6. MODEL ANALYSIS:

- How much faster did Mercury revolve around the Sun than Venus? _____
- How much faster did Mercury revolve around the Sun than Earth? _____
- How much faster did Venus revolve around the Sun than Earth? _____
- How much faster did Venus revolve around the Sun than Mars? _____
- How much faster did Earth revolve around the Sun than Mars?

  _____

How does a model help us learn about the solar system?

_____

_____

_____

_____

INNER, ROCKY PLANETS IN ACTION TEACHER GUIDE

MATERIALS NEEDED:

- Ozobot
- Timer
- Solar System Model
- Inner, Rocky Planets in Action Activity Sheet

OBJECTIVES:

- Students will follow the scientific process to explain how models can help others learn about a specific topic.
- Students will program their Ozobot with Color Codes to demonstrate how all four rocky planets revolve around the Sun.

VOCABULARY:

Model – a representation of an object or process.
Scientific Process – a set of steps used to gain knowledge. The steps are: identify a focus question, gather information, make a hypothesis, complete an experiment, look at the data, and make a conclusion.
Color Codes – a group of colored blocks found along a black line that instruct Ozobot to perform certain actions.

TEACHER TIPS:

- Students should work in groups of 2–4.
- Jobs can be assigned and switched for each planet. Example jobs are: Bot Handler, Timer, Recorder, and Test Checker.
- Groups only need one Ozobot to complete the tests for each planet.
- The board should be used on a flat surface.
- Larger sized planets may need to move at slower speeds.
- After the tests are complete, groups can use four Ozobots to see all the rocky planets revolve at the same time.

Are you ready to be an astronomer? You have been chosen to help others better understand the inner, rocky planets of our solar system.

Your challenge is to make the inner, rocky planets of your model move around the Sun using your Ozobot! Like many scientists, you will follow a process to explore, observe, and answer questions along the way.

1. FOCUS QUESTION:

How can a model teach others about the revolution of the inner, rocky planets around the Sun?

2. BACKGROUND KNOWLEDGE:

A. The names of the inner, rocky planets are ***Mercury, Venus, Earth, and Mars.***
B. ***Mercury*** has the ***fastest*** revolution because it is closest to the sun.
C. ***Venus*** has a revolution slower than ***Mercury*** but faster than ***Earth***.
D. ***Earth*** has a revolution slower than ***Venus*** but faster than ***Mars***.
E. ***Mars*** has the ***slowest*** revolution because it is the furthest rocky planet from the sun.

3. HYPOTHESIS:

Think about what you predict your model will show others about the rocky planets. My model will show ***which rocky planet has the slowest revolution, which rocky planet has the fastest revolution, and how the four different revolutions compare.***

4. TEST:

Use a timer to track how long it takes your bot to move all the way around the Sun as each planet.

- First, run your bot along the line with the Color Code that best demonstrates the speed the planet moves around the Sun.
- Next, put your bot in the dotted circle on the path that best demonstrates the location of the planet from the Sun and start the timer.
- Stop the timer when the bot gets back to the dotted circle. Record your results in the Data table on the back.

DATA:

Name of Planet	Color Code Used	Path Used	Time of Revolution *(minutes/seconds)*
Mercury	***Fast***	***1.***	***9 seconds***
Venus	***Cruise***	***2.***	***26 seconds***
Earth	***Cruise***	***3.***	***42 seconds***
Mars	***Slow***	***4.***	***84 seconds***

BONUS:

Work with friends to show all four planets in action! Put a different bot on each dotted circle at the same time.

5. CONCLUSION:

Did your model accurately show what you learned about the revolution of the inner, rocky planets? ***Yes***

Why or why not? ***My model showed that Mercury has the fastest revolution and Mars revolves around the Sun slower than Earth.***

6. MODEL ANALYSIS:

- How much faster did Mercury revolve around the Sun than Venus? ***17 seconds***
- How much faster did Mercury revolve around the Sun than Earth? ***33 seconds***
- How much faster did Venus revolve around the Sun than Earth? ***16 seconds***
- How much faster did Venus revolve around the Sun than Mars? ***58 seconds***
- How much faster did Earth revolve around the Sun than Mars? ***42 seconds***

How does a model help us learn about the solar system?

A model helps to see how the planets in the solar system move around the sun since our solar system is too large to observe at one time and each planet takes too long to complete a revolution in real time.