**W**

**2K**

.

scientific

**Science Practice:** Describe how scientific investigations lead to

.

* Identify questions that can be answered through scientific

.

* Demonstrate how scientific questions are

By the end of this lesson, you should be able to:

**Lesson Objectives**

**Words to Know**

*Fill in this table as you work through the lesson. You may also use the glossary to help you.*

|  |
| --- |
| a question that is based on and is |
|  |
| scientific question |

**?**

**Lesson Question**

**Slide**

. . . ?

* I wonder

does that work?

•

do I have to do that?

•

is that?

•

.

**Everyone Asks Questions**

Most questions are based on

**2**

.

that can be

* leads to a

in knowledge.

* addresses a

answer.

* has an

focus.

* has a

A good scientific question:

and is

**Characteristics of a Scientific Question**

: A question that is based on

**Slide**

**?**

**Has it been**

**enough?**

**Is it**

**will you answer the question?**

**I wonder . . .**

**Anyone Can Ask Scientific Questions**

**REAL-WORLD CONNECTION**

*Complete the graphic*.

**2**

**5**

**Nonscientific Questions**

*Underline the word or words in each question that makes it nonscientific.*

Can ghosts move objects? Which animal is the best animal? Whom should you vote for?

Does positive thinking make people healthier?

**Slide**

**5**

# Identify a Nonscientific Question

*Read each question. Place a check in the “yes” column if the question indicates* something is nonscientific. Check “no” if the question indicates something is scientific.

|  |  |  |
| --- | --- | --- |
|  | **Yes** | **No** |
| Does the question refer to the supernatural? |  |  |
| Is the question based on opinion? |  |  |
| Does the question rely on moral or social values? |  |  |
| Does the question ask about phenomena that can be measured? |  |  |

## Answering these questions can help you identify questions.

**5**

, field

* Test in lab
* Use

**Scientific Questions Are Testable**

Studies

What does the whale shark eat? Do the remoras harm the shark?

**Slide**

**Distinguish between Scientific and Nonscientific Questions**

**REAL-WORLD CONNECTION**

What questions can you ask about a whale shark and remoras?

What does the whale shark eat? Do the remoras harm the shark?

These questions are

questions.

Does the whale shark like the remoras? What color is a whale shark?

These questions are

questions.

**Slide**

?

resistant to

that are

* How can DNA be used to produce

?

* How are different groups of people

be improved?

* How can

diseases be improved?

* How can the diagnosis of

.

and identified

**Some Questions Are Based on Investigations**

**REAL-WORLD CONNECTION**

The Human Genome Project identified the sequence of base pairs in human

**8**

**10**

of crimes?

the

* How can DNA be used to

who disappeared?

* How can DNA be used to

criminals accurately?

* How can DNA be used to

**The Human Genome Project Led to Questions in Forensics**

How do questions about the natural world become investigations?

**Lesson Question**

**Slide**

**?**

.

* leads to new

.

* can lead to a

.

* Is

by scientific investigations.

* is

.

* is a question that is based on

**Review: Asking Scientific Questions**

A scientific question:

**Answer**

**2**

**Slide**

.

* is about phenomena that cannot be

events.

* refers to

.

* is based on moral

.

* is based

**Review: Differentiating between Scientific and Nonscientific**

**Questions**

A nonscientific question cannot be answered using a scientific investigation

because it:

**2**

.

* new questions can lead to new

.

* the results of an investigation lead to new

often base their work on other scientists’ work.

•

because:

Scientific questions build scientific

**Review: Investigations Often Lead to New Questions**

*Use this space to write any questions or thoughts about this lesson.*