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Warm-Up | Formulating Scientific Questions

Lesson Objectives

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

- Demonstrate how scientific questions are _____.
- Identify questions that can be answered through scientific _____.

Science Practice: Describe how scientific investigations lead to _____ scientific _____.

Words to Know

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

scientific question	a question that is based on _____ and is _____

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Lesson Question

Everyone Asks Questions

Most questions are based on _____.

- _____ is that?
- _____ do I have to do that?
- _____ does that work?
- I wonder _____ . . . ?

Characteristics of a Scientific Question

_____ : A question that is based on _____ and is _____

A good scientific question:

- has a _____ focus.
- has an _____ answer.
- addresses a _____ in knowledge.
- leads to a _____ that can be _____ .

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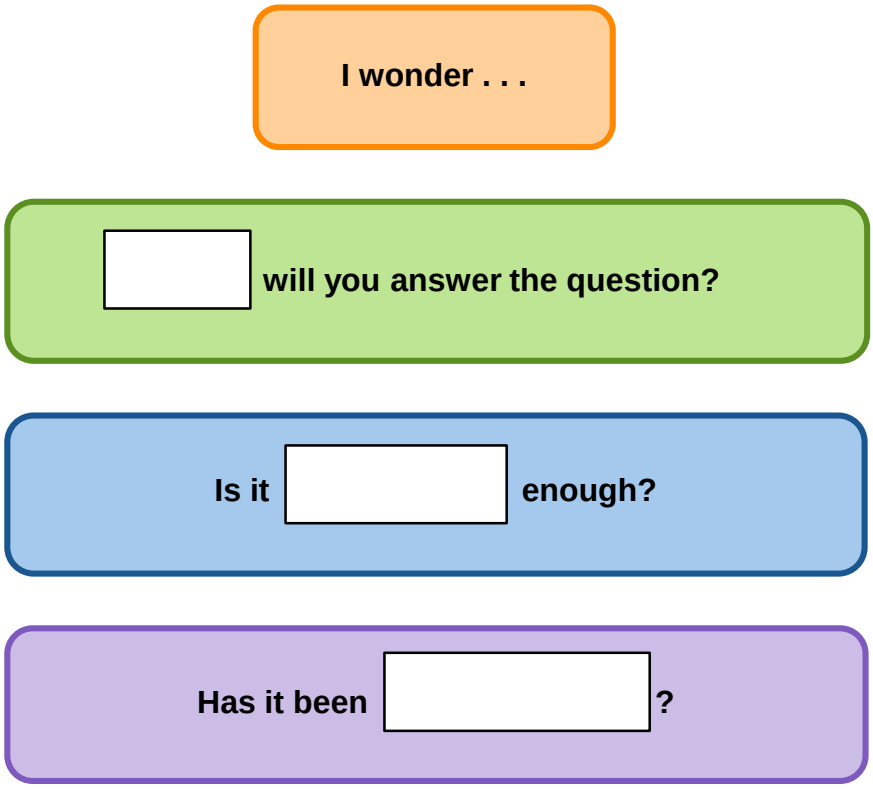
Anyone Can Ask Scientific Questions

REAL-WORLD CONNECTION

Complete the graphic.



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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?

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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.

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Distinguish between Scientific and Nonscientific Questions

REAL-WORLD CONNECTION

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

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

→ These questions are [ ] questions.

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

→ These questions are [ ] questions.

Scientific Questions Are Testable

- Use [ ]
- Test in lab [ ], field [ ]

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

→ [ ] Studies

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Some Questions Are Based on Investigations

REAL-WORLD CONNECTION

The Human Genome Project identified the sequence of base pairs in human [ ] and identified [ ].

- How can the diagnosis of [ ] diseases be improved?
- How can [ ] be improved?
- How are different groups of people [ ]?
- How can DNA be used to produce [ ] that are resistant to [ ]?

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The Human Genome Project Led to Questions in Forensics

- How can DNA be used to [ ] criminals accurately?
- How can DNA be used to [ ] who disappeared?
- How can DNA be used to [ ] the [ ] of crimes?

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Summary | Formulating Scientific Questions

Lesson Question

How do questions about the natural world become investigations?

Answer

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Review: Asking Scientific Questions

A scientific question:

- is a question that is based on _____.
- is _____ by scientific investigations.
- Is _____.
- can lead to a _____.
- leads to new _____.

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Review: Differentiating between Scientific and Nonscientific Questions

A nonscientific question cannot be answered using a scientific investigation because it:

- is based _____ .
- is based on moral _____ .
- refers to _____ events.
- is about phenomena that cannot be _____ .

Review: Investigations Often Lead to New Questions

Scientific questions build scientific _____ because:

- _____ often base their work on other scientists' work.
- the results of an investigation lead to new _____ .
- new questions can lead to new _____ .

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Summary | Formulating Scientific Questions

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

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