



**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 <input type="text"/>	and is
	<input type="text"/>	



### Lesson Question

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#### 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.*

I wonder . . .

will you answer the question?

Is it  enough?Has it been  ?

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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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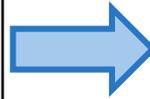
5

### Distinguish between Scientific and Nonscientific Questions

#### REAL-WORLD CONNECTION

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

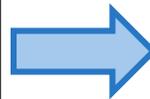
Does the whale shark like the remoras?  
What color is a whale shark?



These questions are

questions.

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



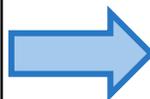
These questions are

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?

## Summary

## Formulating Scientific Questions

**Lesson  
Question**

How do questions about the natural world become investigations?

**Answer**

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**2****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 .



# Summary

## Formulating Scientific Questions

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