**Words to Know**

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

**Lesson Question**

**?**

**W**

**2K**

.

using

explanations.

**Evaluate** scientific arguments

**Analyze**

**Lesson Goals**

|  |  |
| --- | --- |
| claim | a statement saying that what is presented is |
| peer review | the by which the quality of a scientificresearch paper is by other scientists in the same field |


# Science vs. Pseudoscience

**Slide**

.

* based on multiple

experiment.

* from a

that is:

Scientific claims are

.

is

saying that what is presented

is a

A

**Scientific Claims**

**2**

supporting the claim?

is the information

and

* How

of the claim?

* What is the

?

* What is the

answer these questions.

, you should be able to

To determine if a scientific claim is

**Evaluation of Claims**

**Slide**

**2**

# Claims about Caffeine: Example

**Step 1:** Identify what is being stated as a fact.

* Claim: Caffeine improves mental and motor

.

**Step 2:** Determine the importance of this claim.

* Importance: People drink caffeinated drinks to help them in the morning or to alertness.

**Step 3:** Ask: how accurate and consistent is the information supporting this claim?

* Accuracy and consistency: This study was from a university research study. The study shows for all ten subjects, the average time to fit

the beads on the pegs . This shows that caffeine a person’s fine motor skills.

If the information supporting the claim is factual from a reliable reference, you

know that the information is and .

**Slide**

**4**

# Scientific Claims

Assessing a claim requires you to look at its .

* How will the information ?

This information could be used by manufacturers or by people who want to avoid BPA.

* Who may from the claim?

Someone who can benefit financially may use the data to help promote a . In this example, manufacturers who produce containers that do not contain BPA could sell lots of new containers.

On the other hand, it may also be used by an organization that wants to promote the well-being of fetuses, infants, and children and

them from being exposed to

substances.

* How does the claim to you?

If it doesn’t relate to you, you may the claim. However, if you drink from containers that are made using BPA, you may want to pay closer to this.

**Slide**

source.

from a

by

as well, as it is supported

The claim is probably

.

*National Institute of Health*. The information is

was published by the *US Department of Health and Human Services,*

a scientific publication aimed at general audiences. In this case, the story

A story from a celebrity magazine might be quite different from a story in

?

did you read the information? Is the source

•

**4**

**7**

of the profession

* Helps ensure
* Allows others in the field to judge

is one way to ensure that data can be trusted.

collect data.

used to

The quality of a scientific claim depends on the

from a controlled experiment.

by data that are based on multiple trials

Scientific claims are

**Quality of Scientific Claims**

**7**

* Direct

conclusions

•

of

* Identify

the standards of the field

•

**Reasons for Peer Review**

Accept

**Slide**

**in that field**

**paper**

**Paper becomes part of the**

**Journal**

**reject it, or return it for**

**revisions**

**for**

Reject

**accept paper,**

**Journal distributes paper to**

**Author submits**

**to journal**

(Cycle may repeat)

**The Peer Review Process**

**Slide**

.

scientific claim is

by multiple tests, the evidence supporting a

source and the results are

* If data are from a

on the subject?

* Is the source an

of the source?

* What is the

did the data come from?

•

**Sources of Data**

**11**

|  |  |
| --- | --- |
| **Reliable vs. Unreliable Sources****Reliable Sources*** scientific

journals* Encyclopedias
* Nonfiction books written by
* websites

and publications | **Unreliable Sources*** websites and

blogs* Online encyclopedias edited by the
* Magazines and newspaper
* Books written by
* Advertisements
 |

How are scientific explanations evaluated?

**Lesson Question**

**Slide**

**?**

by peer review

* Can be

.

* Quality depends on

is reliable.

, the evidence supporting a scientific claim

by

and the results are validated

If data are from a

**Review: Key Concepts**

**Answer**

**2**

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