**?**

**W**

**2K**

and reproducibility.

.

**Evaluate** data for

**Distinguish** accuracy from

notation.

repetition.

in standard form and scientific

and

**Write**

**Differentiate** between

designs.

**Analyze**

**Lesson Goals**

**Words to Know**

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

**Lesson Question**

|  |  |
| --- | --- |
|  | the act of performing a task several times |
|  | to be based in fact |
|  | the ability of a process to be repeated in the same manner by another individual |


# Science

Among the many elements of science is that it:

* relies on a process.
* involves observation and .
* involves the of information.
* is by evidence.
* is updated as new are made.

**2**

in the results.

* Increases

.

It is used in science because it:

* reduces

.

is the act of performing a task

**Repetition**

results.

The repeated process should produce the

**Replication**

is the ability of a process to be repeated in the manner by another individual.

**Slide**

results.

* Good design and repeatability ensure

results.

experiments and

* Other scientists can

.

* Scientists communicate their results in a particular

.

**Scientific Design**

* Different scientific designs follow a

**Slide**

 accuracy

E. the ability of data to be duplicated

D. a simplified way to write numbers that are very large or very small

 reproducibility

C. the closeness of measured values to accepted values

 precision

B. the information obtained through a scientific investigation

 scientific notation

A. the closeness of measured values to other measured values

 data

**Words to Know**

*Write the letter of the definition next to the matching word as you work through the lesson. You may use the glossary to help you.*

**5**

and

* Must be

a conclusion

to answer a question or support

* Can be used as

**Results of Scientific Investigation**

are the information obtained through a scientific investigation.

**Slide**

# Accuracy vs. Precision

is the closeness of measured values to the

value.

is the closeness of measured values to values.

**5**



|  |  |  |
| --- | --- | --- |
|  |  |  |
| Accurate precise | Precise accurate | accurate precise |

**5**

**7**

**10**

to some degree.

* Experimental conditions may

results are expected to recur.

* The

is the ability of data to be duplicated.

**Reproducibility**

that are very large or very small.

Scientific notation is written as a product of a number between 1 and 10 and a

.

way to write numbers

is a

**Scientific Notation**

**Slide**

**Accuracy and Precision: Example**

|  |
| --- |
| **Accuracy** |
| **Correct Value: 10** |
| 9, 11 | accurate |
| 7, 15 | accurate |

|  |
| --- |
| **Precision** |
| **Correct Value: 10** |
| 9, 10, 10, 11, 12 | precise |
| 5, 7, 19, 15, 10 | precise |

**Slide**

appropriate power of 10.

* The power of 10 is equal to the number of spaces the

was moved.

Write 7,200,000,000 in scientific notation:

by the

* Place the decimal point in the space, and

needed to move the

to get a number between 1 and 10.

* Count the

**Large Numbers in Scientific Notation: Example**

How is the number 7,200,000,000 expressed in scientific notation?

**10**

**12**

Write 0.000063 in scientific notation:

.

the appropriate power of 10.

* The power of 10 will be

by

in the space, and

* Place the

needed to move the

to get a number between 1 and 10.

* Count the

**Small Numbers in Scientific Notation: Example**

How is the number 0.000063 expressed in scientific notation?

**Slide**

# Scientific Notation to Standard Notation: Example

**12**

If the power of 10 is :

* Move the decimal to the .
* Add the appropriate number of .
	+ Write 8.1 × 103 in standard notation.

If the power of 10 is :

* Move the decimal to the .
* Add the number of zeroes.
	+ Write 4.7 × 10−8 in standard notation.

How are data evaluated?

**Lesson Question**

**Slide**

**?**

is the ability of data to be duplicated.

•

* Accuracy is the closeness of measured values to the

value.

* Precision is the closeness of measured values to other

values.

results

* Should produce the
* is the ability of a process

in the same manner by another individual.

in results

* is the act of

several times.

* + Reduces mistakes and increases

to ensure valid results.

**Review: Key Concept**

**GOOD SCIENTIFIC DESIGN**

Good scientific designs allow for

**Answer**

**2**

**Slide**

* Examples
	+ 75,200 = 7.52 × 104
	+ 0.000063 = 6.3 × 10−5

of 10.

and a

and

of a number between

that are very large or very small.

* Written as the

way to write

Scientific notation is a

**Review: Key Concept Scientific Notation**

**SCIENTIFIC NOTATION**

**2**

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