

Intro to Physical Science

Section 3: Methods of Science & Technology

Technology has had a significant impact on society and has helped make solving everyday problems easier. **Technology** is the application of science to solve problems. For example, the invention of cars, buses, and airplanes has made traveling easier and helped shape the modern world. New technology emerges as a result of **technological design**. This process is used to develop new technologies relying on evidence and reasoning.

Steps of the **technological design** process:

1. Identify the problem
2. Research the problem
3. Generate solutions
4. Select the best solution
5. Create a model
6. Test the model
7. Refine and retest the model
8. Share results

All technological designs have physical and social limitations or constraints due to natural laws, materials used, ease of use, cost, and safety.

Scientific work often requires **calculations** to solve formulas or to convert to units. For example, this can be seen on a thermometer when you convert Celsius to Fahrenheit.

Scientific notation is a way of writing very large or small numbers using exponents.

Example: $a = 10^b$

a represents a decimal number

b represents an exponent, or power, of 10

Steps to convert to and from scientific notation:

1. Move the decimal point left or right until the last nonzero digit
2. Count how many places you move the decimal point
3. If the decimal moved left, b is positive; decimal moved right b is negative

Examples: 500 written with scientific notation is 5.0×10^2

0.05 written with scientific notation is 5.0×10^{-2}

Review:

1. What are constraints?
2. Explain how the technological design process works.