



From the:
**National Science Education
Standards -- Physical Science
Content Standards
Grades Five to Eight**

The following is a list of the National Science Content Standards for Physical Science -- Grades Five to Eight, and the chapters in Exploration Education's Intermediate Physical Science curriculum that support these standards.



*Covered in
Exploration
Education's
Intermediate
Level
Physical Science
Curriculum*

**Physical Science
CONTENT STANDARD B:**
As a result of their activities in grades 5-8, all students should develop an understanding of

- Properties and changes of properties in matter
- Motions and forces
- Transfer of energy



PROPERTIES AND CHANGES OF PROPERTIES IN MATTER

- A substance has characteristic properties, such as density, a boiling point, and solubility, all of which are independent of the amount of the sample. A mixture of substances often can be separated into the original substances using one or more of the characteristic properties.
- Substances react chemically in characteristic ways with other substances to form new substances (compounds) with different characteristic properties. In chemical reactions, the total mass is conserved. Substances often are placed in categories or groups if they react in similar ways; metals is an example of such a group.
- Chemical elements do not break down during normal laboratory reactions involving such treatments as heating, exposure to electric current, or reaction with acids. There are more than 100 known elements that combine in a multitude of ways to produce compounds, which account for the living and nonliving substances that we encounter.

*Covered in EE's
Curriculum*

5.2, 5.4, 19.2, 20.1,
22.1, 23.1, 23.2

22.2, 24.1, 24.4, 25.2,
25.3, 25.4, 25.5, 26.1,
26.4, 27.1

20.2, 20.4, 20.5, 21.4,
21.5, 22.1, 22.2, 22.4,
27.2

MOTIONS AND FORCES

- The motion of an object can be described by its position, direction of motion, and speed. That motion can be measured and represented on a graph.
- An object that is not being subjected to a force will continue to move at a constant speed and in a straight line.
- If more than one force acts on an object along a straight line, then the forces will reinforce or cancel one another, depending on their direction and magnitude. Unbalanced forces will cause changes in the speed or direction of an object's motion.

*Covered in EE's
Curriculum*

3.1, 3.2, 3.3, 3.4, 3.5

1.2, 1.3, 1.4, 4.1, 4.2

1.2, 1.3, 1.4, 2.1, 2.2,
2.3, 2.4, 2.5, 4.4, 4.5

TRANSFER OF ENERGY

- Energy is a property of many substances and is associated with heat, light, electricity, mechanical motion, sound, nuclei, and the nature of a chemical. Energy is transferred in many ways.
- Heat moves in predictable ways, flowing from warmer objects to cooler ones, until both reach the same temperature.
- Light interacts with matter by transmission (including refraction), absorption, or scattering (including reflection). To see an object, light from that object--emitted by or scattered from it--must enter the eye.
- Electrical circuits provide a means of transferring electrical energy when heat, light, sound, and chemical changes are produced.
- In most chemical and nuclear reactions, energy is transferred into or out of a system. Heat, light, mechanical motion, or electricity might all be involved in such transfers.
- The sun is a major source of energy for changes on the earth's surface. The sun loses energy by emitting light. A tiny fraction of that light reaches the earth, transferring energy from the sun to the earth. The sun's energy arrives as light with a range of wavelengths, consisting of visible light, infrared, and ultraviolet radiation.

*Covered in EE's
Curriculum*

6.1, 6.2, 7.4, 7.5, 9.1,
9.2

21.1, 21.2, 21.3, 21.4,
21.5, 22.4, 22.5, 23.5,

32.1, 32.2, 32.3, 33.1,
33.2, 33.3, 33.4, 33.5,
34.1, 34.2, 34.3, 34.5,
35.2, 36.1, 36.2

10.1, 10.2, 12.1, 12.2,
13.4, 13.5, 14.2, 14.4,
14.5, 17.2, 17.3, 18.2,
31.2

22.4, 22.5, 26.1, 26.2,
27.1, 27.2, 28.2, 28.4,
30.2

8.4, 19.4, 32.1, 32.2,
32.3, 32.4, 33.1, 33.4,
33.5, 35.1, 35.2, 35.4