Social Studies

Social studies class becomes easier when you understand how your textbook's words, pictures, and maps work together to give you information. Following these tips can make you a better reader of social studies lessons. As you read the tips, look at the sample lesson on the right-hand page.

A First look at any **headlines** or **subheads** on the page. These give you an idea of what each section covers.

B Make sure you know the meaning of any boldfaced or underlined **vocabulary terms.** These terms often appear on tests.

C Carefully read the text and think about **ways the information is organized.** Social studies books are full of sequence, comparison and contrast, and organization by geographic location.

D Look closely at **graphics,** such as **maps, charts,** and **illustrations.** Think about how the graphic and the text are related.

E Read any **study tips** in the margins or at the bottom of the page. These let you check your understanding as you read.

|| MARK IT UP > Carefully read the textbook page at right. Use the information from the page and from the tips above to answer these questions.

1. Circle the main idea covered on this page.

2. Place a check mark next to important terms covered on this page.

3. Give three examples of languages descended from the original Indo-European language.

_____

_____

_____

4. What can historians learn by studying how languages spread? _____

_____

5. Underline the definition of Slavic-speakers.

Indo-European Migrations

MAIN IDEA	WHY IT MATTERS NOW
Indo-European peoples migrated into Europe, India, and Southwest Asia and interacted with peoples living there.	Half the people living today speak languages that stem from the original Indo-European languages.

C **SETTING THE STAGE** In India and in Mesopotamia, civilizations first developed along lush river valleys. Even as large cities such as Mohenjo-Daro and Harappa declined, agriculture and small urban communities flourished. These wealthy river valleys attracted seminomadic tribes. These peoples may have left their own homelands because of politics or changes in the environment.

Indo-Europeans Migrate

E **Background**
This steppe area included parts of present-day Romania, Moldova, Ukraine, southern Russia, and Kazakhstan.

The **Indo-Europeans** were a group of seminomadic peoples who came from the **steppes**—dry grasslands that stretched north of the Caucasus (KAW·kuh·suhs). The Caucasus are the mountains between the Black and Caspian seas. (See the map on pages 54–55.) These primarily pastoral people herded cattle, sheep, and goats. The Indo-Europeans also tamed horses and rode into battle in light, two-wheeled chariots. They lived in tribes that spoke forms of a language that we call Indo-European.

The Indo-European Language Family The languages of the Indo-Europeans were the ancestors of many of the modern languages of Europe, Southwest Asia, and South Asia. English, Spanish, Persian, and Hindi all trace their origins back to different forms of the original Indo-European language.

B **Vocabulary**
Slavic-speakers: speakers of a language that developed into most of today's eastern European languages.

Historians can actually tell where different Indo-European tribes settled by the languages they spoke. Some Slavic-speakers moved north and west. Others, who spoke early Celtic, Germanic, and Italic languages, moved west through Europe. Still others, Greek- and Persian-speakers, went south. The Aryans (AIR·ee·uhnz), who spoke an early form of Sanskrit, penetrated the mountain passes of the Hindu Kush and entered India.

Notice the similarities of words within the Indo-European family of languages.

D **Language Family Resemblances**

English	mother	father	daughter	new	six
Sanskrit	mātár	pitár	duhitá	návas	sát
Persian	muhdáhr	puhdáhr	dukhtáhr	now	shahsh
Spanish	madre	padre	hija	nuevo	seis
German	Mutter	Vater	Tochter	neu	sechs

An Unexplained Migration No one is quite sure why these people left their homelands in the steppes. The lands where their animals grazed may have dried up. Their human or animal population may have grown too large to feed. They may also have tried to escape from invaders, or from an outbreak of disease.

Whatever the reason, Indo-European nomads began to migrate outward in all directions between 1700 and 1200 B.C. These **migrations**, movements of a people from one region to another, did not happen all at once, but in waves over a long period of time.

Science

Reading a science textbook becomes easier when you understand how the explanations, drawings, and special terms work together. Use the strategies below to help you better understand your science textbook. Look at the examples on the opposite page as you read each strategy in this list.

A Preview the **title** and **headings** on the page to see what scientific concepts will be covered.

B Read the **key idea, objectives,** or **focus.** These items summarize the lesson and establish a purpose for your reading.

C Look for **boldfaced** and **italicized** words that appear in the text. Look for **definitions** of those words.

D Carefully examine any **pictures** or **diagrams.** Read the **captions** and evaluate how the graphics help to illustrate and explain the text.

E Many science textbooks discuss **scientific concepts** in terms of **everyday events** or **experiences.** Look for these places and consider how they improve your understanding.

▌■ MARK IT UP ▷ Use the sample science page and the tips above to help you answer the following questions.

1. What main idea will be covered in this lesson? Where on the page did you find this information? _____

   _____

   _____

2. Circle the key term *phytoplankton* and underline its definition.

3. What are three factors that affect the survival of phytoplankton? _____

   _____

   _____

4. What is one fact given in the photograph and caption? _____

   _____

A Ocean Life

The diversity of life found in the oceans is extraordinary. Scientists estimate that the oceans harbor as many as 10 million species, many of which have yet to be discovered. The life forms range from microscopic animals and plants, such as plankton, to the largest known animal, the blue whale.

Marine Plant Life

Sunlight is vital to ocean life. Like land plants, most sea plants need sunlight to grow. However, as you learned in Section 22.3, sunlight penetration decreases rapidly with depth. Only within the mixed layer is there enough sunlight for most plants to carry out photosynthesis.

While many types of plants live in the ocean's mixed layer, one of the most important groups is the microscopic phytoplankton. **Phytoplankton** are typically single-celled plants that float freely in the ocean's surface waters. One of the most abundant kind of phytoplankton is the **diatom**, a **C** one-celled plant with a delicate, thin shell made of silica. Phytoplankton, including diatoms, make up the base of the ocean's food chain and are the primary energy source for the marine ecosystem.

When large numbers of phytoplankton concentrate in one area, they can change the color of the water. Such formations are called *blooms*. Large blooms are visible from space and can help scientists predict where to find groups of life forms.

The survival of phytoplankton populations depends on factors like ocean currents, temperature, and the amount of nutrients available. Areas with large phytoplankton populations can support large numbers of microscopic marine animals, which eat the phytoplankton. During photosynthesis, the phytoplankton consume the animals' carbon dioxide waste and then give off oxygen, which the animals then use to survive.

When diatoms die, their shells settle to the sea bottom and become part of the sediment. Marine geologists can use shells preserved in this way to trace changes in diatom populations, to determine the age of the sediment, and even to hypothesize the water temperature at the time the diatoms lived.
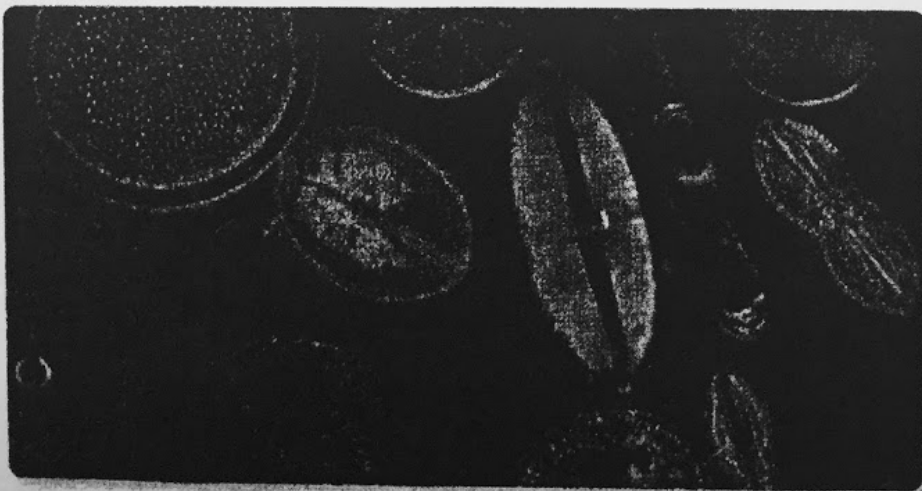
22.4

i VISUALIZATIONS
CLASSZONE.COM
Discover areas of highest plant productivity in the ocean.
Keycode: ES2203

D

DIATOMS This microscope photograph shows that one-celled diatoms are remarkably diverse. (Magnification is approximately 150X.)

Mathematics

Reading in mathematics is different from reading in history, literature, or science. Use the strategies below to help you better understand your mathematics textbook. Look at the example on the opposite page as you read each strategy in the list.

A Preview the **title** and **headings** on the page to see what math concepts will be covered.

B Find and read the **goals** or **objectives** for the lesson. These will tell you the most important points to know.

C Read **explanations** carefully. Sometimes a concept is explained in more than one way to make sure you understand it.

D Look for **special features**, such as vocabulary tips or real-life problems. They provide more help or information.

E Study any **worked-out solutions** to sample problems. These are the key to understanding how to do the homework assignment.

∥MARK IT UP ▷ Use the sample math page and the strategies above to help you answer the following questions.

1. Circle the title of the lesson.

2. Place a check mark by the learning goals for this lesson.

3. Underline an explanation of the distributive property.

4. Draw a box around the text that shows the four versions of the distributive property.

5. What does the worked-out solution show you how to do? _____

_____

_____

_____

2.6

The Distributive Property

GOAL 1 USING THE DISTRIBUTIVE PROPERTY

To multiply 3(68) mentally, you could think of 3(68) as

$$3(60 + 8) = 3(60) + 3(8) = 180 + 24 = 204.$$
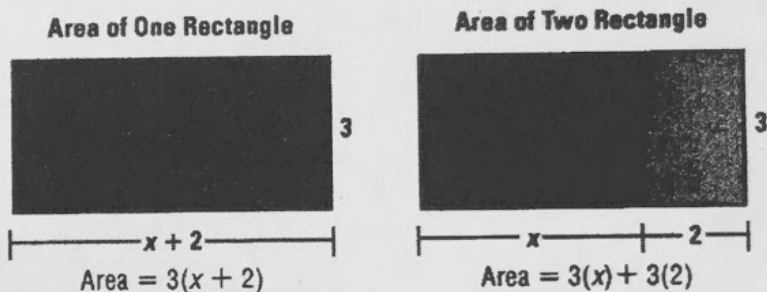
This is an example of the *distributive property*.

The distributive property is a very important algebraic property. Before discussing **C** the property, study an example that suggests why the property is true.

EXAMPLE 1 *Using an Area Model*

Find the area of a rectangle whose width is 3 and whose length is $x + 2$.

E **SOLUTION**

You can find the area in two ways.

Area of One Rectangle	Area of Two Rectangle

3

3

$x + 2$
Area $= 3(x + 2)$

x ── 2
Area $= 3(x) + 3(2)$

▶ Because both ways produce the same area, the following statement is true.

$$3(x + 2) = 3(x) + 3(2)$$

C Example 1 suggests the **distributive property.** In the equation above, the factor 3 is *distributed* to each term of the sum $(x + 2)$. There are four versions of the distributive property, as follows.

THE DISTRIBUTIVE PROPERTY

The product of a and $(b + c)$:

$a(b + c) = ab + ac$ Example: $5(x + 2) = 5x + 10$

$(b + c)a = ba + ca$ Example: $(x + 4)8 = 8x + 32$

The product of a and $(b - c)$:

$a(b - c) = ab - ac$ Example: $4(x - 7) = 4x - 28$

$(b - c)a = ba - ca$ Example: $(x - 5)9 = 9x - 45$