

# Weathering

## Chapter 8



# The Big Idea

**Weathering, erosion, and deposition shape Earth's surface.**

## Lesson 1: Weathering

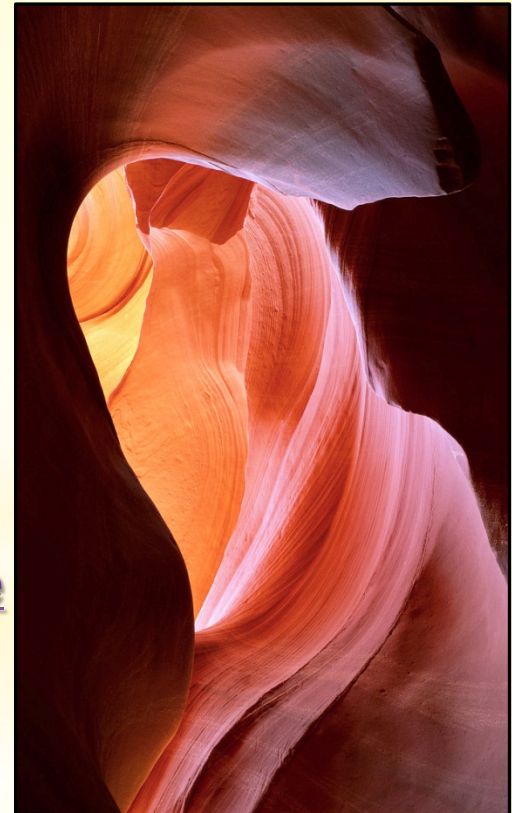
**Rocks exposed at Earth's surface are broken down into sediment and soils by the action of weathering.**

## Lesson 2: Erosion and Deposition

**Movement of rock and soil are natural occurrences caused by specific geological conditions.**

## Lesson 3: Reshaping the California Landscape

**The geology of California is expressed as mountains, deserts, valleys, and shorelines. These are natural physical features of Earth's surface.**





# **Lesson 1: Weathering**

**Rocks exposed at Earth's surface are broken down into sediments and soils by the action of weathering.**

**What you'll learn:**

- **Compare and contrast chemical and physical weathering.**
- **Describe weathering actions.**
- **Explain the effects of weathering.**
- **Determine the roles of humans and living things in weathering.**

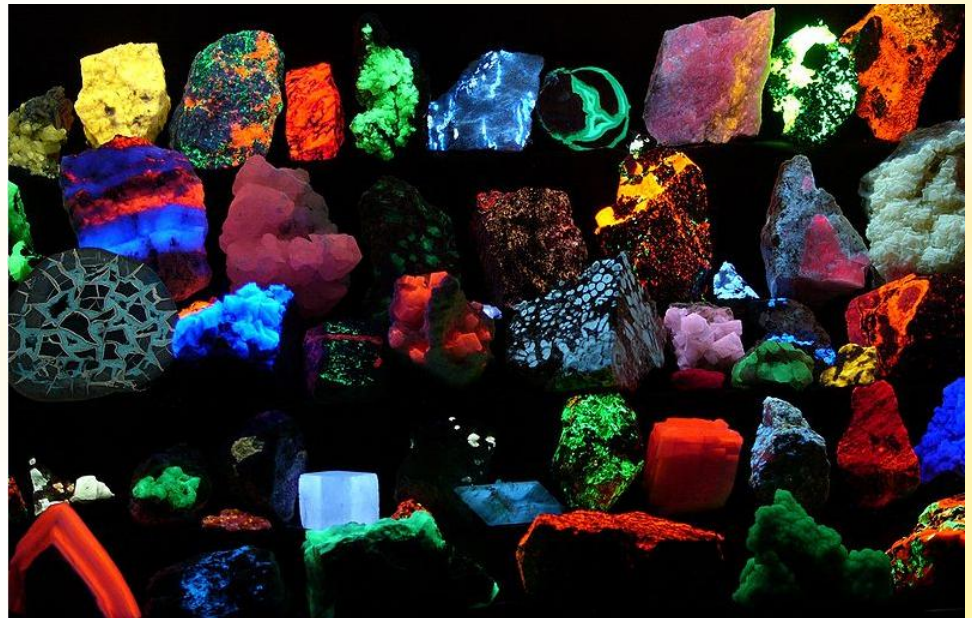
## **So What?!**

**Everything around us is affected by weathering – the roads, our homes, and the land we live on.**

# Review Vocabulary

mineral

**Naturally occurring, inorganic solid that has a definite chemical composition and an orderly structure.**





# New Vocabulary

Soil

**Mixture of weathered rock, minerals, and organic matter**

Chemical  
Weathering

**Breakdown of rocks at Earth's surface from exposure to water and gases in the atmosphere.**

Weathering

**Destructive process that breaks down and changes rocks**



# New Vocabulary

## Frost wedging

**Process that occurs when water freezes, expands, and melts into the cracks of rocks.**



## Physical weathering

**Breaking of rock into smaller pieces without changing its mineral composition.**





# Academic Vocabulary

**Contact**     A union or junction of surfaces

**\* When slightly acidic rainwater comes in contact with rock, it reacts.**



**Figure 3** Chemical reactions with atmospheric elements cause metals to corrode.

# What is Weathering?

Organize information by listing four agents of weathering..

Water; moving particles along stream beds

Wind; moving particles against each other and wearing away

**Agents of Weathering**

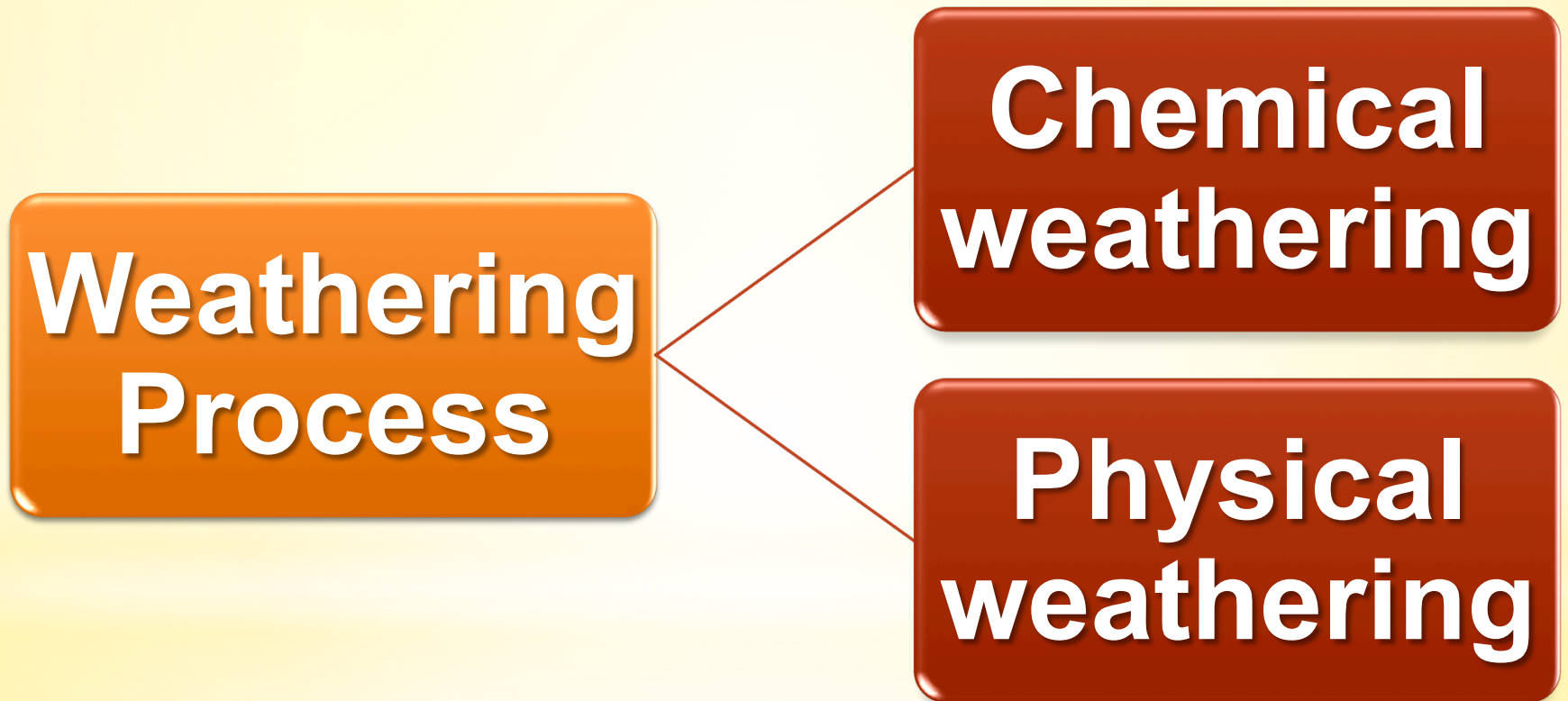
Ice; breaking rock by wedging action, in glaciers

Gravity; making particles fall down into valleys



# What is Weathering?

Classify two types of weathering processes.



# Chemical Weathering

Outline information about chemical weathering.

**I. Definition:** process in which water or gases in the atmosphere change the chemical makeup of rock.

## **II. Causes**

**A. Water dissolving minerals**

**B. Carbonic acid**

**C. Sulfur dioxide in rain**

**D. Oxidation**



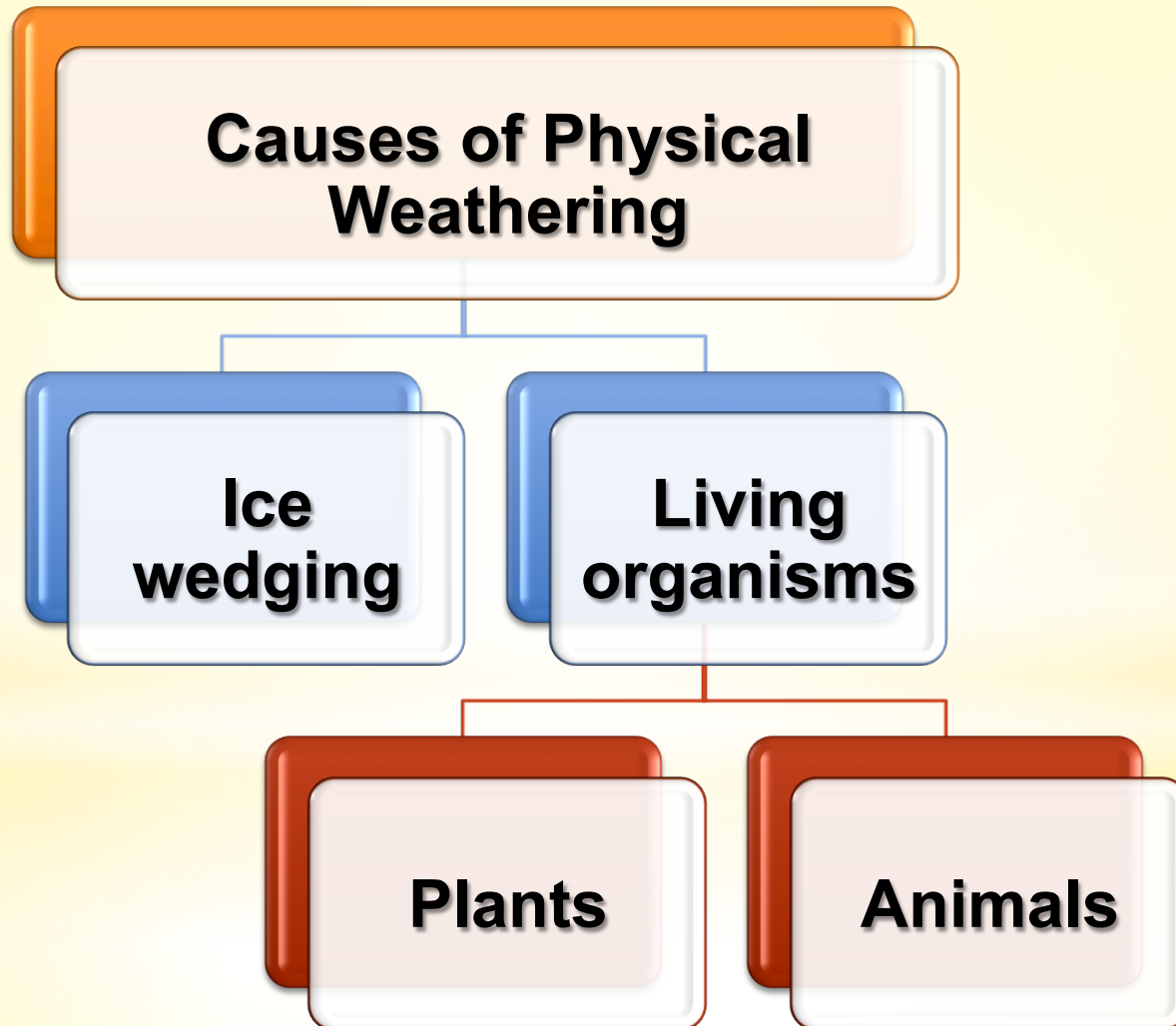
# Summarize it!

## Summarize the main idea of the above section.



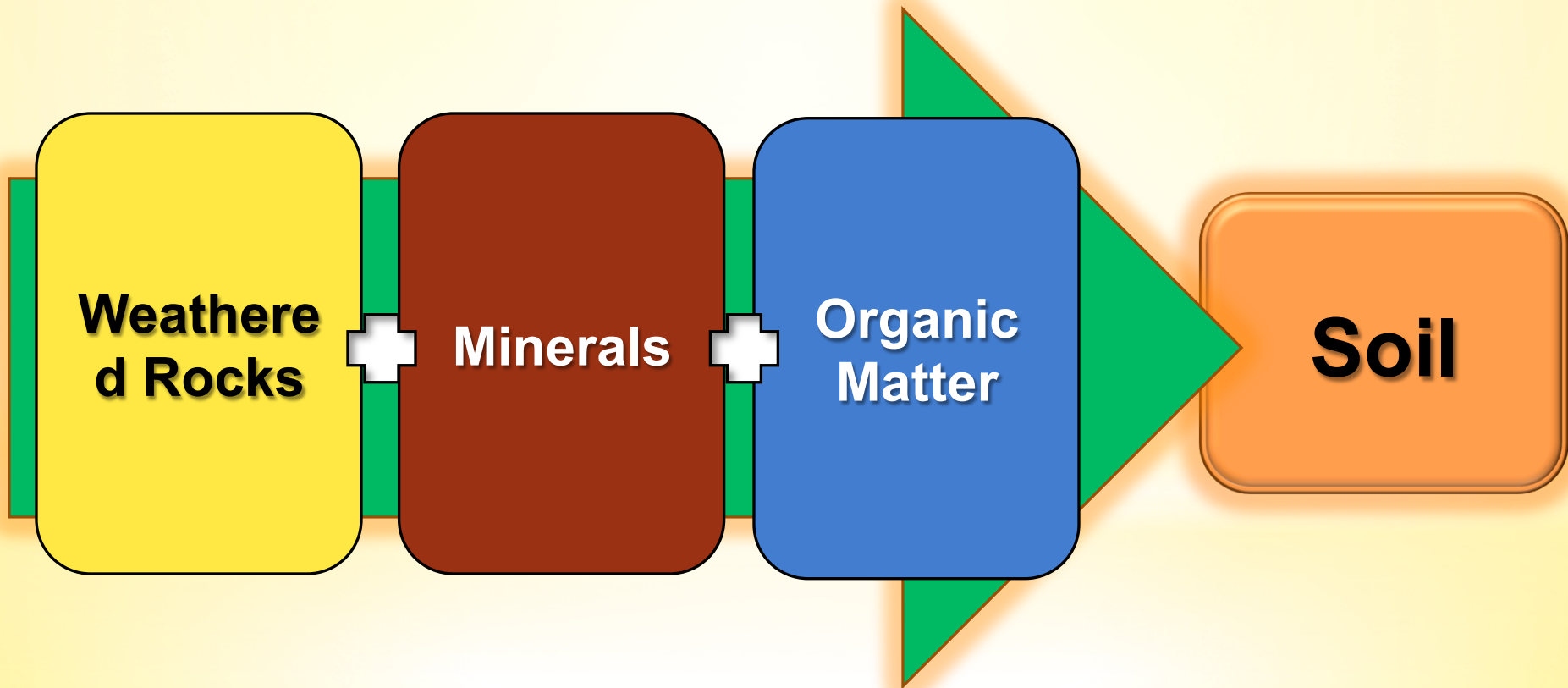
# Physical Weathering

Identify major causes of physical weathering.



# Soil Formation

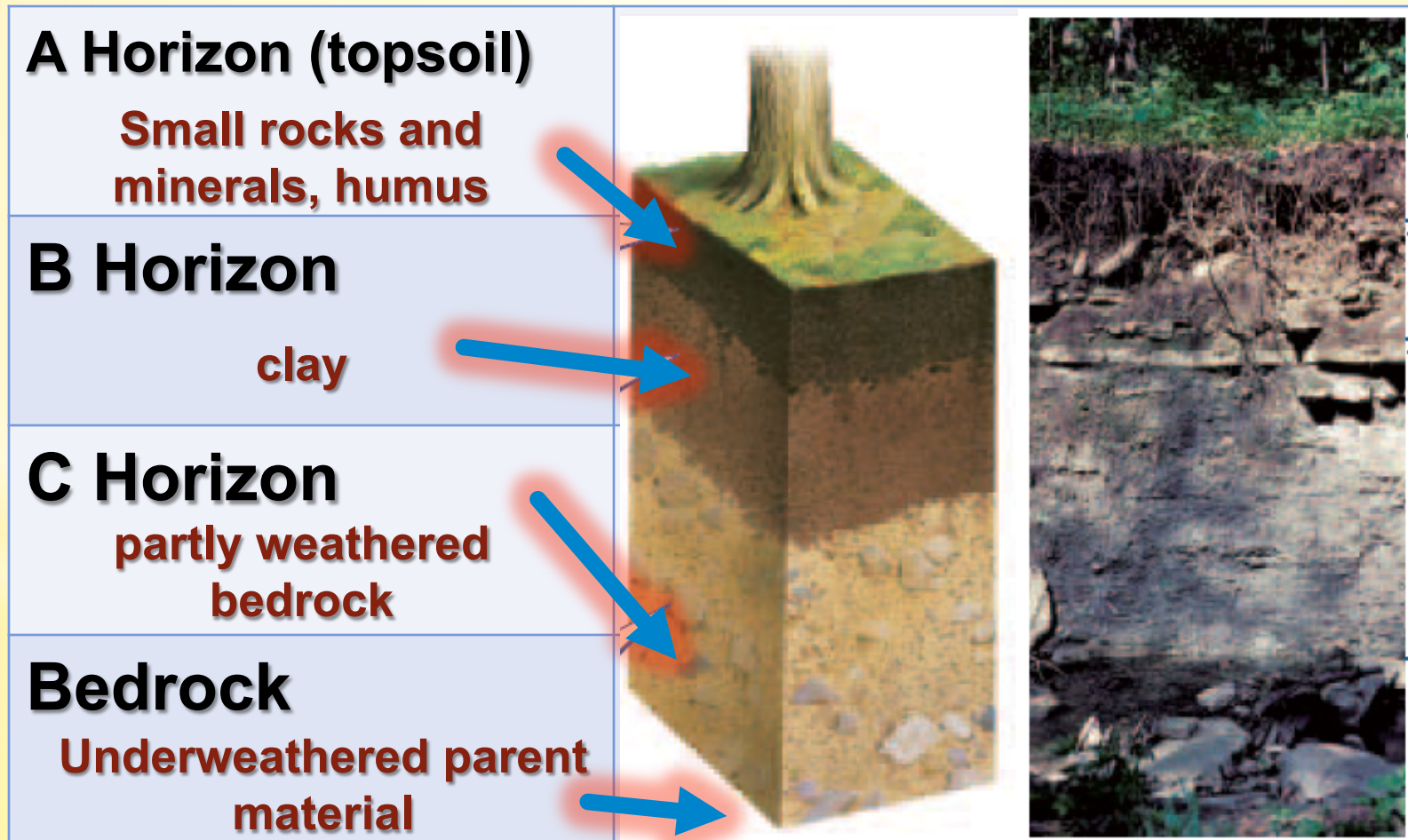
Complete the diagram to describe the process of soil formation.





# Soil Formation

Label the soil profile diagram to identify the composition of the layers. Sketch the particles in each layer.



# **Summarize it!**

## **Summarize three main ideas of the above section.**



# **Lesson 2: Erosion and Deposition**

**Movement of rock and soil are natural occurrences caused by specific geological conditions.**

**What you'll learn:**

- **Tell how the land surface is changed by water action.**
- **Describe stream formation.**
- **Discuss mass wasting and how it relates to land use in California.**
- **Explain erosion and deposition.**

## **So What?!**

**Landscapes are the result of erosion and deposition.**



# Review Vocabulary

sediment

**Rock that is broken down into smaller pieces or is dissolved in water.**



**Tributary  
Sediment**

# New Vocabulary

**glacier**

Large mass of ice and snow

**flood**

Event that occurs when the water level in a river rises above the usual height and overflows the sides of its banks

**beach**

Landform consisting of loose sand and gravel

**Mass wasting**

Form of erosion that is caused by gravity

**deposition**

Laying down of sediments in a new location

**landslide**

Rapid, gravity-caused event that moves soil, loose rocks, and boulders

**floodplain**

Wide, flat valley located along the sides of some rivers and streams



# \*Academic Vocabulary

**ultimate** Last in a progression or series

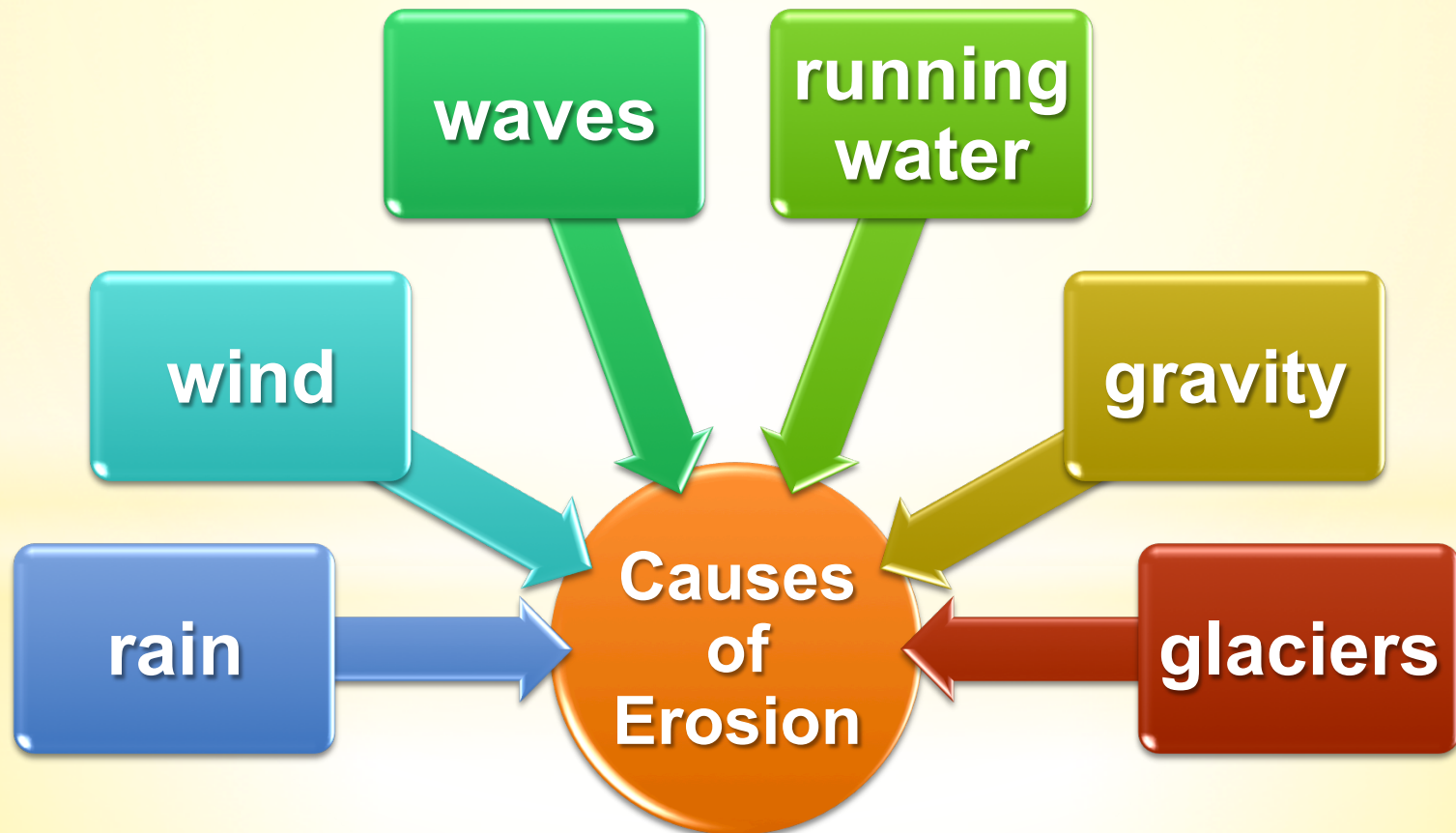
**Water flows over  
Earth's surface  
into lakes,  
streams, rivers,  
and ultimately  
into oceans.**





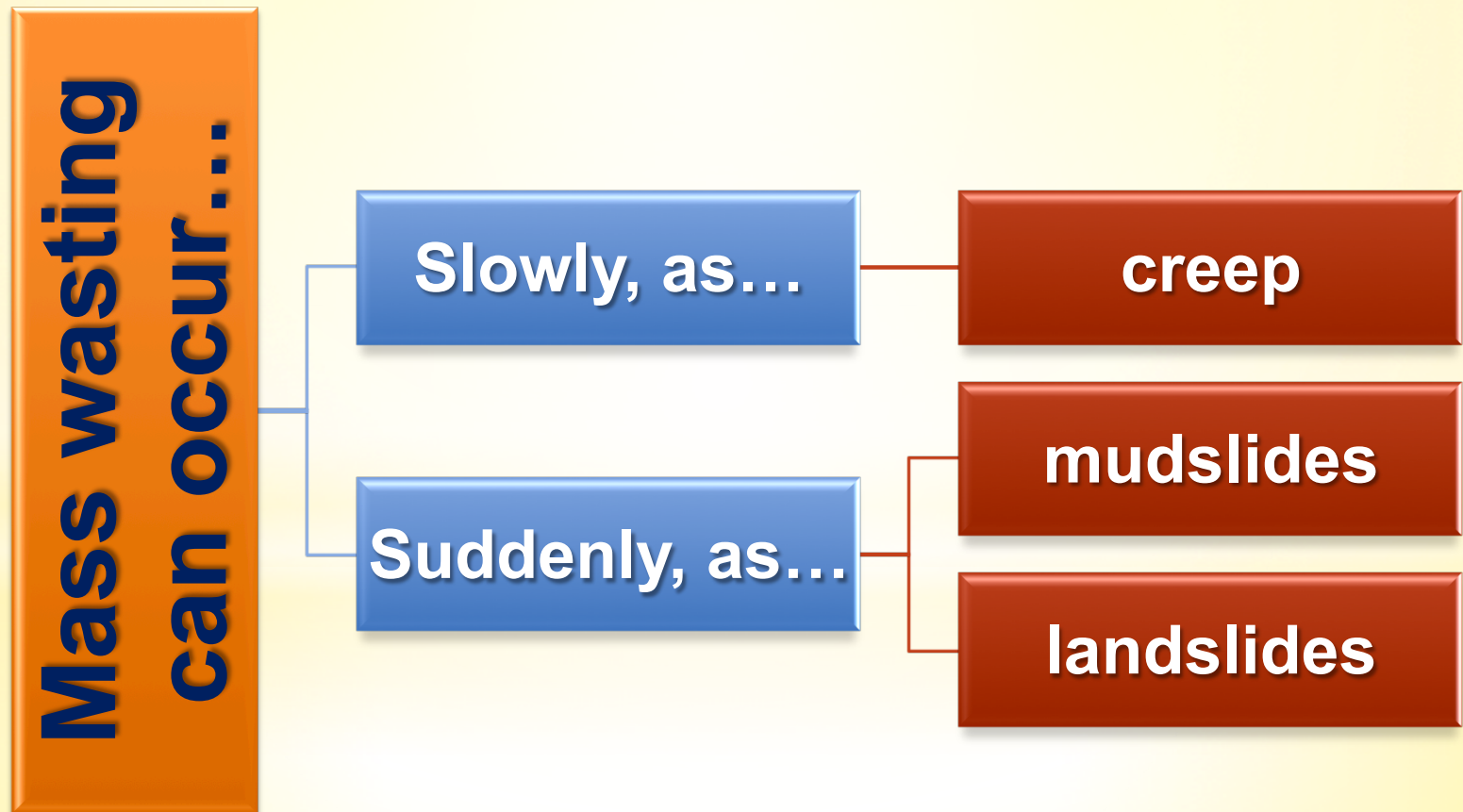
# What Are Erosion & Deposition?

Organize information about the causes of erosion.



# What Are Erosion & Deposition?

Classify information about types of mass wasting.



# Water & Erosion

Model three features that result when streams deposit sediments.

## Oxbow Lake



## Alluvial Fan



## Delta



# **Summarize it!**

**Rephrase the three main ideas of the above sections in your own words.**

# Shorelines and Erosion

Contrast five features formed by wave erosion.

1. **Cliff:** formed by cutting action of waves at the base of rocks
2. **Wave-cut platform:** flat area left behind at water level as a cliff is eroded
3. **Marine terrace:** wave-cut platform lifted above water level by upward movement along a fault
4. **Sea cave:** formed by wave erosion at bottom of sea cliff
5. **Sea stack, sea arch:** remains of rocky coastline that have not been eroded

# Shorelines and Erosion

Sequence the three steps that create a longshore current.

1. Waves usually approach the shoreline at an angle.
2. Friction causes waves to bend parallel to the shoreline.
3. Waves retreat from the beach perpendicular to the shoreline.



# Shorelines and Erosion

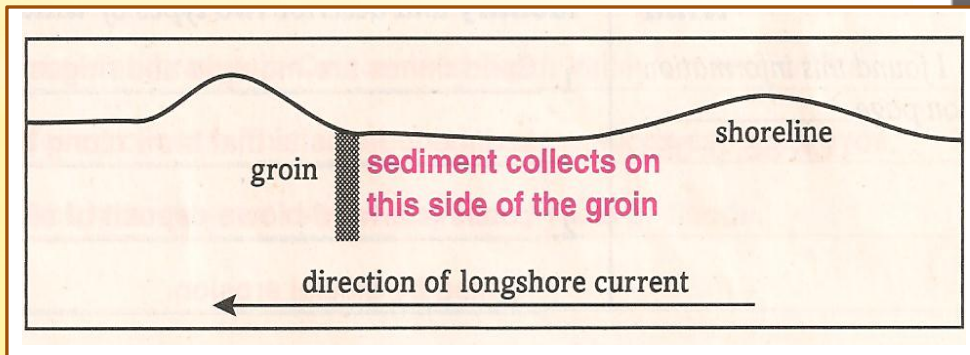
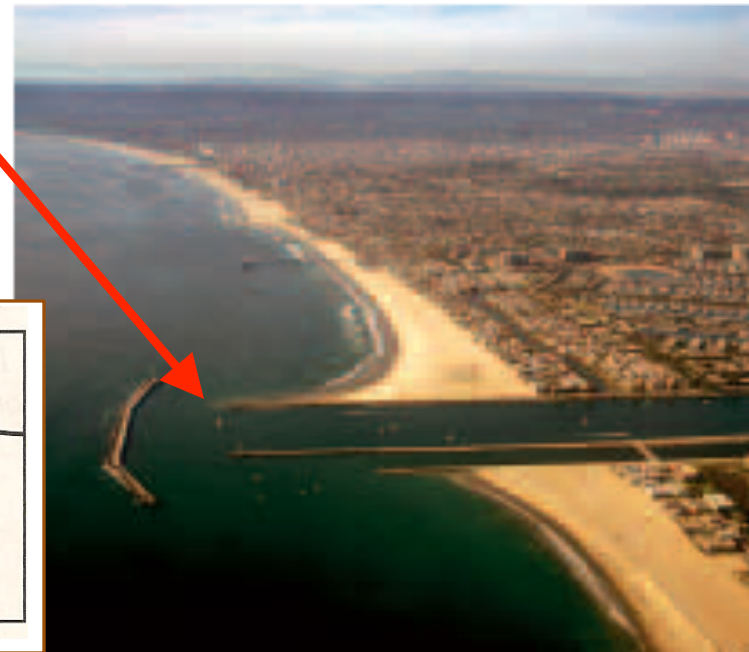
**Model how a groin affects a shoreline. Indicate where the groin would trap sediment..**

**The current is moving from top left to bottom right.**

**This is shown by the large amount of sand accumulating along the top left portion of the groin.**

**Figure 17** These groins are helping to reduce sediment transport along the Marina del Ray beach.

**Infer** In which direction is the longshore current moving?



# Summarize it!

**Summarize the main ideas  
of the above section.**

# What are Glaciers?

Compare Alpine glaciers and Continental glaciers.

## Alpine Glaciers

- \*Form high in mountains
- \*Flow from higher to lower elevations
- \*Also called valley glaciers

\*Large masses of ice and snow

\*Form where more snow falls in winter than melts in summer

## Continental Glaciers

- \*Cover entire land areas
- \*Found only in Antarctica and Greenland
- \*Also called ice sheets



# What are Glaciers?

Identify and describe two types of wind-blown deposits.

1. Sand dunes are mounds and ridges formed from heavier sediment deposits that blow along the ground.
2. Loess is a wind-blown deposit of silt, the smallest grain formed by glacial erosion.

# **Summarize it!**

**Summarize two main ideas  
of the above sections of  
the lesson.**

# **Lesson 3: Reshaping the California Landscape**

**The geology of California is expressed as mountains, deserts, valleys, and shorelines. These are natural physical features of Earth's surface.**

**What you'll learn:**

- **Describe the effects of weathering and erosion on California's landscape.**
- **Relate California's uniqueness to the land use.**

## **So What?!**

**Understanding weathering and erosion help you understand how California's landscape was formed.**



# Review Vocabulary

uplift

**Raising of an area of land due to the push of horizontal forces.**



# New Vocabulary

California's landscape includes mountains, deserts, valleys, and coastlines. At the western edge of the basin and range in California is Death Valley, an area with a desert climate. This area contains streambeds called arroyos, which carry water only during heavy rains or floods.

# Academic Vocabulary

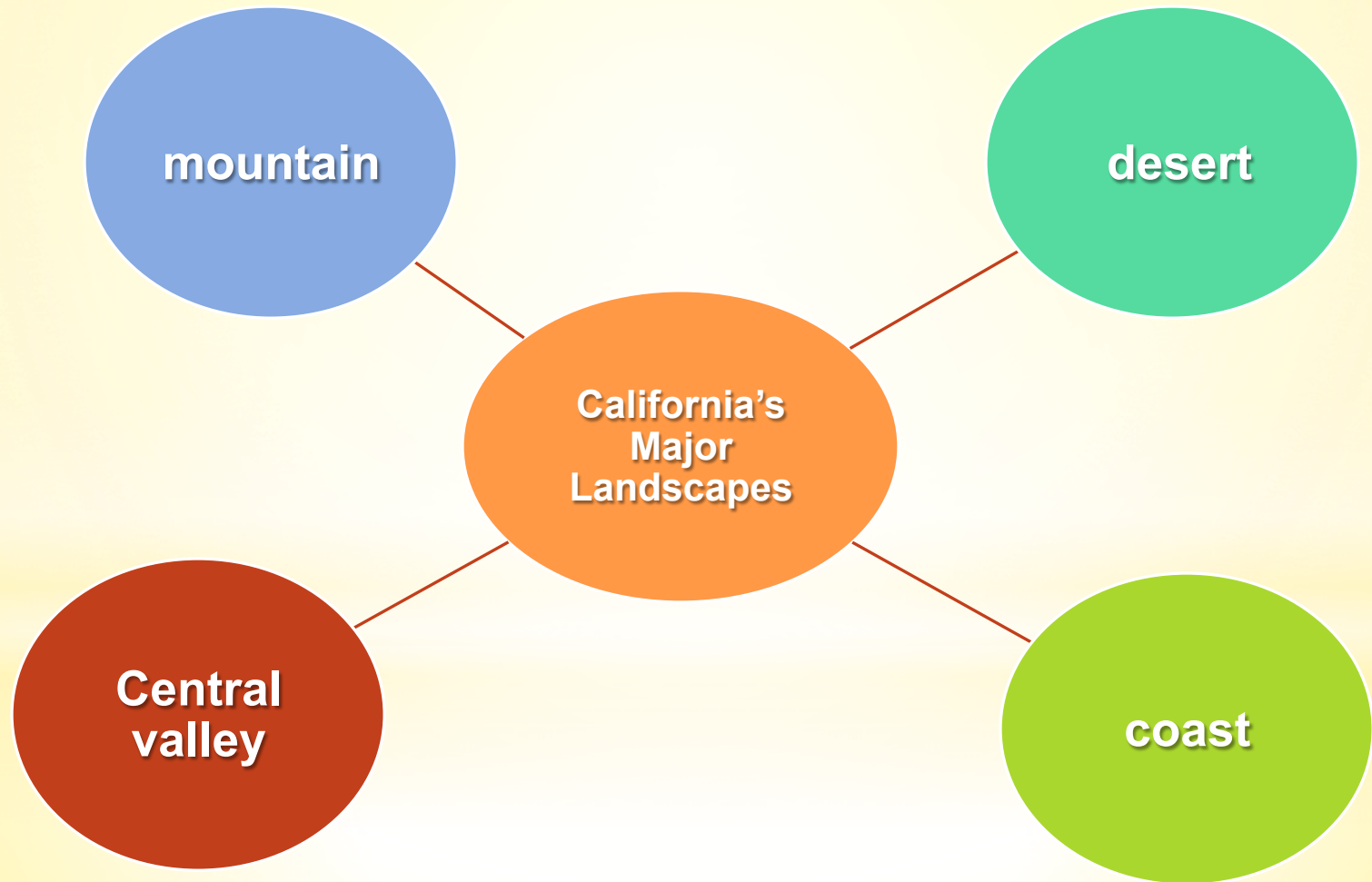
significant      Having special value or  
meaning; important

**\*Wind direction has a  
significant effect on sand  
dune shape.**



# Mountain Landscapes

Identify the four major types of landscapes in California.



# Mountain Landscapes

Distinguish erosional and depositional mountain features.

## Features of California's Mountains

### Erosional Features

- **U-shaped valleys**
- **Hanging valleys**
- **V-shaped valleys**

### Depositional Features

- **Moraines**

# Desert Landscapes

Compare two types of desert landscapes.

## Mohave Desert

**\*Sometimes  
referred to as  
high desert**

**\*Has little  
vegetation**

**\*located in  
southeaster  
n corner of  
California**

## Colorado Desert

**\*Sometimes  
referred to as  
low desert**

**\*Agricultural  
area as a  
result of  
irrigation**



# **Summarize it!**

**Summarize three main  
ideas of the above  
sections.**

# The Central Valley

## Outline information about the Central Valley

### I. Description

A. Location: **between mountain ranges**

B. Elevation: **lower than surrounding mountains**

### II. Main Rivers

A. **Sacramento flows south from the northern part of the valley.**

B. **San Joaquin flows north from the southern part of the valley.**

### III. Other Features

A. **Rivers from the Sacramento River Delta where they flow into the Pacific Ocean.**

B. **Floodplains provide fertile soil for farming.**

# Coastal Landscapes

Model three features that may result from erosion along California's rocky coasts.

**Sea Arch**



**Sea Cliff**

**Sea Stack**



**Sea Stack**





# **Summarize it!**

**Summarize the main ideas  
of the above section.**