NO PREP

Types of Tides

Diurnal, Semidiurnal, and Mixed

Includes: Student reading, case study, differentiated questions, teacher key

Name: Period: Date:

Types of Tides: Diurnal, Semidiurnal, and Mixed

The Variety of Tidal Patterns

While all tides are driven by the gravitational pull of the Moon and the Sun, not every coastline experiences them in the same way. Around the world, local geography, ocean basin shapes, and latitude combine to produce different types of tides. Understanding these patterns is essential for navigation, fishing, coastal management, and even tourism. Scientists recognize three main tidal patterns: diurnal tides, which occur once per day; semidiurnal tides, which occur twice per day with similar heights; and mixed tides, which occur twice per day but with unequal highs and lows. Each type of tide influences the ecosystems, ports, and human activities along its coastline.

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Diurnal, Semidiurnal, and Mixed Explained

A diurnal tide is the simplest pattern, with one high tide and one low tide every 24 hours. These tides are common in the Gulf of Mexico, where coastal communities adapt to a single daily rise and fall of the sea. A semidiurnal tide features two high tides and two low tides each day, occurring roughly every 12 hours. Both high tides are nearly equal, as are both low tides. The Atlantic coast of the United States provides a clear example of semidiurnal tides. A mixed tide is more complex. It also produces two high tides and two low tides per day, but their heights are unequal. One high tide may be significantly higher than the other, and one low tide may be much lower. The Pacific coast of North America often experiences this tidal type. Mixed tides can complicate navigation and planning, since water levels are less predictable.

Key Information: Key Concepts Table

Tidal Type	Description	Example Location
Diurnal	1 high tide, 1 low tide daily	Gulf of Mexico
Semidiurnal	2 equal highs, 2 equal lows daily	Atlantic coast of the U.S.
Mixed	2 highs, 2 lows of unequal height daily	Pacific coast of North America

Case Study: Tides in the Gulf of Mexico vs. the Atlantic

The Gulf of Mexico and the Atlantic Ocean demonstrate how tidal types vary depending on geography. The Gulf's shallow basin and restricted connection to the wider ocean make it prone to diurnal tides, with only one high tide and one low tide each day. This has shaped fishing practices and port operations for centuries. Fishermen time their work to match the single daily tidal cycle, and ships must account for these narrow tidal windows when navigating harbors. In contrast, the Atlantic coast—especially areas like the Carolinas and New England—experiences semidiurnal tides. Twice each day, water levels rise and fall in a more balanced way, creating predictable cycles for coastal communities. These semidiurnal tides are essential for estuaries, where the daily inflow and outflow of water bring nutrients that support rich ecosystems. The difference between the Gulf and Atlantic shows how tidal patterns are not uniform but instead shaped by the unique geography of each region.

1. Why does the Gulf of Mexico experience diurnal tides while the Atlantic has semidiurnal tides?

2. How do tidal cycles shape fishing and coastal community activities?

Multiple Choice

1. Which tidal type occurs when there is only one high tide and one low tide per day?

    a) Semidiurnal

    b) Diurnal

    c) Neap

    d) Mixed

2. Which U.S. coast most often experiences mixed tides?

    a) Gulf Coast

    b) Great Lakes

    c) Pacific Coast

    d) Atlantic Coast

3. Why are semidiurnal tides especially important for estuaries?

    a) They prevent saltwater mixing

    b) They bring in nutrients twice daily

    c) They produce the world's largest tides

    d) They reduce erosion completely

Matching

Write the letter of the correct definition on the line next to each term.

Term	Definition
1. ___ Diurnal Tide	A) Two unequal highs and lows daily, common on Pacific coast
2. ___ Semidiurnal Tide	B) Coastline from the Carolinas to New England
3. ___ Mixed Tide	C) Shallow basin with a restricted link to the open ocean
4. ___ Gulf of Mexico	D) Single daily rise and fall of the sea
5. ___ Atlantic Coast	E) Twice-daily tides with similar heights

Fill-in-the-Blank

1. The Pacific coast of North America often experiences _____ tides.

2. A tide with one high and one low daily is called a _____ tide.

3. Semidiurnal tides occur roughly every _____ hours.

Short Answer

Answer each question in 2-4 complete sentences.

1. How do mixed tides complicate planning for shipping and fishing?

_____

_____

_____

2. Why are tidal types not uniform around the globe?

3. How can communities use knowledge of tidal cycles to benefit ecosystems?