

Tide Range Loop

Track the Moon's repeating tidal pattern.

6.9 "Earth and space. The student models the cyclical movements of the Sun, Earth, and Moon and describes their effects. The student is expected to: model and illustrate how the tilted Earth revolves around the Sun, causing changes in seasons..."

NAME _____

DATE _____

1 LABEL THE MODEL _____ Word bank below

Read the stages in arrow order. Write one process from the word bank in each numbered box to show how one stage leads to the next.

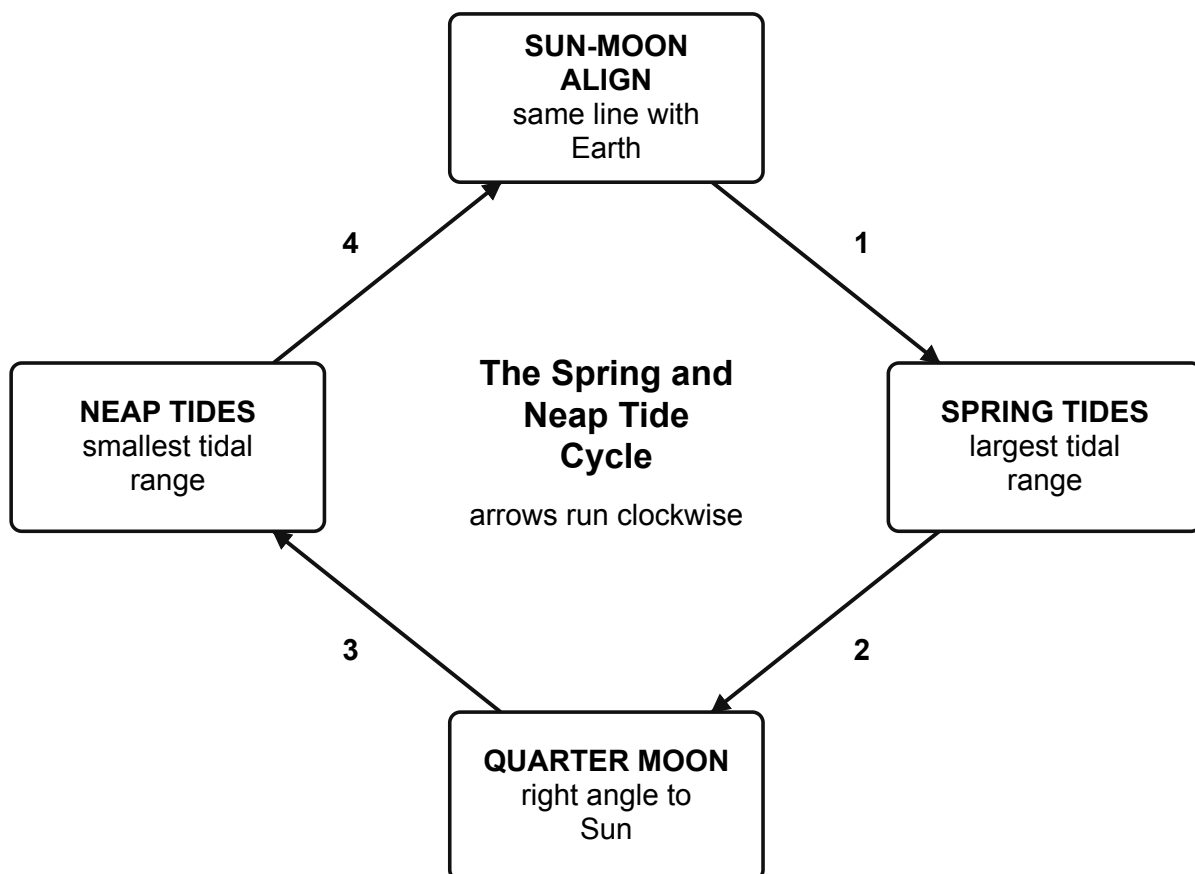
WORD BANK

Gravitational pulls combine

Moon moves quarter orbit

Moon orbits to alignment

Tidal effects partly cancel



Arrow numbers match the response boxes on the next student section.

Label the arrows

Use the word bank to write the process for each numbered arrow.

Arrow 1

Arrow 2

Arrow 3

Arrow 4

2 RUN THE MODEL --- Use your finished diagram

- 1** Which stage has the largest difference between high and low tide? Use a process from the model to explain why.

- 2** After the Moon is at a right angle to the Sun, which tide stage comes next? What happens to the tidal range?

- 3** About one week after a spring-tide alignment, predict the Moon's position and tide type.



CHECK IT

Before you turn it in

☐ I placed one word-bank process in every box.

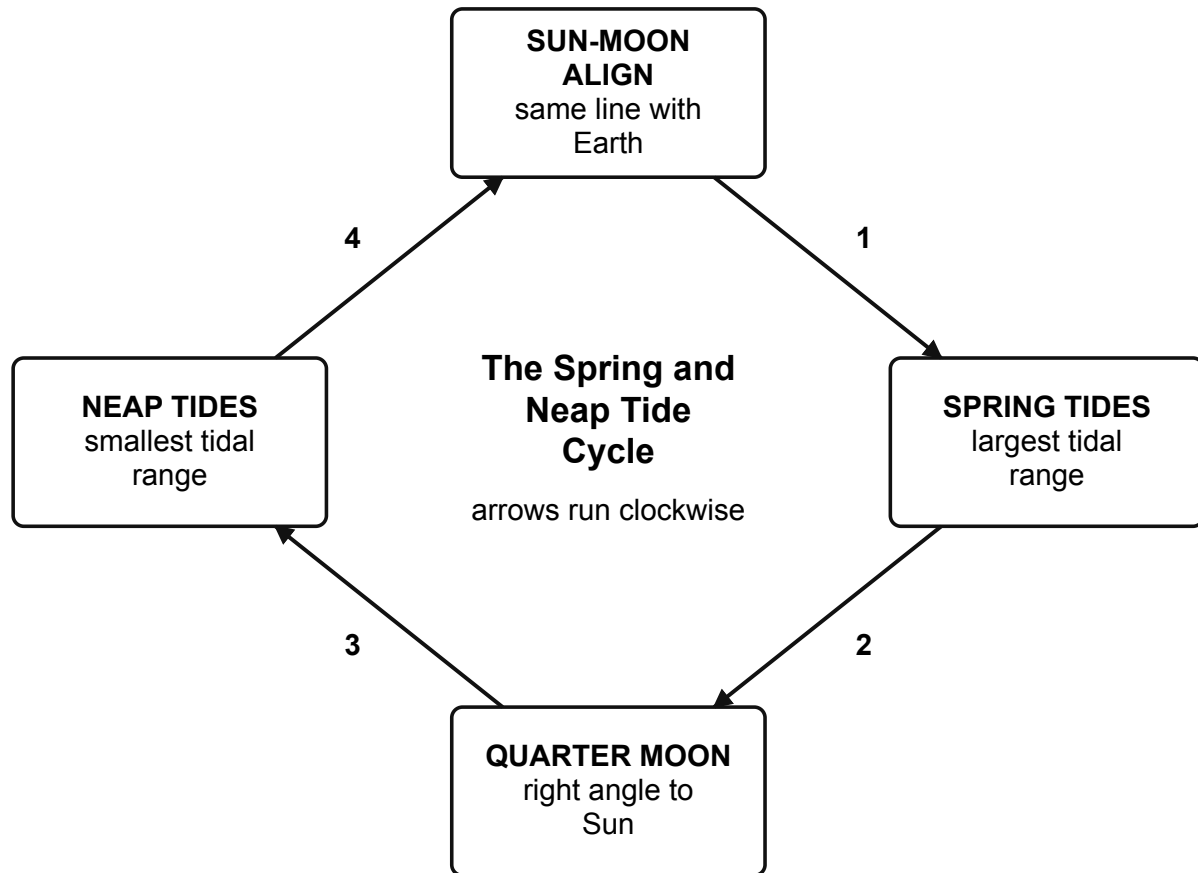
☐ I can connect Moon position to tidal range.

☐ I can predict the next stage in the loop.

TEST THE MODEL

What is one important part of real ocean tides that this model leaves out?

PART 1 • COMPLETED MODEL

**Arrow 1**

Gravitational pulls combine

Arrow 2

Moon moves quarter orbit

Arrow 3

Tidal effects partly cancel

Arrow 4

Moon orbits to alignment

PART 2 • RUN THE MODEL

1. **SPRING TIDES, because the Sun's and Moon's gravitational pulls combine.** (Which stage has the largest difference between high and low tide? Use a process from the model to explain why.)
2. **NEAP TIDES comes next, and the tidal range is smallest.** (After the Moon is at a right angle to the Sun, which tide stage comes next? What happens to the tidal range?)
3. **The Moon will be near a quarter-moon position, and neap tides will occur.** (About one week after a spring-tide alignment, predict the Moon's position and tide type.)

TEST THE MODEL (SAMPLE ANSWERS)

- It leaves out that coast shape and ocean depth can change tide height and timing.
- It leaves out the daily rise and fall as Earth rotates through tidal bulges.

The process order is: gravitational pulls combine, Moon moves quarter orbit, tidal effects partly cancel, Moon orbits to alignment. This model focuses on changing tidal range during the Moon's orbit, not local daily tide timing or height.