

Spring and Neap Tides

A. Spring Tides

When the moon is at its full and new phases, the earth has higher high tides and lower low tides than at other times. These tides are called **spring tides** and they occur twice a month, when the sun and the moon line up with the earth. The increased effect of the sun's gravity on the earth causes the ocean bulges to become larger.

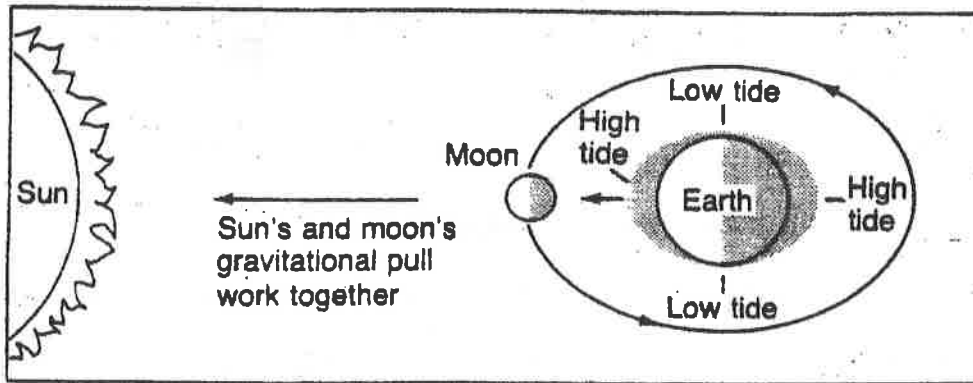


Figure 1 New moon

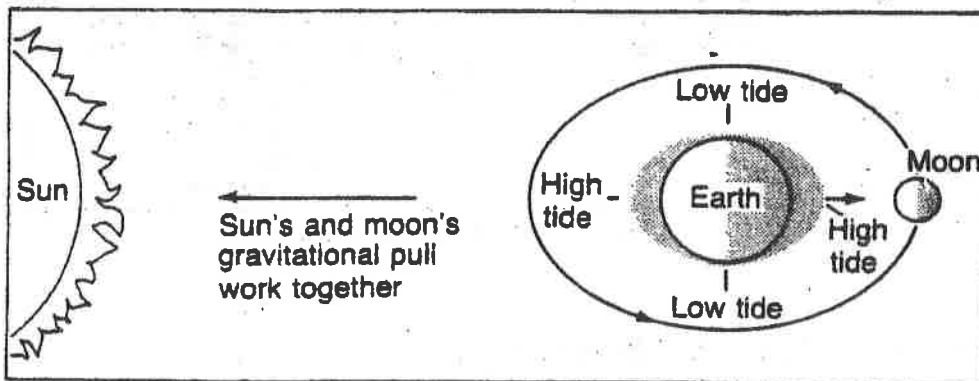


Figure 2 Full moon

1. When are the sun, moon, and earth in a line? _____
2. What happens to the pull of gravity on the earth when the sun, earth, and moon are in a line?

3. What are the unusually high and low tides called? _____

4. How often do the unusually high and low tides occur? _____
5. At which moon phases do the spring tides take place? _____

B. Neap Tides

During the first- and last-quarter phases, the moon's gravitational pull on the oceans is partially canceled out by the sun's gravitational pull. This results in tides that are not very high and not very low. These tides are called neap tides and they occur twice a month.

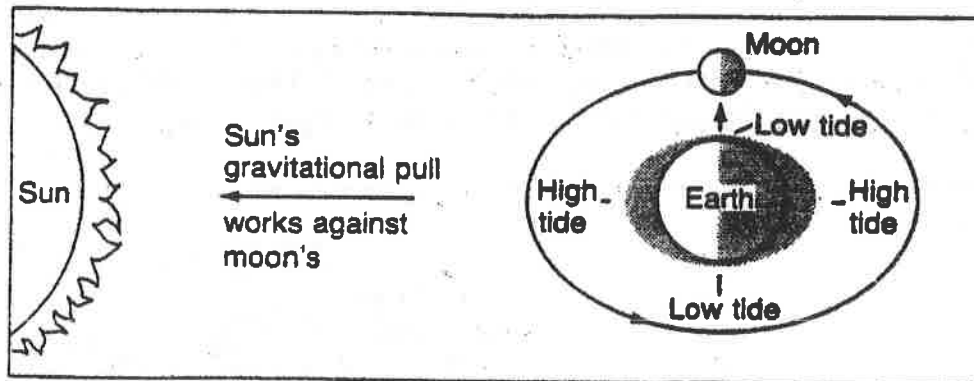


Figure 3 First-quarter moon

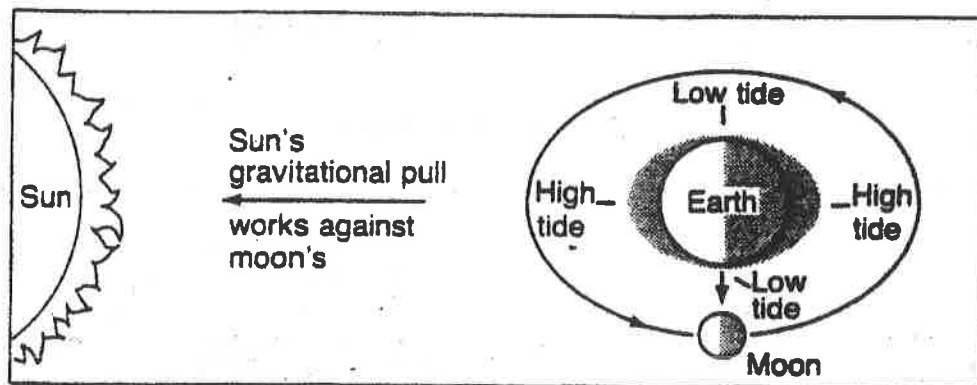


Figure 4 Last-quarter moon

1. When are the moon and sun at right angles? _____
2. What happens to the pull of gravity when the moon and sun are at right angles?

3. What kinds of tides occur when the moon and sun are at right angles? _____
4. What are tides that are not very high and not very low called? _____
5. How often do these tides occur? _____
6. At which moon phases do these tides take place? _____