

Because the tides are dominated by the moon, which orbits the earth in about 28 days,

1. We have 2 high and 2 low tides in every 24 hour interval.
2. We sometimes have 2 low tides and 1 high tide in a 24 hour interval.
3. We have 1 high tide and 1 low tide every 24 hours.
4. All of the above responses are flawed.

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The correct answer is #2: Some 24 hour intervals have two high tides and one low tide, because

- Each day the moon moves about  $1/28$  of its orbit in the same direction as the earth rotates, carrying the high tide point along with it.
- Therefore it takes a little more than  $(1/2)^*24=12$  hours for a specific point on the earth to catch up with its next high tide.
- Thus in some 24 hour intervals, a high tide (or a low tide) may be transferred into the subsequent 24 hour period, leaving only 2 low tides and 1 high tide during that interval.