

# CONCEPTUAL *Physics* PRACTICE PAGE

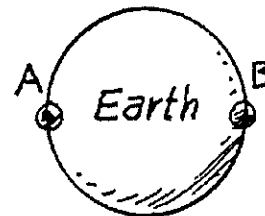
## Chapter 9 Gravity Our Ocean Tides

1. Consider two equal-mass blobs of water, A and B, initially at rest in the Moon's gravitational field. The vector shows the gravitational force of the Moon on A.



- Draw a force vector on B due to the Moon's gravity.
- Is the force on B more or less than the force on A? \_\_\_\_\_
- Why? \_\_\_\_\_
- The blobs accelerate toward the Moon. Which has the greater acceleration? [A] [B]
- Because of the different accelerations, with time  
[A gets farther ahead of B] [A and B gain identical speeds] and the distance between A and B  
[increases] [stays the same] [decreases].
- If A and B were connected by a rubber band, with time the rubber band would  
[stretch] [not stretch].
- This [stretching] [non-stretching] is due to the [difference] [non-difference]  
in the Moon's gravitational pulls.
- The two blobs will eventually crash into the Moon. To orbit around the Moon instead of crashing into it, the blobs should move  
[away from the Moon] [tangentially]. Then their accelerations will consist of changes in  
[speed] [direction].

2. Now consider the same two blobs located on opposite sides of Earth.



- Because of differences in the Moon's pull on the blobs, they tend to  
[spread away from each other] [approach each other].
- Does this spreading produce ocean tides? [Yes] [No]
- If the Earth and Moon were closer, gravitational force between them would be  
[more] [the same] [less], and the difference in gravitational forces on the near and far  
parts of the ocean would be [more] [the same] [less].
- Because Earth's orbit about the Sun is slightly elliptical, the Earth and Sun are closer in  
December than in June. Taking the Sun's tidal force into account, on a world average, ocean  
tides are greater in [December] [June] [no difference].

Hewitt  
Draw it!

Life is what happens to you  
while you're making other plans.



Hewitt  
Drew it!