THE MOON. Because the moon is so much closer to Earth than the sun, its gravitational effect on the tides is about twice that of the sun. Let us first consider the simple case of the gravitational attraction between Earth and moon (Figure 10-18). The gravitational attraction is strongest on the side of Earth that happens to be facing the moon, simply because it is closer. This attraction causes the water on this "near side" of Earth (*N*) to be pulled toward the moon. Inertia is also active here, attempting to keep the water in place. But the gravitational force exceeds it and the water is pulled toward the moon, causing a "bulge" of water on the near side toward the moon.

On the opposite side of Earth ("far side," *F*), the gravitational attraction of the moon is less because it is farther away. Here, the inertial force exceeds the gravitational force, and the water tries to keep going in a straight line and thus moves away from Earth, also forming a bulge.

Thus, the combination of gravity and inertia creates two bulges of water. One forms where Earth and moon are closest, and the other forms where they are farthest apart. Over the rest of the globe the two forces are relatively in balance.

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