

Daily Check 38

1. An object on the end of a spring is oscillating in simple harmonic motion given by /2

$x(t) = (4.0 \text{ cm})\cos((3.0 \text{ rad/s}) t + 0.3 \text{ rad})$. What is the velocity of the particle at $t = 1.0$ seconds?

- +3.9 cm/s
- 3.9 cm/s
- 12 cm/s
- 1.89 cm/s
- +1.89 cm/s

2. A swinging simple pendulum has period T . If the same pendulum bob were put on a string that had /2
double the length, how would the new period compare to the old period? Assume g stays the same.

- period does not change
- period increases by a factor of 2
- period decreases by a factor of 2
- period increases by a factor of $\sqrt{2}$
- period decreases by a factor of $\sqrt{2}$

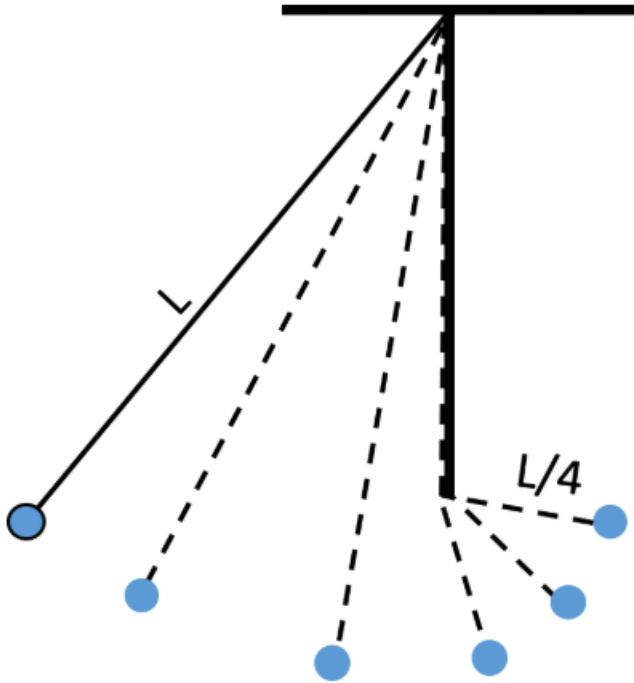
3. A swinging simple pendulum has period T on Earth. If the same pendulum were moved to the /2
Moon, how does the new period compare to the old period? Note that $g_{\text{moon}} = \frac{g_{\text{earth}}}{6}$

- period increases
- period does not change
- period decreases

4. An asymmetric simple pendulum is one that oscillates at two different lengths, as shown. A simple pendulum of length L swings and hits a barrier at the bottom of its motion, causing the last half of its motion to be that of a pendulum of length $L/4$. So half of the motion is that of a pendulum of length L , while the other half is that of a pendulum of length $L/4$.

/2

If $L = 1$ meter and $g = 9.8 \text{ m/s}^2$, what is the period of this pendulum?



- 1.5 seconds
- 0.75 seconds
- 1.0 seconds
- 2.0 seconds
- 0.10 seconds