

## Answer on Question #50222, Physics, Other

### Question:

a horizontal platform is made to exceed SHM of amplitude  $a$  in the vertical direction. an object placed on the platform will lose contact with it. when frequency of oscillate.

### Answer:

Coordinate of the platform:

$$x(t) = A \cos(\omega t + \phi_0)$$

where  $A$  is amplitude of motion.

Then velocity equals:

$$v(t) = -A\omega \sin(\omega t + \phi_0)$$

And acceleration:

$$a(t) = -A\omega^2 \cos(\omega t + \phi_0)$$

From Newton's law of motion:

$$g = A\omega^2$$

where  $g$  is acceleration due to gravity.

$$\omega = \sqrt{\frac{g}{A}}$$

Answer:  $\omega = \sqrt{\frac{g}{A}}$