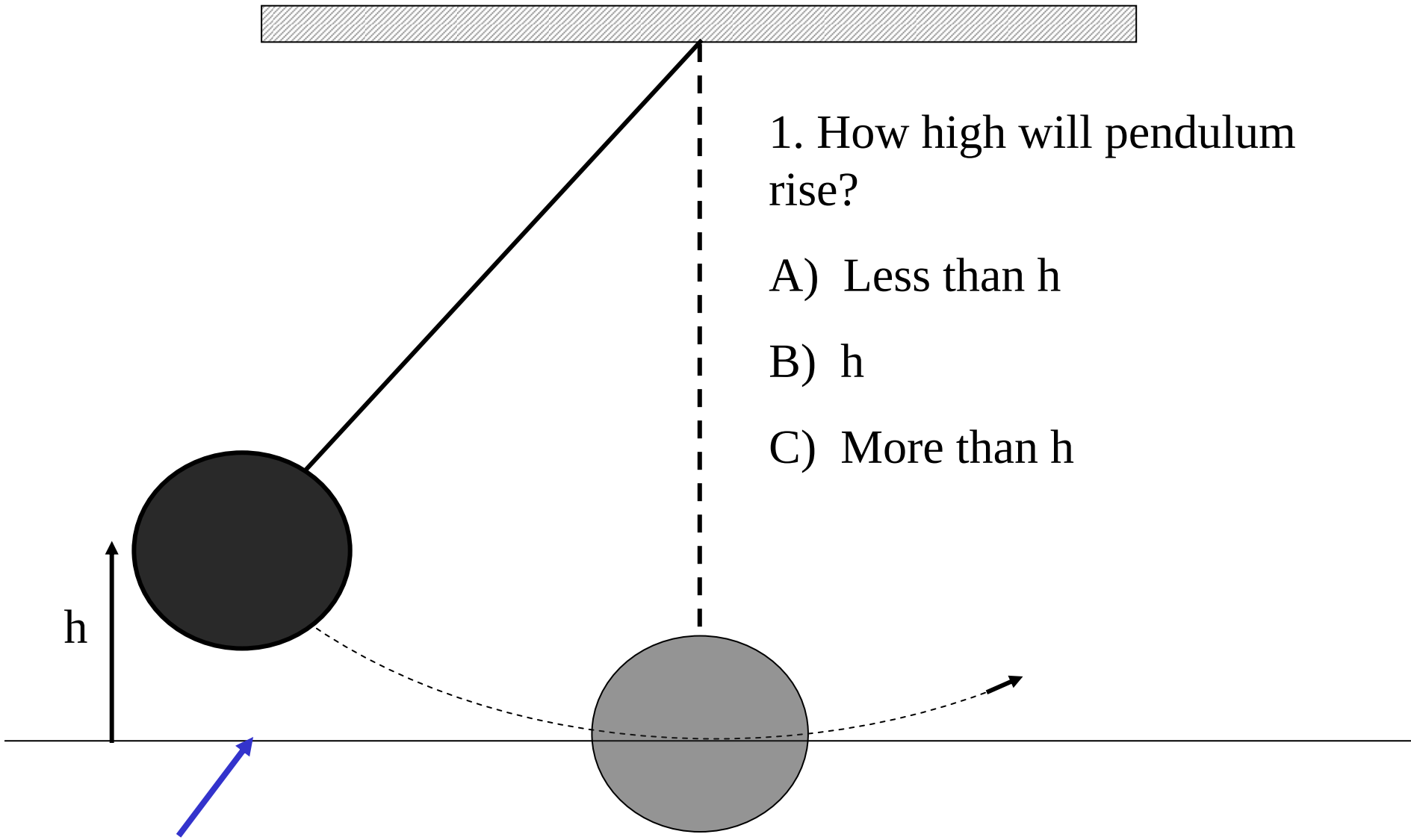
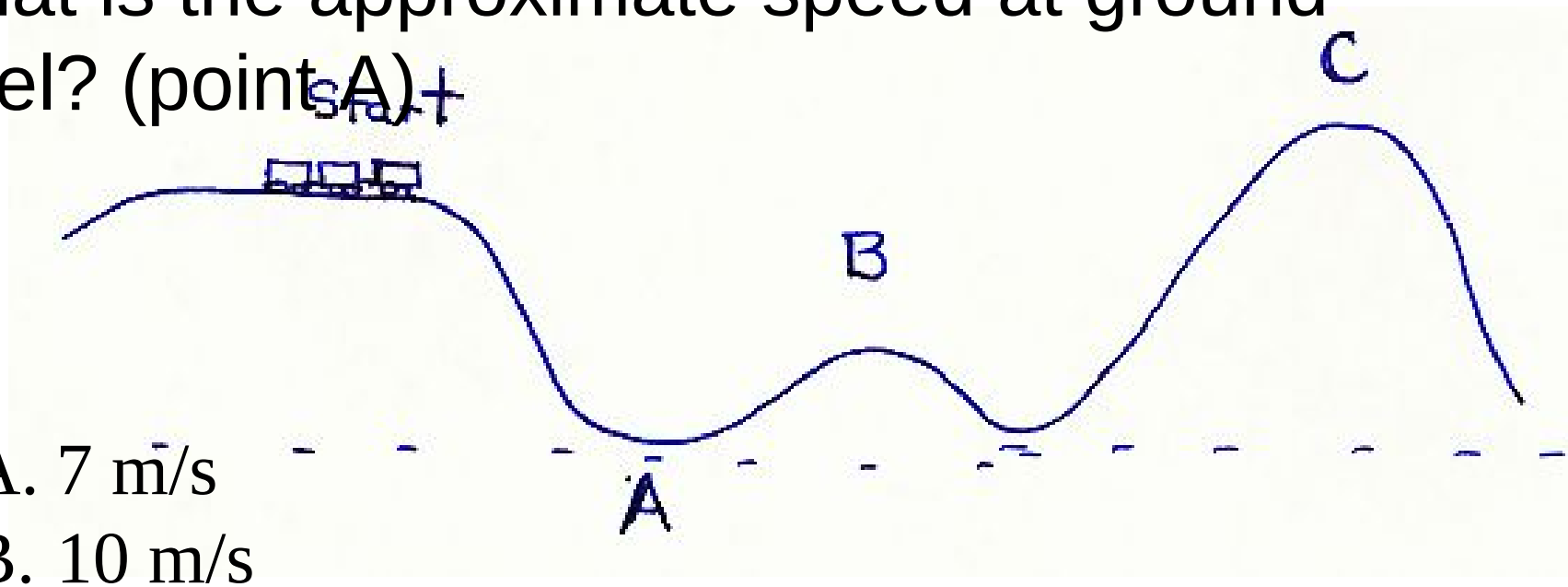
# Energy Skate park 3



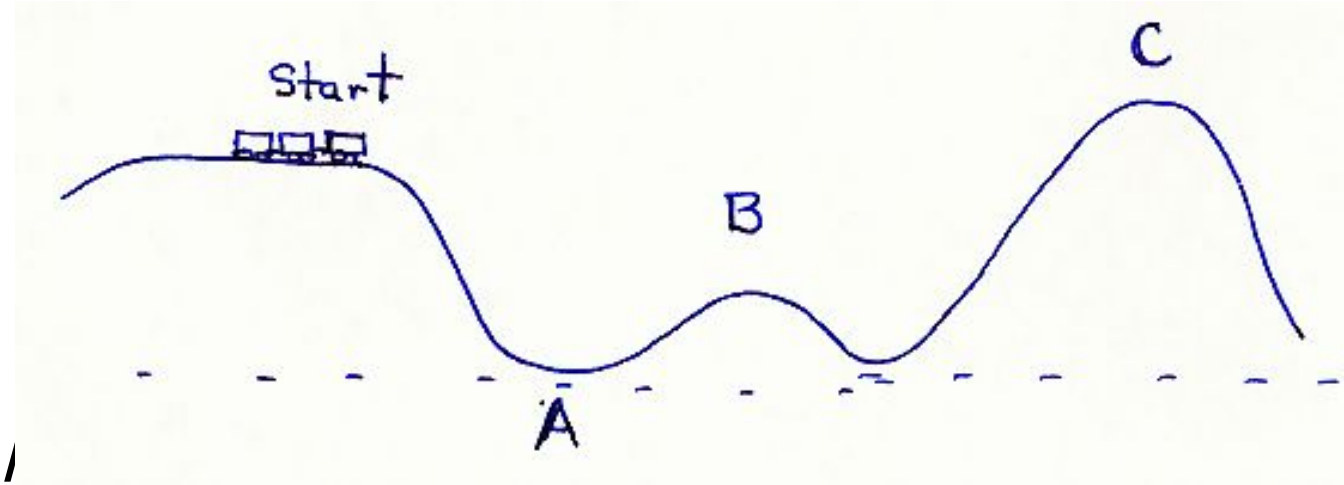

Pendulum height

2. A 5000 kg coaster is released 20 meters above the ground on a frictionless track. What is the approximate speed at ground level? (point A)



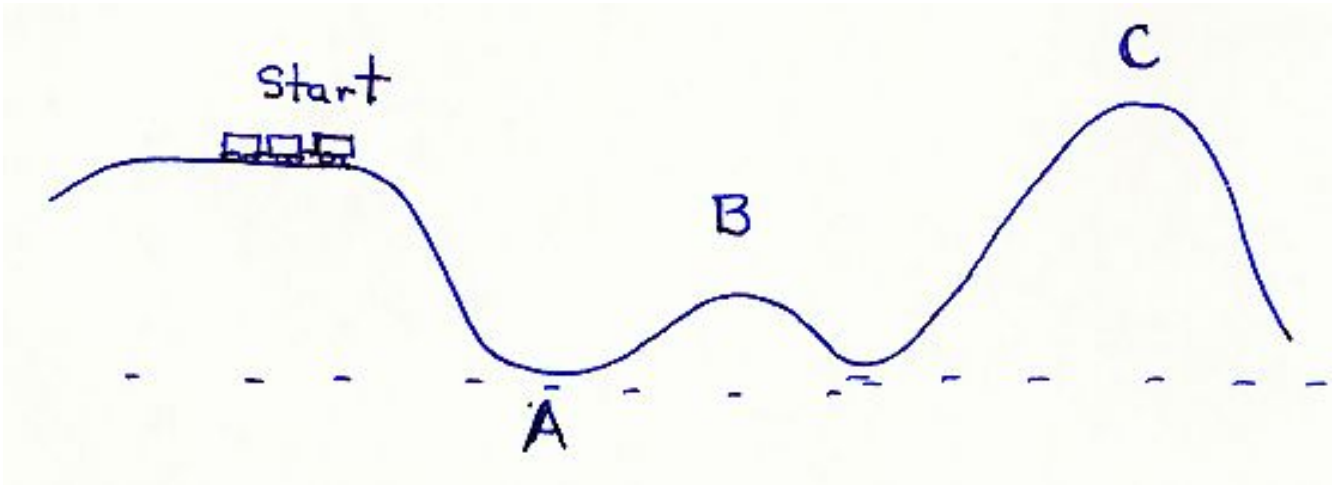

A. 7 m/s
B. 10 m/s
C. 14 m/s
D. 20 m/s
E. none of the above

3. What is its approximate speed at 10 meters high (point B )?

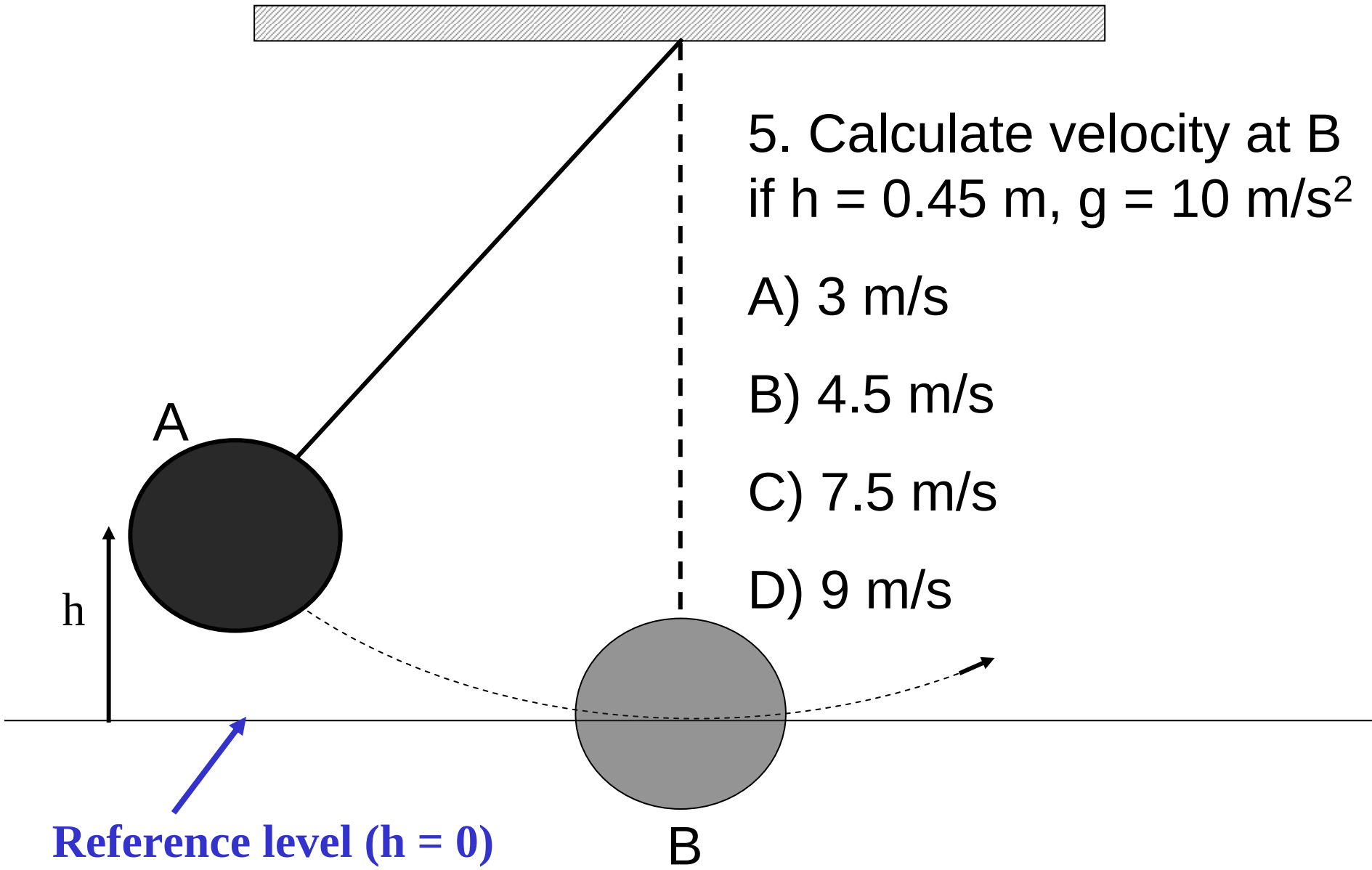



A) 7 m/
B) 10 m/s
C) 14 m/s
D) 20 m/s
E) none of the above

# 4. How fast would the coaster have to be going at the start to reach 21 meters high (point C)?




A) 1.1 m/s
B) 3.2 m/s
C) 4.5 m/s
D) 20 m/s




5. Calculate velocity at B if h = 0.45 m, g = 10 m/s$^2$

A) 3 m/s

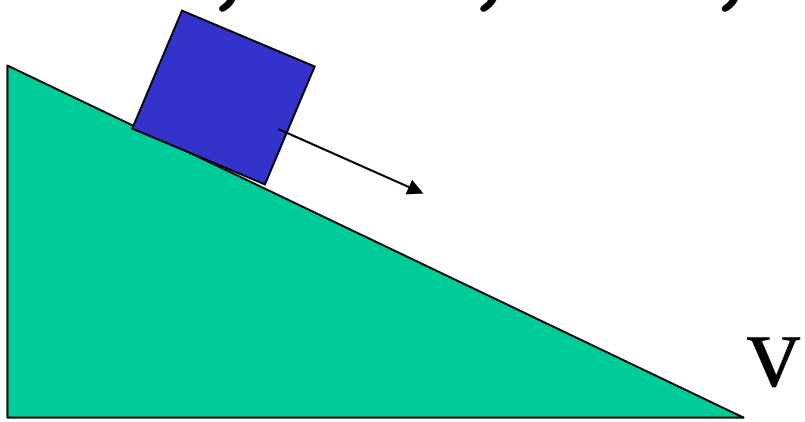
B) 4.5 m/s

C) 7.5 m/s

D) 9 m/s

6. A block initially at rest is allowed to slide down a frictionless ramp and attains a speed v at the bottom. To achieve a speed 2v at the bottom, how many times higher must the new ramp be?

A) $\sqrt{2}$ B) 2 C) 3 D) 4 E) none of these.



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A) $\sqrt{2}$ B) 2 C) 3 **D) 4** E) none of these.

$$mgh_{top} + \cancel{0_{KE}} + \cancel{0_{work}} = \cancel{0_{PEg}} + 1/2\ mv_{bottom}^2$$

First ramp: $h_{top} \propto v_{bottom}^2$

2nd ramp: $h'_{top} \propto (2v_{bottom})^2 = 4\ (v_{bottom}^2)$

$h'_{top} = 4h_{top}$

CQ 6 Show work