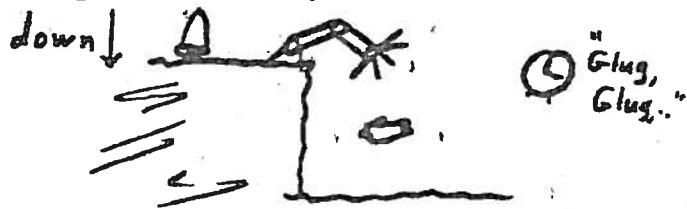


## SIN Questions-Falling Bodies and Projectiles

- 85-5. The commander of the Lower Slobbovian Space Shuttle lands on an unknown planet where time is measured in "GLUG"s and distance in "NARG"s. He uses his CANADA-ARM to throw a rock vertically downwards from a cliff top. After one GLUG has passed, the rock is thirty NARGs below the starting point. After two GLUGs have passed (total time) the rock has fallen eighty NARGs (total distance). At the end of the third GLUG, the rock strikes the horizontal surface at the bottom of the cliff. Assuming constant acceleration, how high was the cliff? (Answers in NARGs.)

- (A) 130
- (B) 150
- (C) 180
- (D) 240
- (E) 270



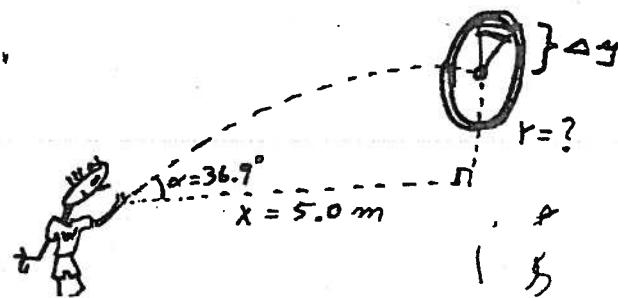
91-11.

*Little Willie, for a start,  
Scored a "bull's eye" with his dart;  
Then, at risk of trouble plenty,  
Raised the speed — got "double 20"!*

A.A.

For both darts, Willie released them from the same position as shown and in the same direction, at an angle  $\alpha = 36.9^\circ$  above horizontal. If the speed of the first dart was 9.0 m/s, find the percentage increase in speed for the second dart. The vertical separation between the bull's eye and the double 20 is  $\Delta y = 0.20$  m. Ignore air resistance. (Answer in %.)

- (A) 1.5
- (B) 3.0
- (C) 4.5
- (D) 6.0
- (E) 7.5



- 94-2. Joe Carter hit a fly ball during spring training. It just cleared a 10 m high vertical fence on the way down at  $45^\circ$  as shown and struck the level ground 8 m beyond the fence. Calculate the speed of the ball when it left his bat at ground level. Of course we ignore air resistance. Answers in m/s.

- A) 22.6
- B) 19.7
- C) 24.1
- D) 20.8
- E) 18.6



ANSWERS: 85-5: B  
91-11:C  
94-2: A