32) Understand the Problem

The problem is asking for the total distance of a bouncing ball that is dropped perpendicular. When it is dropped it rebounds to 1/2 of its previous height. Therefore, I know that the height of each bounce needs to be doubled because the ball is reaching that height and coming back down that height. On the 5th bounce it reaches a height of 6 centimeters. After this bounce it falls to the floor.
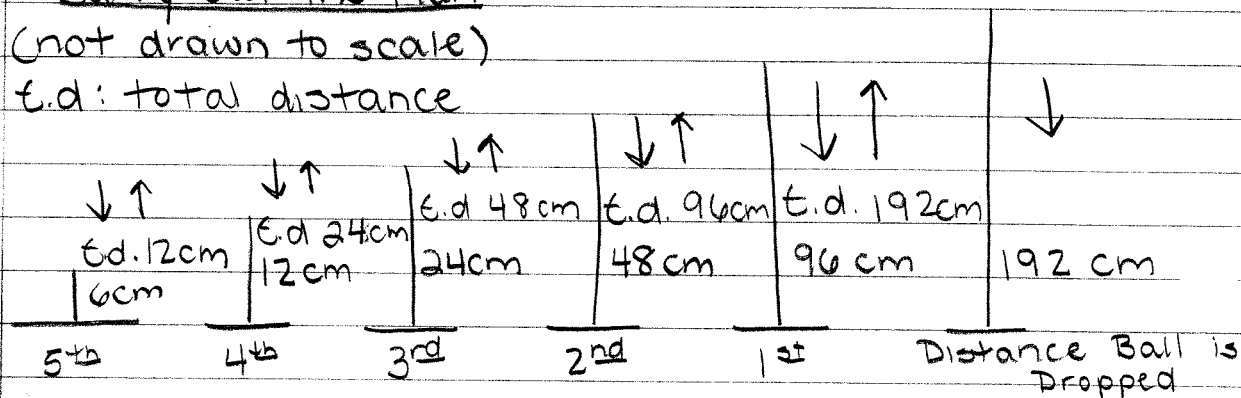
Devise a Plan

For this problem it would be most beneficial to draw pictures. Each bounce can be represented by a vertical line that is 1/2 the preceding line. To solve this problem I will work backwards since I know that the fifth bounce is 6 cm.

Carry Out the Plan

(not drawn to scale)
t.d: total distance

↓↑	↓↑	↓↑	↓↑	↓↑	↓
t.d.12cm	t.d 24cm	t.d 48cm	t.d. 96cm	t.d. 192cm	
6cm	12cm	24cm	48cm	96 cm	192 cm
5th	4th	3rd	2nd	1st	Distance Ball is Dropped

Total distance = 12 cm + 24 cm + 48 cm + 96 cm + 192 cm + 192 cm

Total distance = 564 cm

Look Back

I believe my solution is correct. I know that the ball bounced 6 cm on the fifth bounce, and I just worked backward from there. I liked this problem because I could use pictures to visualize the problem.