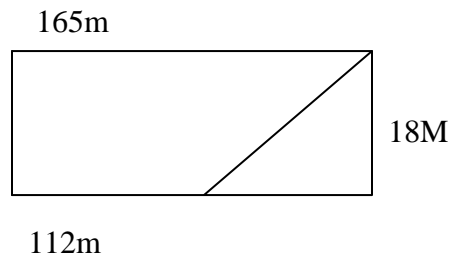


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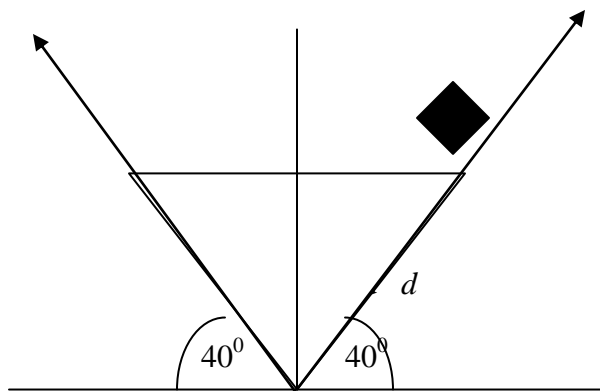
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#22



On a banked race track, the smallest circular path on which cars can move has a radius of 112m, while the largest has a radius of 165m, as the drawing illustrates. The height of the outer wall is 18m. Find (a) the smallest and (b) the largest speed at which cars can move on this track without relying on friction.

#23



A racetrack has the shape of an inverted cone, as the drawing shows. On this surface the cars race in circles that are parallel to the ground. For a speed of 34.0m/s, at what value of the distance d should a driver locate his car if he wishes to stay on a circular path without depending on friction?