

This 1956 commercial for Chevrolet shows a troupe of men driving regular Chevrolet cars, not the “souped-up models.” They perform a variety of tricks including, at about 0:34, a jump from one ramp to another. This is a simple projectile motion problem when a few assumptions are made:

- Assume the time of flight to be about 2 seconds, as recorded in the video player’s timer.
- Assume the angle of launch to be about 20° .
- Assume the car’s speed to be about 20 mph or about 10 m/s.
- The y-component of the velocity at the top of the trajectory (at $t=1$ second) is 0 m/s.

Given these assumptions, calculate the range of the car and the maximum y-displacement.

The range is found by:

$$x = v_{0,x}t = 10\frac{m}{s}(\cos 20^\circ)2s = 20\text{ m}$$

The maximum y-displacement is:

$$\Delta y = v_{0,y}t + \frac{1}{2}a_y t^2 = 10\frac{m}{s}(\sin 20^\circ)2s + \frac{1}{2}\left(-9.8\frac{m}{s^2}\right)(1s)^2 = 2\text{ m}$$

Both of these ranges are reasonable estimates as seen in the video clip.