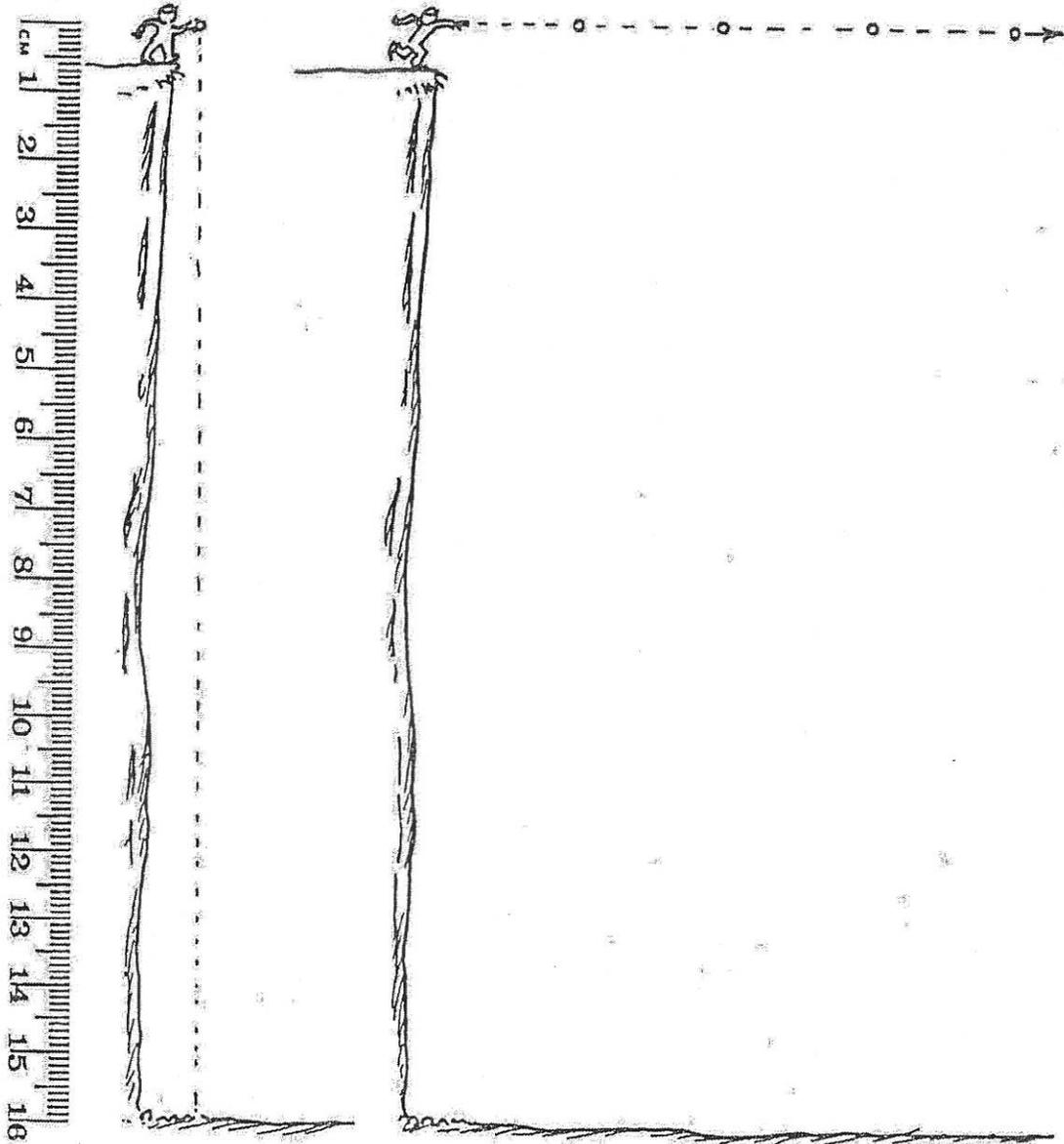


## Concept-Development Practice Page

# 3-1

### Projectile Motion

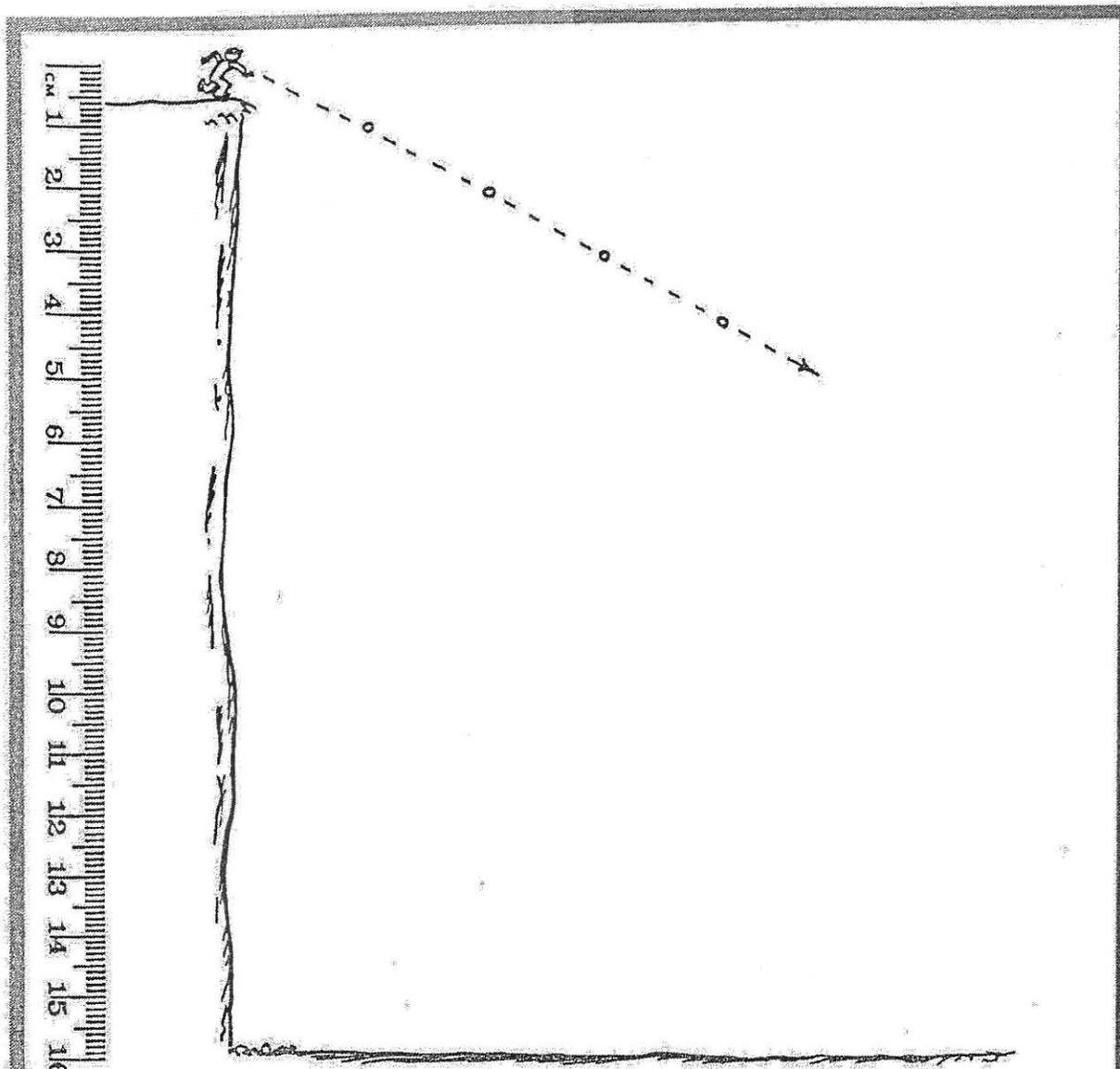


1. Above left: Use the scale 1 cm: 5 m and draw the positions of the dropped ball at 1-second intervals. Neglect air drag and assume  $g = 10 \text{ m/s}^2$ . Estimate the number of seconds the ball is in the air.

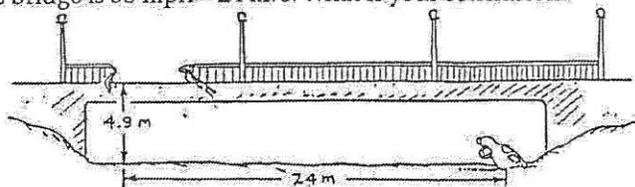
\_\_\_\_\_ seconds.

2. Above right: The four positions of the thrown ball with *no gravity* are at 1-second intervals. At 1 cm: 5 m, carefully draw the positions of the ball *with gravity*. Neglect air drag and assume  $g = 10 \text{ m/s}^2$ . Connect your positions with a smooth curve to show the path of the ball. How is the motion in the vertical direction affected by motion in the horizontal direction?

Conceptual **PHYSICS**



3. This time the ball is thrown below the horizontal. Use the same scale 1 cm: 5 m and carefully draw the positions of the ball as it falls beneath the dashed line. Connect your positions with a smooth curve. Estimate the number of seconds the ball remains in the air. \_\_\_\_\_ s
4. Suppose that you are an accident investigator and you are asked to figure whether or not the car was speeding before it crashed through the rail of the bridge and into the mudbank as shown. The speed limit on the bridge is 55 mph = 24 m/s. What is your conclusion?




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