HOLD THIS PAGE UNTIL IP1-IP3 PREDICTIONS ARE RECORDED

Evidence card: open after predicting

Supplied ideal-model evidence

Use this card for an offline comparison after the teacher checks predictions. These are model calculations for the given launch, not measurements of your own flight or a student experiment. Copy them into the evidence column on page 3, then explain your comparison.

A stationary launcher fires a point projectile at 28 m/s, 45° above +x, from (0, 0) m. It returns to level ground at y = 0 m. Earth g = 9.8 m/s^2; a_x = 0. No wind, drag or earlier obstacle collision. The marked point defines the flight; artwork is illustrative.

Quantity	Supplied value
Initial horizontal velocity	19.799 m/s
Initial vertical velocity	19.799 m/s
Total flight time	4.041 s
Horizontal range	80 m

Selected motion samples

t (s)	x (m)	y (m)	v_x (m/s)	v_y (m/s)
0	0	0	19.799	19.799
1	19.799	14.899	19.799	9.999
2.02	40	20	19.799	0
3	59.397	15.297	19.799	-9.601
4.041	80	0	19.799	-19.799

At the apex: v_y = 0 m/s, while v_x remains positive and a_y = -9.8 m/s^2. At first ground contact: y = 0 m. The projectile stops being tracked at this event; no bounce is modeled.

Values are rounded for display. Keep full component precision during calculations. An answer that agrees within rounding still needs an explanation of why the equations apply.

For the Do Now discussion: the two releases have equal initial vertical velocity, equal release height and the same vertical acceleration. Use the teacher-led comparison to check your three original choices.