BEFORE THE GUIDED RANGE PRELAB / INDIVIDUAL DO NOW

Two releases. Your prediction.

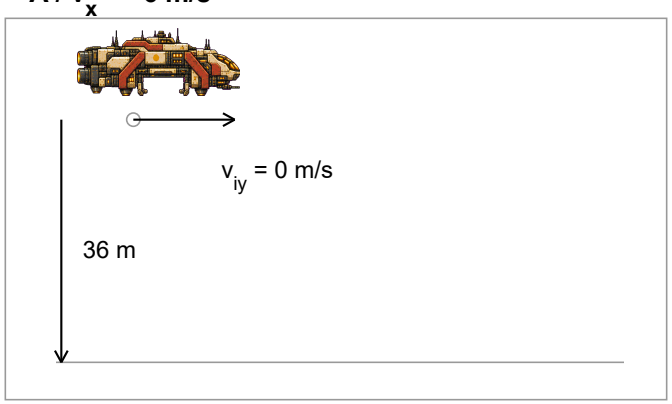
Name: _____ Class: _____ Date: _____

Two identical supply packages, A and B, are released at the same instant, 36 m above level ground. A inherits +6 m/s horizontally; B inherits +12 m/s. Both begin with $v_{iy} = 0$. Earth g = 9.8 m/s^2; neglect wind and air resistance.

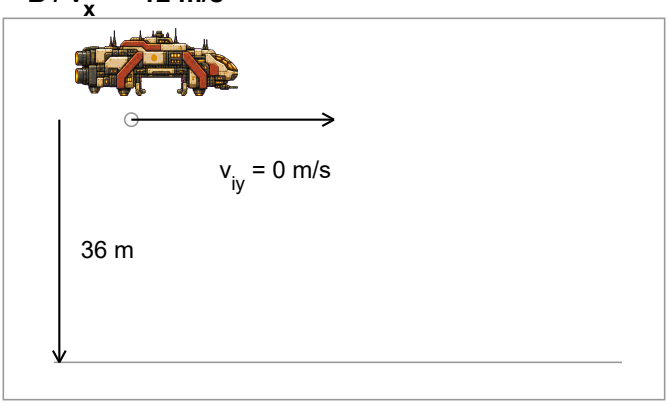
Work independently. Circle one response in each row. No calculation is required.

ID	Question	Circle one
DN1	Which package reaches the landing surface first?	A / B / Same time
DN2	Which package travels farther horizontally before landing?	A / B / Same distance
DN3	What is package B's horizontal acceleration after release?	0 m/s^2 / +6 m/s^2 / +12 m/s^2

A / v_x = +6 m/s



B / v_x = +12 m/s



After the teacher checks your first responses

Write any corrections here. Keep the original circles above.

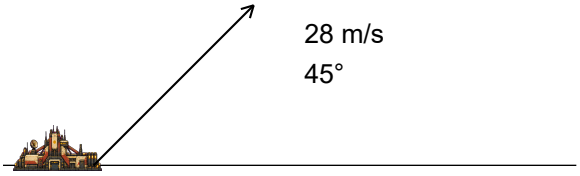
DN1 correction	DN2 correction	DN3 correction
_____	_____	_____

Next: complete the guided range prelab. Use pages 2-3 of this packet afterward. Keep the evidence card on page 4 separate until predictions have been recorded.

AFTER THE GUIDED PRELAB / IP1-IP2 / CALCULATE FIRST

Plan a new Earth launch

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.



Launch y = landing y = 0 m
g = 9.8 m/s^2; a_x = 0
Given conditions only; not to scale.

IP1 / Resolve the 28 m/s launch velocity into initial horizontal and vertical components. Show your equations, substitution and units.

Givens	**U**nknowns	**E**quation	**S**ubstitute	**S**olve

IP2 / Calculate the total flight time to first ground contact. Show how the vertical motion determines this time.

Givens	**U**nknowns	**E**quation	**S**ubstitute	**S**olve

IP3-IP4 / PRESERVE ORIGINAL PREDICTIONS

Predict the range. Explain the result.

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.

IP3 / Calculate horizontal range. Show how it follows from the shared flight time, or use the equal-height range equation and state its assumptions.

Givens	**U**nknowns	**E**quation	**S**ubstitute	**S**olve

IP4 / Compare your original predictions with the observed or supplied evidence. Cite a numerical comparison and explain a discrepancy, or explain why agreement is expected. Add any correction beside the original; do not erase it.

Copy original predictions before observing. Use the animation or, afterward, the supplied evidence card on page 4.

Quantity	Original prediction	Observed / supplied
v_{ix} (m/s)		
v_{iy} (m/s)		
T (s)		
R (m)		

Numerical comparison, explanation and any correction: