Physical Science: Physics

Three calibration cases • Official criteria with hypotheses for anonymous local work

JUNE 2026 / Q4 / 1 credit criterion

Represent a force with direction and magnitude

The accepted response combines a downward arrow with a net force from 1.4 through 1.5 N. Exact placement on the dot is flexible.

Test this possibility. An accurate magnitude can coexist with confusion between motion direction and net-force direction.

Ask: If the object is moving one way, must its acceleration point that way? Which direction does the net force indicate here?

Exam task Official scoring criterion · PDF p. 4

JUNE 2026 / Q20 / 1 credit criterion

Select the design using the relevant peak

The guide requires Helmet 3 and an explanation based on its smaller maximum force or acceleration in the impact comparison.

Test this possibility. A student may choose the right helmet by appearance or conflate peak force with total impulse.

Ask: Which table entry establishes the smallest maximum acceleration? How does that relate to force for the same mass?

Exam task Official scoring criterion · PDF p. 6

JUNE 2026 / Q25 / 1 credit criterion

Construct the image with rays

The guide requires a constructed, inverted image between F and 2F. A correct word describing orientation supplies only part of the graphical evidence.

Test this possibility. The student may recall the image rule without being able to construct its position.

Ask: Which two rays determine the tip of the image? Where should they cross?

Exam task Official scoring criterion · PDF p. 7

Physical Science: Physics

Constructed practice responses • Read independently, then compare with the facilitator interpretation.

PHYS_NEW-1 / Two force curves, one change in motion

A padded cart and a rigid cart carry the same mass and strike identical barriers at the same speed. For a simplified comparison, force pulses are rectangular: 120 N for 0.06 s and 240 N for 0.03 s. Compare impulses and peak forces. Explain what this model predicts about padding.

Focal request

Decide what differs between the two force pulses in the Studio task.

Response A

The 240 N pulse changes momentum more because the force is larger.

Response B

Both rectangles have area 7.2 N·s. They give the same magnitude of momentum change. The 240 N pulse has a higher peak and lasts half as long.

What the pair distinguishes

A uses peak height alone. B distinguishes peak force from impulse. A second task with a triangular pulse can test whether the student understands area or recalls a rectangle formula.

A fresh transfer check

Replace the 240 N rectangle by a triangular pulse with the same peak and duration. Does the momentum change stay the same?

Evidence of transfer

Uses the triangle’s 3.6 N·s area to revise the momentum comparison and keeps peak force separate.