GET BETTER AT PHYSICS · MARK SCHEME

Momentum & Its Conservation: tiered multiple choice

Edexcel IAL Physics · Unit 1 (WPH11) · Specification points 13–14 · 5 questions · 5 marks

1 mark per correct letter | Worked reasoning for every question

How students did = from Pearson examiner reports, where available

Answer key

Q1	Q2	Q3	Q4	Q5
A	A	B	B	D

Easy

Questions 1–5

1 **A**

Total momentum of two colliding objects · Edexcel IAL January 2021 · Unit 1 · Q6

Momentum is conserved, so the total after equals the total before. Taking right as positive: 2 × 3 + 5 × (−2) = 6 − 10 = −4 kg m s^{-1}, i.e. 4 kg m s^{-1} to the left.

Watch out: Adding the sizes (6 + 10 = 16) ignores the opposite directions.

2 **A**

Momentum after a collision · Edexcel IAL June 2025 · Unit 1 · Q10

Take the train's direction as positive. Total momentum before = 3m × v + m × (−2v) = mv. After, the combined mass 4m moves with speed V: 4mV = mv, so V = v/4.

Watch out: Momentum is a vector: the truck's momentum must be subtracted.

3 **B**

Momentum gained by falling objects · Edexcel IAL October 2025 · Unit 1 · Q10

Change in momentum = force × time = weight × t. R (mass m) gains mgt, which the question tells us is p (from p to 2p). S has twice the mass, so twice the weight, and gains 2mgt = 2p in the same time. S's momentum becomes p + 2p = 3p.

4 **B**

Momentum transferred by a bat · Edexcel IAL October 2024 · Unit 1 · Q8

The momentum lost by the bat is gained by the ball. First ball: mv = Δp. Second ball: it gains 2Δp = 2mv, so 3m × v′ = 2mv and v′ = 2v/3.

5 **D**

Trolleys that collide and stick · Edexcel IAL January 2020 · Unit 1 · Q7

By Newton's third law the forces on X and Y are equal in size, so A and B are wrong. Momentum: 3mv − mv = 2mv before; after, 4m moves together at speed 2mv/4m = v/2. So X's speed after the collision is less than v.

End of mark scheme. Answers from Pearson's published mark schemes; explanations written for this pack. Pearson Edexcel material is © Pearson Education Ltd. More free packs and 1-to-1 tuition: **www.getbetteratphysics.co.uk**

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