Momentum and impulse

Answers

Further Maths topic practice

This topic online

Q	Answer	Marks
1	**a)** 3 N s **b)** 75 N	3
2	**a)** 11.2 m s^{-1} **b)** F = 5	4
3	**a)** 2.2 m s^{-1}, in the direction A was moving **b)** 29.4 J	5
4	**a)** m = 0.96 **b)** 4.8 N s **c)** 12 J	7
5	**a)** 7 m s^{-1} **b)** 5.6 m s^{-1} **c)** 2.52 N s	6
6	**a)** 3v = 5w, so v = (5/3)w **b)** A: 3 m s^{-1}, B: 1.8 m s^{-1} **c)** 9 N s	7
7	**a)** P and Q have the same speed once the string is taut **b)** v = 2 **c)** 6 N s **d)** 15 J	7
8	**a)** $\frac{3}{2}$u, in the direction P was moving (Q is reversed) **b)** $\frac{1}{4}$u **c)** $\frac{225}{16}$ mu^2	8
9	**a)** 4 m s^{-1} **b)** 1584 J (1580 J to 3 s.f.) **c)** 1.63 m **d)** Friction is a finite force acting for a very short time, so its impulse (Ft) is negligible compared with the impulse between the bullet and the block	9
10	**a)** v = (15 - 2k)u/(2k) shown **b)** $0 < k < \frac{15}{2}$ **c)** KE after ≤ KE before leads to 225 ≤ 105k, so $k \geq \frac{15}{7}$	10
11	**a)** 5.94 m s^{-1} **b)** 3.96 m s^{-1} **c)** 1580 N s **d)** R = 74 500 (3 s.f.)	10
12	**a)** 4.2 m s^{-1} **b)** 1.68 m s^{-1} **c)** 1.01 N s **d)** 2.12 J **e)** 0.72 m	12

Full worked solutions, written out by hand, are on the solutions sheet for this topic.

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