Units
kg·m/s

$p = mv$

Momentum 3.1 Worksheet Answers

① 2000 kg = 2000 kg (35 m/s)
35 m/s = 70,000 kg·m/s
p = ?

② 1000 kg = 1000 kg (35 m/s)
35 m/s = 35000 kg·m/s
p = ?

③ 8kg
16 kg·m/s
v = ?

$\frac{16\ kg\cdot m/s}{8\ kg} = \frac{8\ kg\ (v)}{8\ kg}$

2 m/s = v

④ 0.5 m/s
0.25 kg·m/s
m = ?

$\frac{0.25\ kg\ m/s}{0.5\ m/s} = \frac{m\ (0.5\ m/s)}{0.5\ m/s}$

0.5 kg = m

⑤ 4000 kg = 4000 kg (10 m/s)
10 m/s = 40,000 kg·m/s
p = ?

⑥ 1400 kg
40 000 kg·m/s
v = ?

$\frac{40{,}000\ kg\cdot m/s}{1400\ kg} = \frac{1400\ kg\ (v)}{1400\ kg}$

28.57 m/s = v

⑦ 8 kg 4 kg
2 m/s 1 m/s
8kg (2m/s) 4kg (1m/s)
= 16 kg·m/s = 4 kg·m/s

8 kg ball faster

⑧ 24,500 kg·m/s
20 m/s
m = ?

$\frac{24{,}500\ kg\cdot m/s}{20\ m/s} = \frac{20\ m/s\ (m)}{20\ m/s}$

1225 kg = m

(9) 0.14 kg
30 m/s

$= 0.14\text{ kg}(30\text{ m/s})$
$= 4.2\text{ kg}\cdot\text{m/s}$

(10) 2.1 kg·m/s
0.14 kg

$\frac{2.1\text{ kg m/s}}{0.14\text{ kg}} = \frac{0.14\text{ kg}(v)}{.14\text{ kg}}$
$15\text{ m/s} = v$

(11) 1 kg
0.01 m/s

$= 1\text{ kg}(0.01\text{ m/s})$
$= 0.01\text{ kg}\cdot\text{m/s}$