after

$m = 7.05$ kg
$v = 5.00$ m/s
$p = 35.3$ kg•m/s

$p_{after} = 35.3$ kg•m/s

$$v = \frac{p}{m}$$
$$= \frac{35.3 \text{ kg•m/s}}{0.050 \text{ kg}}$$
$$= 706 \text{ m/s}$$

5

before collision

$m = 40.0$ g
$v = 9.00$ m/s
$p = 3.60 \times 10^2$ g•m/s
$p_{before} = 3.0 \times 10^1$ g•m/s

$m = 55.0$ g
$v = -6.00$ m/s
$p = -3.30 \times 10^2$ g•m/s

after collision

$m = 95.0$ g
$v = ?$
$p = 3.0 \times 10^1$ g•m/s
$p_{after} = 3.0 \times 10^1$ g•m/s

$$v = \frac{p}{m}$$
$$= \frac{3.0 \times 10^1 \text{ g•m/s}}{95 \text{ g}}$$
$$= 0.316 \text{ m/s right}$$

6.

before

$m = 76.2$ kg
$v = 0$
$p = 0$

$p_{before} = 0$

after

$m = 0.20$ kg
$v = -22$ m/s
$p = -4.4$ kg•m/s

$m = 76$ kg
$v = ?$
$p = 4.4$ kg•m/s

$p_{after} = 0$

$$v = \frac{p}{m}$$
$$= \frac{4.4 \text{ kg¥m/s}}{76 \text{ kg}}$$
$$= 0.058 \text{ m/s right}$$

7.

before

$m = 1.13 \times 10^3$ kg
$v = 0$
$p = 0$

$p_{before} = 0$

after

$m = 1.1 \times 10^3$ kg
$v = ?$
$p = -8.13 \times 10^2$ kg•m/s
$p_{after} = 0$

$m = 25$ kg
$v = 325$ m/s
$p = 8.13 \times 10^2$ kg•m/s

$$v = \frac{p}{m}$$
$$= \frac{-8.13 \times 10^3 \text{ kg•m/s}}{1.1 \times 10^3 \text{ kg}}$$
$$= -7.4 \text{ m/s west}$$

8.

before

$m = ?$
$v = 0$
$p = 0$

$p_{before} = 0$

