6E Merrill Inelastic Collisions solutions

1. 155 kg(6.0 m/s) + x (0) = (155 + mboat)2.2

930 kg /s – 341 kg m/s = 2.2 (mboat) mboat = 268 kg

1. 63 (10.8 m/s) + 0 = (63 + x) 10.01
   1. kg m/s – 630.6 kg m/s = 10.01 x x = 4.97 kg
2. mg(4.48 m/s) = (54 + mg)(4.00 m/s)

4.48mg – 4.00 mg = 216 kg m/s

0.48 mg = 216 kg m/s mg = 450 kg

1. 1200 kg x + 0 = (2800 + 1200) (3 m/s)

x m/s = 12,000/1200 = 10.0 m/s

1. 227 kg( 4.0 m/s) + 267 kg (x) = 0 + 0

227(4) / -267 kg = – 3.4 m/s

1. 24 km/hr = 6.67 m/s 11 km/hr = 3.06 m/s

32 (x) + 9.50(6.67 m/s) = (32 + 9.50)3.06 m/s

32 x + 63.37 kg m/s = 127 kg m/s

32 x = 63.6 kg m/s x = 1.99 m/s

1. m(24.7 m/s) + m(19.1 m/s) = (2m)(v’)

24.7 m/s + 19.1 m/s = 2 v’ (the mass cancels)

v’ = 21.9 m/s

1. 250 kg (– 3 m/s) **down** + 3000 kg (1.0 m/s) = 3250 v’

v’ = 0.69 m/s (up)

1. Total mass is cow plus cart **left is positive**

2767 (2 m/s) + 2300 kg (– 1.4 m/s) = 5067 kg(v’)

v’ = 0.46 m/s (**left)**