5. $F_{net} = ma$
$= (6.2 \text{ kg})(1.1 \text{ m/s}^2)$
$= 6.8 \text{ N}$

$F_{net} = T - F_f$

$F_f = T - F_{net}$
$= 22.0 \text{ N} - 6.8 \text{ N}$
$= 15.2 \text{ N}$

$F_f = \mu F_N$
or $F_f = \mu mg$

$\mu = \dfrac{F_f}{mg}$
$= \dfrac{15.2 \text{ N}}{(6.2 \text{ kg})(9.80 \text{ m/s}^2)}$
$= 0.25$

Lesson 6–Hooke's Law

1. $F = -kx$
$= -(20.0 \text{ N/m})(0.100 \text{ m})$
$= -2.00 \text{ N}$

2. $F = -kx$

$x = -\dfrac{-F}{k}$
$= -\dfrac{-2.0 \text{ N}}{15 \text{ N/m}}$
$= 0.13 \text{ m}$

3. $F = -kx$

$k = \dfrac{F}{x}$
$= \dfrac{1.2 \text{ N}}{0.025 \text{ m}}$
$= 48 \text{ N/m}$

4. $F = -kx$

$k = \dfrac{F}{x}$
$= \dfrac{1.65 \text{ N}}{0.110 \text{ m}}$
$= 15.0 \text{ N/m}$

5. $F_g = mg$
$= (5.0 \text{ kg})(9.80 \text{ m/s}^2)$
$= 49 \text{ N}$

$F = -kx$
$k = \dfrac{F}{x}$
$= \dfrac{49 \text{ N}}{3.25 \times 10^{-2} \text{ m}}$
$= 1.5 \times 10^3 \text{ N/m}$

6. $F = -kx$

$x = -\dfrac{-F}{k}$
$= -\dfrac{-9.3 \text{ N}}{25 \text{ N/m}}$
$= 0.37 \text{ m}$

7. max. F_{net} = max F_s $= k \max x$
$= (5.0 \text{ N/m})(0.080 \text{ m})$
$= 0.40 \text{ N}$

$\text{max acceleration} = \dfrac{\max F_{net}}{m}$
$= \dfrac{0.40 \text{ N}}{75 \times 10^{-3} \text{ kg}}$
$= 5.3 \text{ m/s}^2$

Lesson 7–Momentum

1. $p = mv$
$= (4.0 \text{ kg})(12.0 \text{ m/s})$
$= 48 \text{ kg•m/s east}$

2. $p = mv$

$v = \dfrac{p}{m}$
$= \dfrac{25.0 \text{ kg•m/s}}{5.0 \text{ kg}}$
$= 5.0 \text{ m/s west}$

3. $p = mv$

$m = \dfrac{p}{v}$
$= \dfrac{36.0 \text{ kg•m/s}}{8.0 \text{ kg}}$
$= 4.5 \text{ kg}$