

Forces at an Angle Answers

1. a) 5.34 m/s^2 [down ramp] b) 3.69 m/s^2 [down ramp]
2. 0.57
3. a) 401.8 N [down ramp] b) 125.4 N [down ramp]
4. a) 2.29 m/s^2 [up ramp] b) 1.26 m/s^2 [down ramp]
5. a) $F_x = 34.47 \text{ N}$, $F_y = 28.93 \text{ N}$ b) 20.07 N c) 9.03 N d) 5.09 m/s^2
6. 4.22 m/s^2
7. 0.6745
8. 401.0 N

Solution to number 7.



$$F_x = 750 \cos 30^\circ$$
$$= 649.5 \text{ N}$$

$$F_y = 750 \sin 30^\circ$$
$$= 375 \text{ N}$$

$$F_g = mg$$
$$= 588 \text{ N}$$

$$F_N = F_g + F_y$$
$$= 963 \text{ N}$$

$$F_f = F_x \text{ for constant velocity}$$
$$= 649.5$$

$$F_f = \mu F_N \rightarrow \mu = \frac{F_f}{F_N} = \frac{649.5}{963}$$
$$= 0.6745$$

