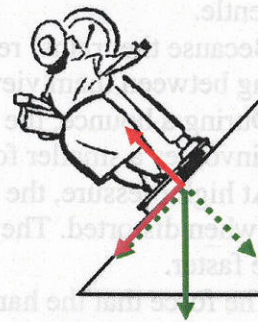


total: 14 points

Homework 3.1

Homework 3.1

- ② E.2 The watch has a spring inside which obeys Hooke's law: $F = -kx$. The force is proportional to the displacement; thus the further you wind the clock (spring), the harder it will be to wind it.
- ② E.3 The top of the curl supports more weight than the bottom.
- ② E.6 The weight reported by the scale will be lower, since part of your weight will be supported by the table.
- ② E.8 The weight will be low, since only the normal force component will be measured (red arrow in diagram).



P.1 Hooke's law $F = -k \cdot x$

②
$$\rightarrow k = \frac{-F}{x}$$

$$k = \frac{-600 \text{ N}}{-0.04 \text{ m}}$$

$$k = \underline{\underline{15,000 \frac{\text{N}}{\text{m}}}}$$

P.2 From Hooke's law:

②
$$-x = \frac{F}{k}$$

$$x = -\frac{1000 \text{ N}}{15,000 \frac{\text{N}}{\text{m}}}$$

$$x = \underline{\underline{-0.067 \text{ m} = 6.7 \text{ cm}}}$$

P.4 Your weight pushes the trampoline down 0.12 m (and the trampoline is pushing up with the same force

② Hooke's law ($F = kx$): If the trampoline is pushed down 0.3 m, it pushes on you with $\frac{0.3}{0.12} = \underline{\underline{2.5 \times \text{your weight}}}$