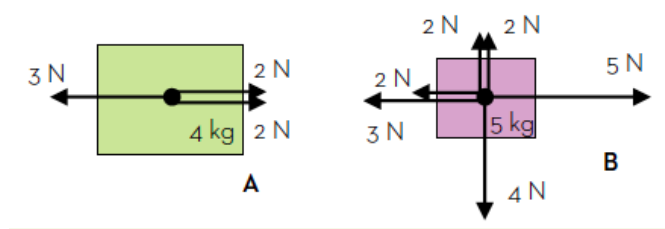


ANSWERS TO ACTIVITIES 7,12, 13, 15

7)



A)

$$F_{NET} = (2+2) - 3 = 1 \text{ N (RIGHT)}$$

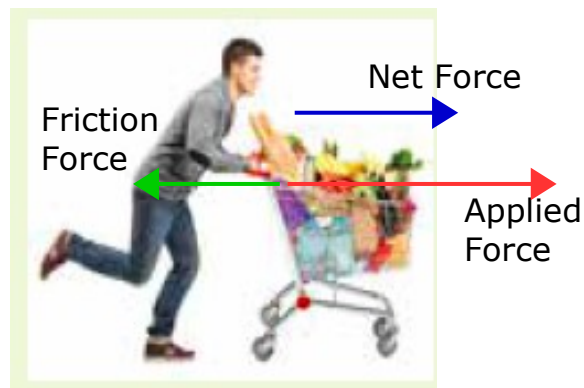
$$a = F_{NET} / m = 1/4 = 0,25 \text{ m/s}^2$$

B) F_{NET} (horizontal) = $5 - (2+3) = 0 \text{ N}$

F_{NET} (vertical) = $(2 + 2) - 4 = 0 \text{ N}$

Net Force is zero, so there is not acceleration.

12)



$$F_{NET} = 1250 \text{ N} - 150 \text{ N} = 1100 \text{ N (RIGHT)}$$

$$F_{NET} = m \times a \rightarrow a = \frac{F_{NET}}{m} = \frac{1100 \text{ N}}{50 \text{ kg}} = 22 \text{ m/s}^2$$

$$a = \frac{v_f - v_0}{t} \leftarrow v_f = v_0 + a \times t = 0 + 22 \text{ m/s}^2 \times 5 \text{ s} = 110 \text{ m/s}$$

13)

$$W_{Earth} = m \times g_{Earth}$$

$$m = \frac{W_{Earth}}{g_{Earth}} = 196 \text{ N} : 9,8 \text{ N/kg} = 20 \text{ kg}$$

$$W_{Io} = m \times g_{Io}$$

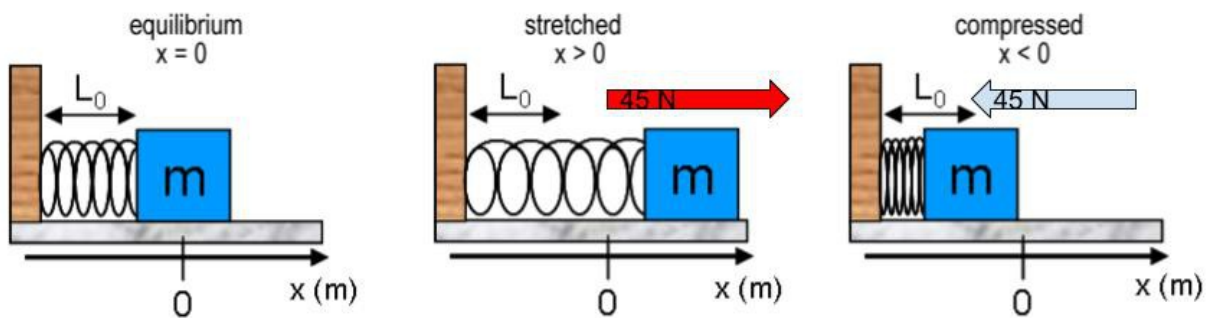
$$g_{Io} = \frac{W_{Io}}{m} = 36,2 \text{ N} : 20 \text{ kg} = 1,81 \text{ N/kg}$$

15)

a) $k = 150 \text{ N/m}$

$$F = k \times \Delta l = 150 \text{ N/m} \times 0,3 \text{ m} = 45 \text{ N}$$

It is the same force for stretching or compressing the spring, but in opposite directions:



b) $\Delta l = F : k = 25 \text{ N} : 150 \text{ N/m} = 0,17 \text{ m} = 17 \text{ cm}$