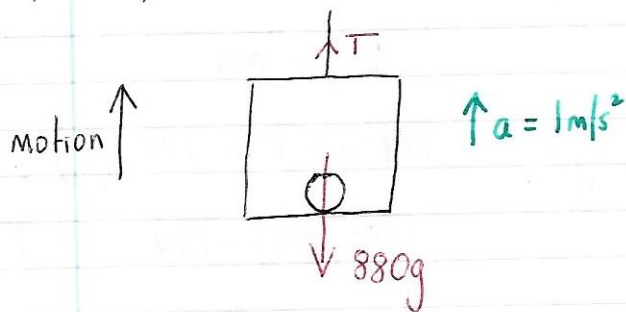


Lift Questions: $RF = ma$

Answers

1) a) $RF = ma$ whole system



$$RF = ma$$

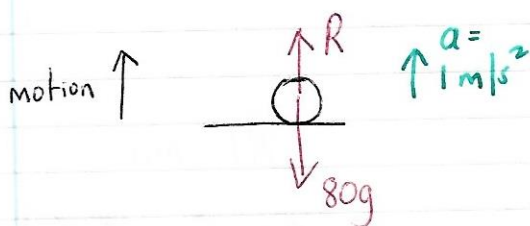
$$T - 880g = 880(1)$$

$$T = 880 + 880(9.8)$$

$$T = 9504 \text{ N}$$

change g
to 9.8
here
because we
need to
add it
to 880

b) $RF = ma$ for person



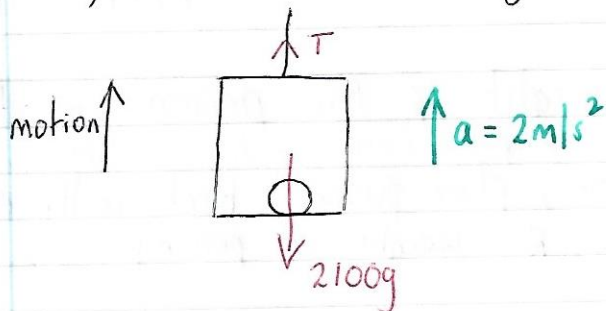
$$RF = ma$$

$$R - 80g = 80(1)$$

$$R = 80 + 80(9.8)$$

$$R = 864 \text{ N}$$

2) a) $RF = ma$ whole system



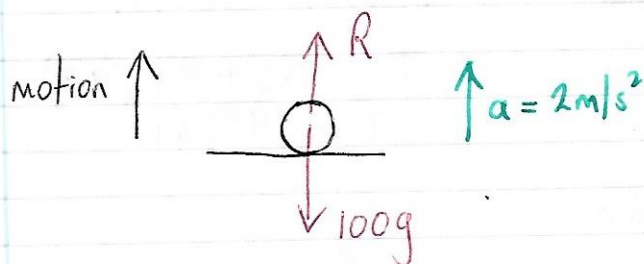
$$RF = ma$$

$$T - 2100g = 2100(2)$$

$$T = 4200 + 2100(9.8)$$

$$T = 24780 \text{ N}$$

b) $RF = ma$ for person



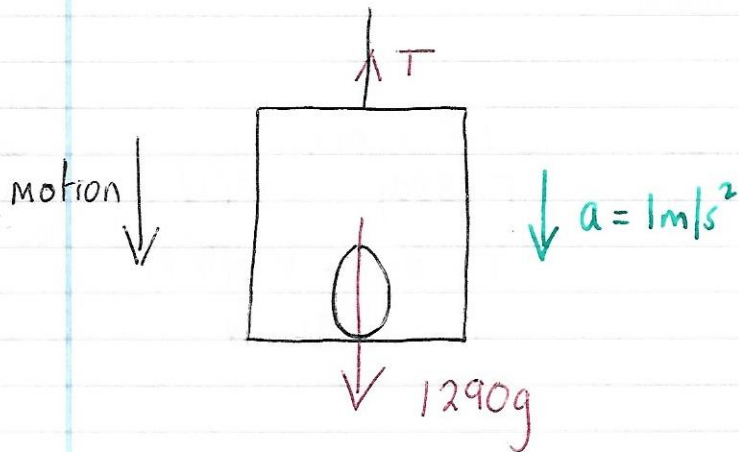
$$RF = ma$$

$$R - 100g = 100(2)$$

$$R = 200 + 100g$$

$$R = 1180 \text{ N}$$

3) a) $Rf = ma$ whole system



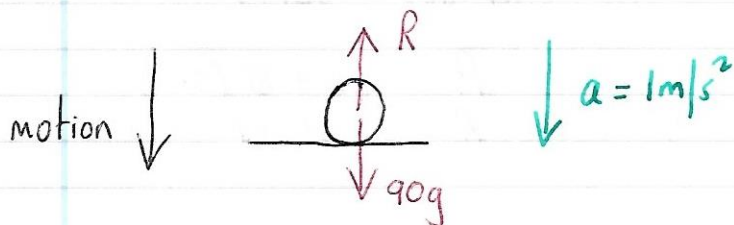
$$Rf = ma$$

$$1290g - T = 1290(1)$$

$$1290(9.8) - 1290 = T$$

$$11352 \text{ N} = T$$

b) $Rf = ma$ for person



$$Rf = ma$$

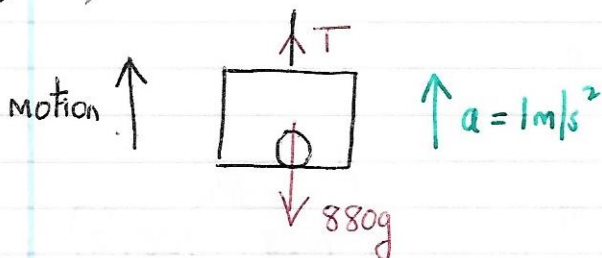
$$90g - R = 90(1)$$

$$90(9.8) - 90 = R$$

$$792 \text{ N} = R$$

Now R is the weight of the person in this situation. **NOTICE PERSON is lighter by 90 N !!!**
(Person pushes on floor, floor pushes back with equal and opposite force. $\therefore R = \text{weight of person}$)

4) a) $Rf = ma$ whole system



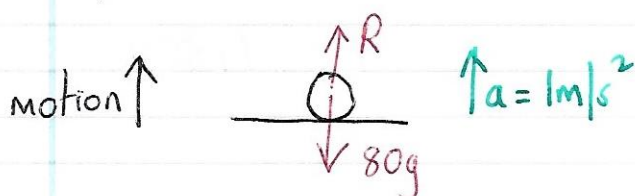
$$Rf = ma$$

$$T - 880g = 880(1)$$

$$T = 880 + 880(9.8)$$

$$T = 9504 \text{ N}$$

b) $Rf = ma$ for person



$$Rf = ma$$

$$R - 80g = 80(1)$$

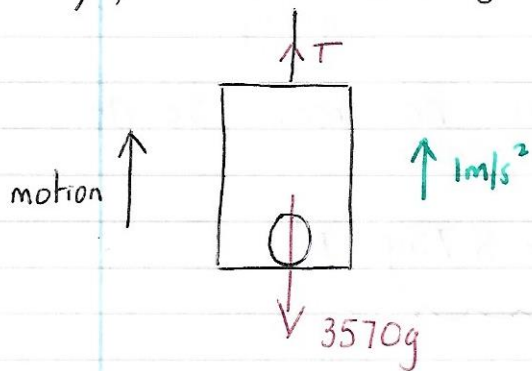
$$R = 80 + 80(9.8)$$

$$R = 864 \text{ N}$$

person is heavier
by 80 N

$\therefore \text{Weight of person} = 864 \text{ N}$

5) a) $Rf = ma$ whole system



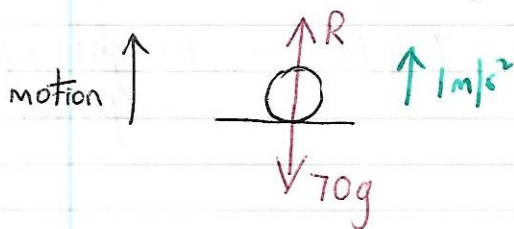
$$Rf = ma$$

$$T - 3570g = 3570(1)$$

$$T = 3570 + 3570(9.8)$$

$$T = 38\,556\text{ N}$$

b) $Rf = ma$ for person



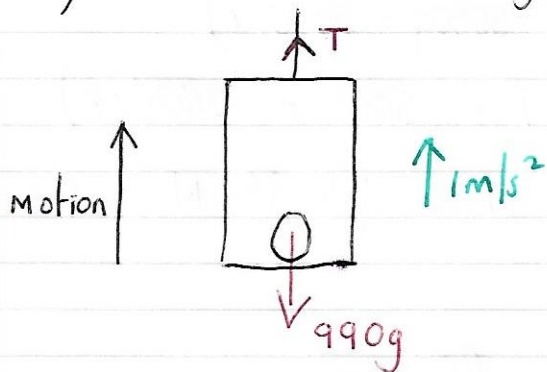
$$Rf = ma$$

$$R - 70g = 70(1)$$

$$R = 70 + 70(9.8)$$

$$R = 756\text{ N} = \text{Weight of person.}$$

6) a) $Rf = ma$ whole system



$$Rf = ma$$

$$T - 990g = 990(1)$$

$$T = 990 + 990(9.8)$$

$$T = 10\,692\text{ N}$$

b) $Rf = ma$ for person



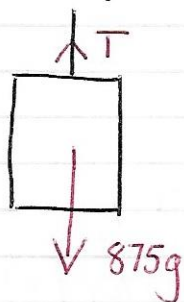
$$Rf = ma$$

$$R - 90g = 90(1)$$

$$R = 90 + 90(9.8)$$

$$R = 972\text{ N}$$

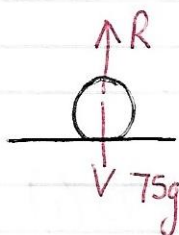
7) a) Whole system



doesn't matter which way it is going
constant speed means no acc. So no resultant force.

$$\therefore T = 875g \text{ N}$$

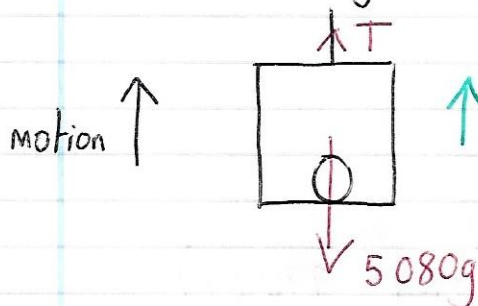
b) Person



As above

person is their normal weight
 $R = 75g \text{ N} = \text{Weight of person}$

8) a) Whole system

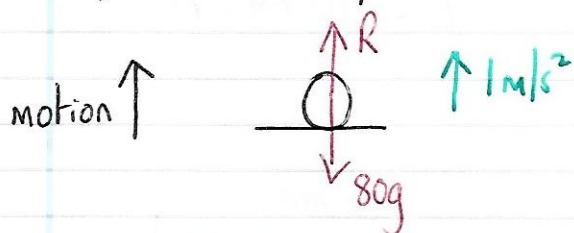


$\uparrow 1\text{m/s}^2$ $RF = ma$
 $T - 5080g = 5080(1)$

$$T = 5080 + 5080(9.8)$$

$$T = 54864 \text{ N}$$

b) $RF = ma$ person



$RF = ma$
 $R - 80g = 80(1)$

$$R = 80 + 80(9.8)$$

$$R = 864 \text{ N}$$

9) Constant speed

So whole system

$$T = 900g \text{ N}$$

Person

$$R = 120g \text{ N} = \text{Weight}$$