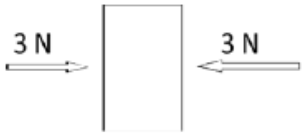
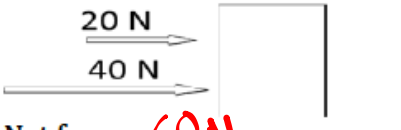
1. What is the net force on the objects below?

a.



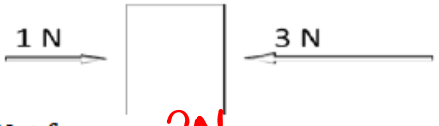
Net force = 0 N

b.



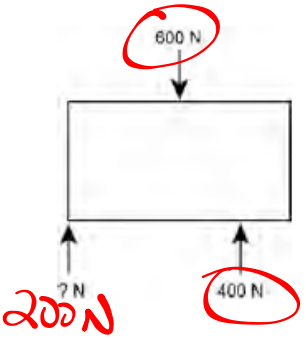
Net force = 60N →

c.



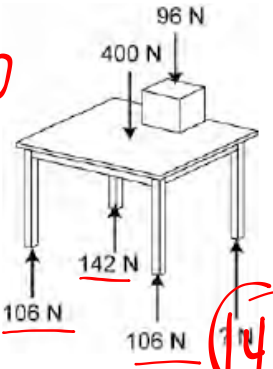
Net force = 2N ←

2. Supply the missing force necessary to achieve equilibrium.



200N

3. Supply the missing force necessary to achieve equilibrium

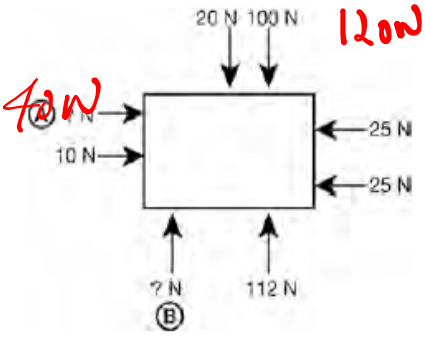


496 N ↓

496 ↑

106N
106N
142N
354N
142N
496N

4. Supply the missing force necessary to achieve equilibrium



120N

40N

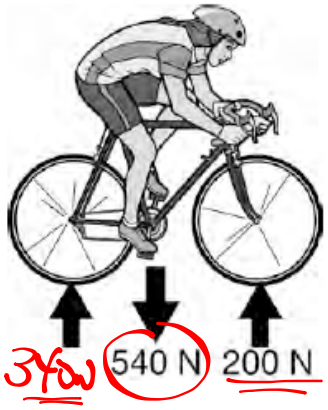
= 80N

80N

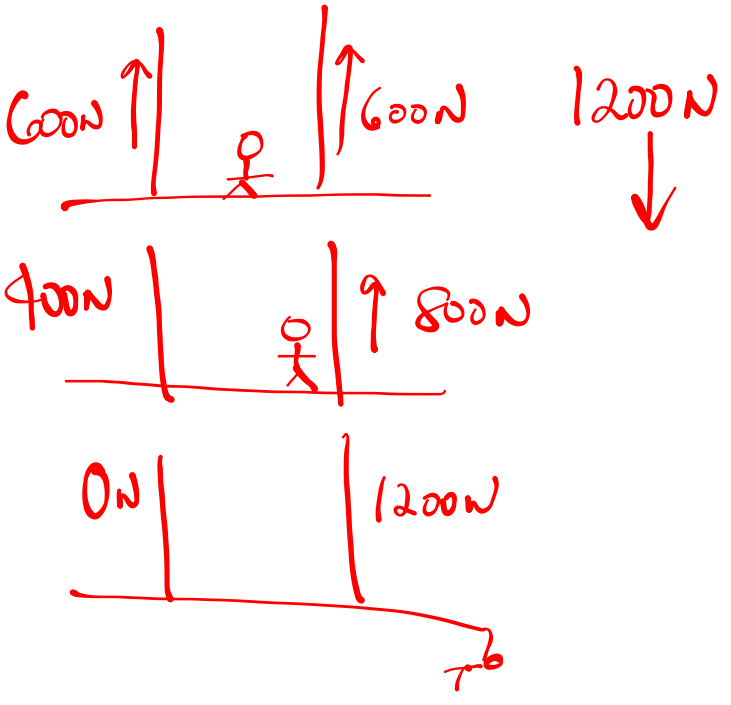
8N

= 120N

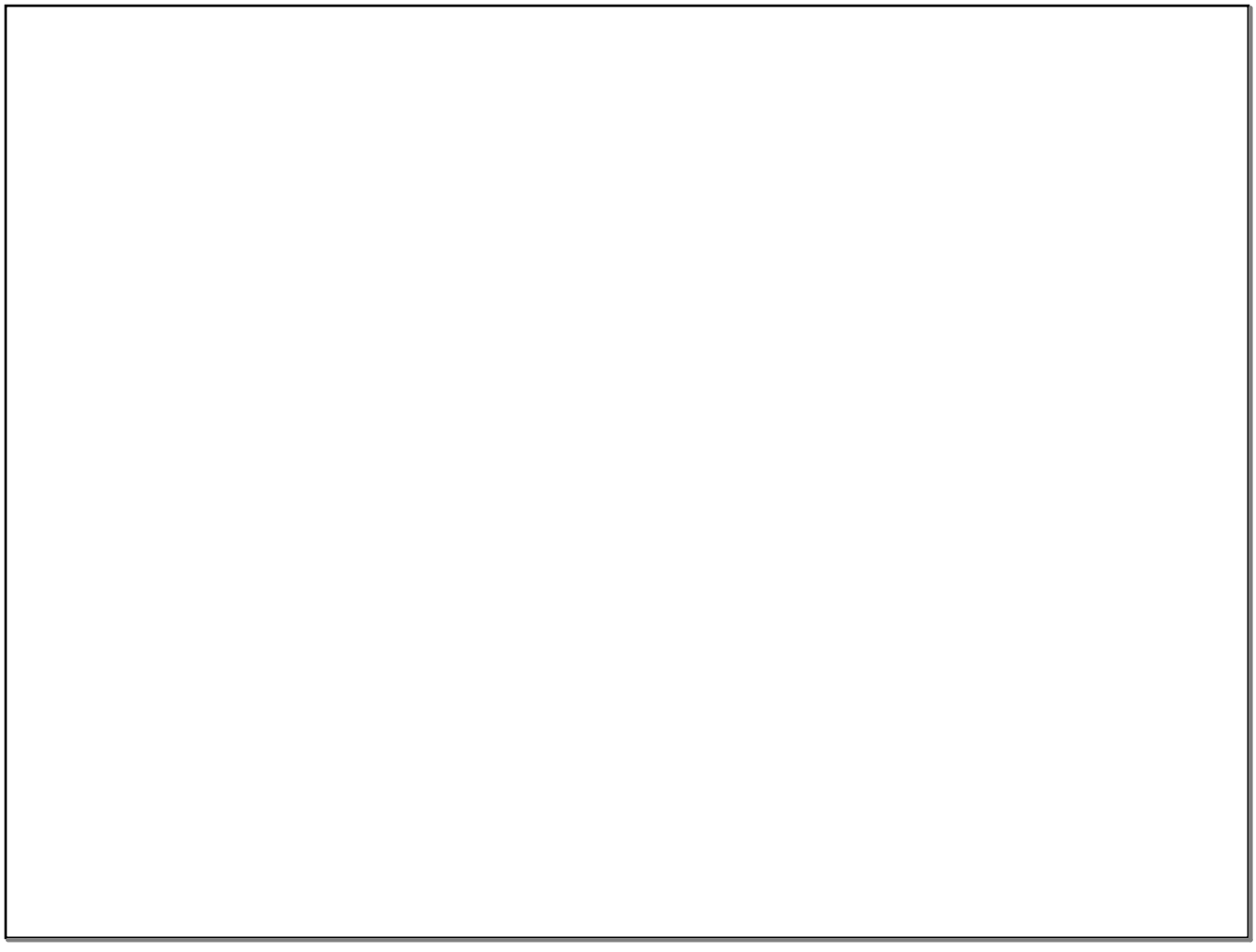
5. In the picture, a girl with a weight of 540 N is balancing on her bike in equilibrium, not moving at all. If the force exerted by the ground on her front wheel is 200 N, how much force is exerted by the ground on her back wheel?



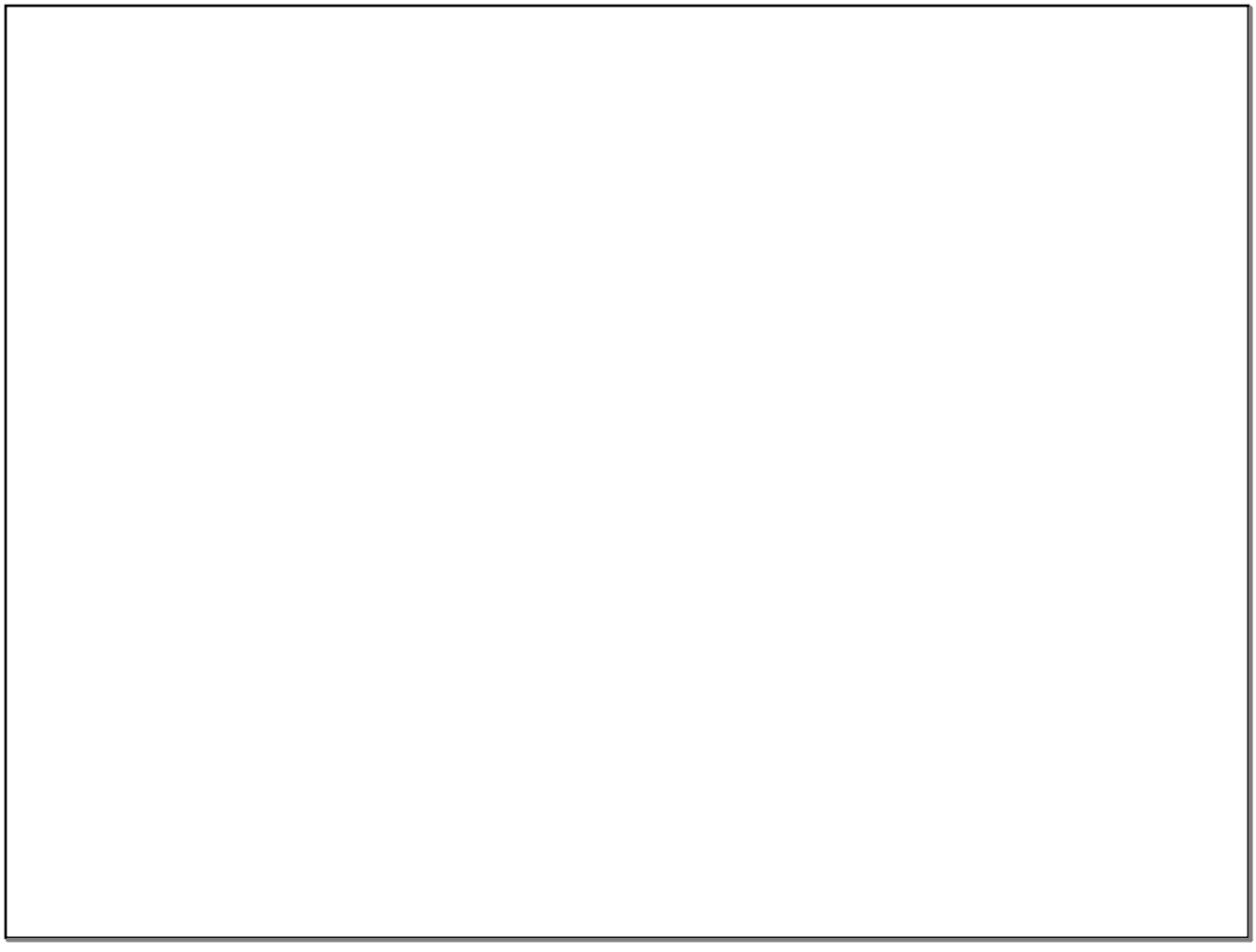
6. The net force on Burl the painter is zero. The total weight of Burl and the staging is 1,200 N. Fill in the readings on the readings on the scale.



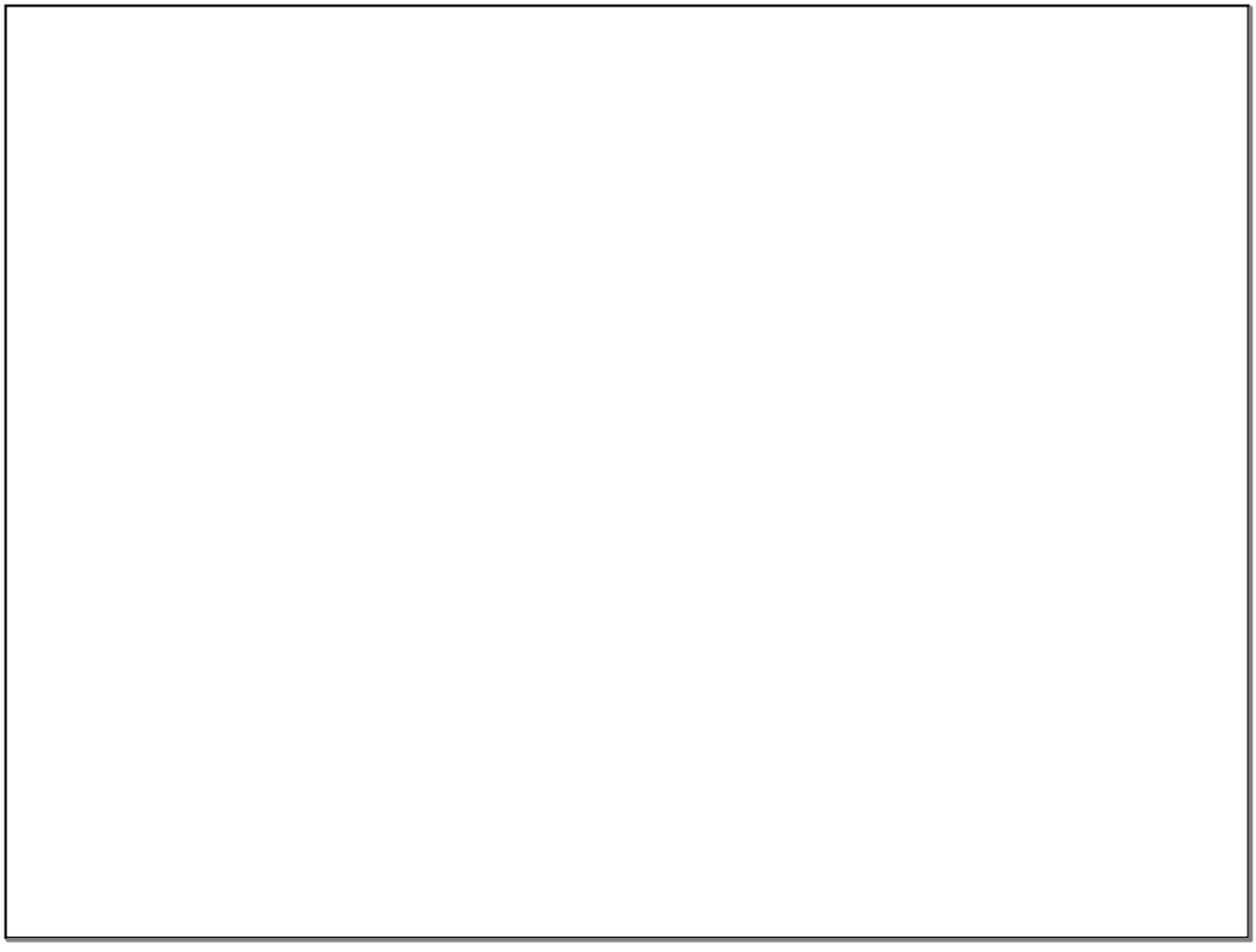
October 13, 2015



October 13, 2015



October 13, 2015



5. The speed of the sled through photogate A is the width of the flag (1 cm) divided by the time through A. Calculate the speed through A. Repeat for photogate B.
6. Use the two speeds and the average time from A to B to calculate the acceleration. Then find the average acceleration.
7. Repeat steps 3 through 6 using the car instead of the sled.

Table 4: Rolling friction data

Trial	Time through A (s)	Time through B (s)	Time from A to B (s)	Speed through A (cm/s)	Speed through B (cm/s)	Acceleration (cm/s^2)
1						
2						
3						
					average	

$S = d/t$ $\quad a = \frac{speed_B - speed_A}{T_{AB}}$

$d = 1.00\,cm$

9 Thinking about your data

a. Were your accelerations positive or negative? Why?

b. Which decelerated more, the sled or the car?

c. What does your answer to the previous question tell you about the rolling friction of the car compared to the sliding friction of the sled?

d. How could you increase the sliding friction between the sled or track? How could you decrease it?

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