Name: _____ Block: _____

Linear Forces #1

1. Two horizontal forces, $225\,\mathrm{N}$ and $165\,\mathrm{N}$ are exerted on a canoe. If these forces are both applied eastward, what is the net force on the canoe?

2. Two horizontal forces are exerted on a canoe, $225\,\mathrm{N}$ westward and $165\,\mathrm{N}$ eastward. What is the net force on the canoe?

Questions 3 & 4 refer to the following situation:

Three confused sled dogs are trying to pull a sled across the snow in Alaska. Alutia pulls to the east with a force of $135\,\mathrm{N}$. Seward pulls to the east with a force of $142\,\mathrm{N}$. Kodiak pulls to the west with a force of $153\,\mathrm{N}$.

3. What is the net force on the sled?

$\boxed{124\,\mathrm{N}\text{ east}}$

4. If the sled has a mass of $150.\,\mathrm{kg}$ and the driver has a mass of $100.\,\mathrm{kg}$, what is the acceleration of the sled? (Assume there is no friction between the runners of the sled and the snow.)

$\boxed{0.496\,\tfrac{\mathrm{m}}{\mathrm{s^2}}\text{ east}}$

5. When a net force of 10. N acts on a hockey puck, the puck accelerates at a rate of 50. $\frac{m}{s^2}$. Determine the mass of the puck.

$0.20\,\text{kg}$

6. A 15 N net force is applied for 6.0 s to a 12 kg box initially at rest. What is the speed of the box at the end of the 6.0 s interval?

$7.5\,\frac{m}{s}$

7. A 810 kg car accelerates from rest to 27 $\frac{m}{s}$ in a distance of 120 m. What is the magnitude of the average net force acting on the car?

$2\,460\,\text{N}$

8. A 44 kg child steps onto a scale and the scale reads 430 N. What is the magnitude of the normal force acting on the child?

9. A 70.0 kg astronaut pushes on a spacecraft with a force $\vec{F}$ in space. The spacecraft has a total mass of 1.0×10^4, kg. During the push, the astronaut accelerates to the right with an acceleration of 0.36 $\frac{m}{s^2}$. Determine the magnitude of the acceleration of the spacecraft.

$0.0025\,\frac{m}{s^2} \leftarrow$