Warm Up Question 1

A $5\,\mathrm{kg}$ object slides along a frictionless horizontal surface. During a period of $10\,\mathrm{s}$ a single force pulls to the right with magnitude $20\,\mathrm{N}$. During another period of $5\,\mathrm{s}$ an additional force also pulls with magnitude $10\,\mathrm{N}$ but perpendicular to the first force (and parallel to the surface). Compare the acceleration during the $5\,\mathrm{s}$ period to the $10\,\mathrm{s}$ period. During the $5\,\mathrm{s}$ period, is it exactly double, exactly zero or somewhere between?

1. Exactly double.
2. Between double and zero.
3. Exactly 1.5 times.
4. The net force will be $22.4\,\mathrm{N}$. So the acceleration will be a little more than the original.

Question 1

A phone is suspended in an elevator as illustrated. The elevator moves up with a constant speed. The rope suspending the phone is taut throughout the motion.

Let F_{G} denote the gravitational force exerted on the phone. Which of the following is true regarding the tension in the rope from which the phone is suspended while it moves up at a constant speed?

1. $T = F_{\mathrm{g}}$
2. $T > F_{\mathrm{g}}$
3. $T < F_{\mathrm{g}}$

Question 2

A phone is suspended in an elevator as illustrated. The elevator moves down with decreasing speed. The rope suspending the phone is taut throughout the motion.

Let F_G denote the gravitational force exerted on the phone. Which of the following is true regarding the tension in the rope from which the phone is suspended while it moves as described?

1. $T = F_g$
2. $T > F_g$
3. $T < F_g$

Warm Up Question 2

A book lies on a board and both move upward at a constant speed for a while. The board is then slowed to a stop and the book stays in contact with the board. During this slowing period is the normal force the same as, smaller than or larger than the gravitational force on the book? Explain your answer.

1. Same. Otherwise the book will leave the board.
2. Normal is less. Book is slowing to a stop.
3. Normal is less. Acceleration down.
4. Normal is larger. Book accelerates.