Kinematics One Dimension

Summary assignment

Physics I



1. An empty sled of mass 25 kg slides down a slippery hill that is inclined at an angle of 15° with the horizontal as shown in the figure above.
	1. Describe the change in the velocity of the sled as it moves down the incline.

When the sled has travelled a distance of 8.1 m down the incline, it has a velocity of 6.4 m/s.

Write the kinematics formula that can be used to determine the acceleration of the sled down the incline.

* 1. Determine the acceleration of the sled down the incline.
	2. Using a different equation, determine the time it will take the sled to travel the 8.1 m down the incline.
1. A 70.0 kg package is suspended by a 5.0 m rope from a helicopter that accelerates upward at 5.0 m/s2. The package starts on the ground with the rope tight as the helicopter starts accelerating. When the helicopter is 100 m above the ground, the rope is cut.
	1. After the rope is cut, what is the acceleration experienced by the package?
	2. Describe the motion of the package after the rope is cut.
	3. How will the time that the package takes to hit the ground compare to the time that it took to reach the point when the rope was cut?



1. Is rock A *dropped, thrown,* or *is it not possible to determine whether it was dropped or thrown?* ***Explain***
2. Is rock B *dropped, thrown,* or *is it not possible to determine whether it was dropped or thrown?* ***Explain.***
3. **Does Rock A hit the ground** *first, at the same time, or after* ***Rock B? Explain***
4. **Does Rock A hit the ground** *closer to, at the same distance from,* ***or*** *farther from* **the base of the cliff compared to Rock B? Explain.**