

The NASA SCI Files™
The Case of the
Powerful Pulleys

Segment 4

The tree house detectives have finally found the solution to lifting Jacob safely into the tree house...pulleys. However, they still don't have an adequate number of pulleys to reduce the force sufficiently to make lifting Jacob easy for them, and they can't figure out what to do with all that rope! While on vacation, Anthony visits Legoland® to learn about gears and decides that gears are the answer. Now the detectives think they have not only solved the problem of force, but that they have even solved the problem of too much rope. As Bianca wraps up her career day presentation, the tree house detectives finish building their lift apparatus. Finally, they lift Jacob successfully into the tree house! However, there is just one small problem....

Objectives

The students will

- determine how the number of teeth on a gear reduces the amount of force.
- discover what materials are used to overcome friction.

Vocabulary

belay - to make (as a rope) tight by turns around a cleat or pin

Imagineer – a person who works at Legoland®, CA designing and creating Lego® models

ratchet - a mechanical device that consists of a bar or wheel having slanted teeth into which a pawl (hinged or pivoted catch) drops so as to allow motion in one direction only

