

Name _____

Mechanics of a Pulley

Open-Ended Response Answer Key

1. To lift a heavy box onto a high shelf, you could use a fixed pulley system. Attach the pulley to a high point on the wall or ceiling above the shelf. Thread a rope through the pulley and tie one end to the box. When you pull down on the other end of the rope, the box will be lifted upward, making it easier to place on the shelf.
2. Pulleys are vital in modern construction because they allow construction workers to lift and move heavy materials efficiently. Block and tackle systems, in particular, enable the lifting of heavy loads to significant heights, reducing the physical strain on workers and increasing productivity.
3. Fixed pulleys change the direction of the force applied and are ideal for scenarios where you want to pull down instead of lifting up. Movable pulleys provide a mechanical advantage and are suitable for lifting heavy loads with less effort. For example, a fixed pulley can be used to raise a flag, while a movable pulley could be employed to lift a heavy engine during an automotive repair.
4. Pulleys have been used for centuries because they provide a practical way to reduce the effort required for lifting and moving heavy objects. Throughout history, they have been instrumental in construction, agriculture, and various industries, making it possible to accomplish tasks that would otherwise be incredibly challenging or impossible.

