

Name _____

Pulleys and Levers: The Superheroes of Simple Machines!

Open-Ended Response Answer Key

1. Answers may vary. Example response: To lift heavy wooden planks to the top of the treehouse, you could use a block and tackle system with multiple pulleys. Additionally, you could use a first-class lever to pivot the planks onto the platform, reducing the force required.
2. Movable pulleys are advantageous when you want to reduce the force needed to lift an object, but they require longer lengths of rope or cable to be effective. Fixed pulleys, while easier to set up, only change the direction of force without reducing the force required.
3. Gymnastics relies on levers, particularly in routines involving parallel bars and uneven bars. Understanding how levers work can help gymnasts optimize their movements and perform complex routines with greater ease and precision.
4. Answers may vary. Example response: I would design a simple machine to assist with digging holes for planting trees. It would combine the features of an auger (a spiral-shaped tool for digging) with a lever mechanism to reduce the effort required to dig deep holes efficiently. This machine would save time and energy compared to traditional methods.

