

Max's Mechanical Marvels: Designing Levers and Pulleys

Learning objective: To design and explain a functional product using levers or pulleys to solve a specific problem.

Use this scaffold to describe your mechanical invention. Think about how your mechanism helps a user move a heavy load or change the direction of a force, just like Max the Monkey does when he solves math puzzles!

My mechanical invention is designed to solve the problem of lifting heavy objects easily using a simple machine.

Word bank: fulcrum · load · effort · mechanism · pulleys · levers · consequently · furthermore · in addition · therefore · efficiency

1. What is the name of your invention and what problem does it solve? Start by saying: 'I have designed a... which helps to...' (2 marks)

2. Describe the components of your mechanism. Explain where the 'load' and the 'effort' are placed. Start by saying: 'My machine uses a lever/pulley system where the effort is applied at...' (3 marks)

3. Explain how your machine functions. How does it make the task easier? Start by saying: 'The mechanism works by... which reduces the force needed to...' (3 marks)

4. What materials would you need to build a prototype? Start by saying: 'To construct my model, I would need...' (2 marks)

5. If you were to sell this in a store, how much would it cost to make and what would the price be? Explain your math. Start by saying: 'The total cost of materials is £... and I would set the price at £... to make a profit.' (2 marks)

Extension challenge: Imagine your machine is used in a historical setting. Write a short paragraph explaining how Ellie the Elephant might use your invention to help transport building materials for a library!