

Max's Mechanical Masterpiece: Engineering a Lever

Learning objective: To understand and apply the principles of levers, fulcrums, and load-bearing mechanisms in a mechanical design.

Max the monkey is building a lever-based machine to help him lift heavy fruit baskets into his treehouse! Use the word bank to label your diagram and follow the steps to design a functional mechanism.

Draw: Draw a clear, technical side-view diagram of a lever system. The style should be clean and annotated, similar to a blueprint. Include a 'rigid beam' resting on a 'fulcrum' (a triangular pivot). On one side of the beam, draw a 'load' (a basket of fruit). On the opposite side, draw an arrow indicating 'effort' force. Use arrows to show the direction of movement.



Label words: Fulcrum · Load · Effort · Pivot point · Rigid beam · Mechanical advantage

Steps:

1. Step 1: Draw a long, straight line to represent the rigid beam. Mark a triangle underneath it to show the fulcrum. Label these.
2. Step 2: Draw a heavy basket (the load) on one end of the beam and an arrow showing where Max pushes down (the effort).
3. Explain why moving the fulcrum closer to the load makes the basket easier to lift. Use scientific vocabulary.

4. What might happen if the rigid beam was replaced with a piece of flexible rubber? Justify your answer.
5. Compare and contrast a lever used to lift a load with a pair of scissors. How are they similar in their mechanical function?
6. If Max wants to lift a load that costs £5.00 in weight, but his lever only allows him to exert £2.00 of force, how could he redesign his machine to succeed?