

Max's Mechanical Masterpiece: Designing a Toy

Learning objective: To design a functional moving toy using a lever or linkage mechanism, identifying key components and movement.

Max the monkey is helping you build a new kinetic toy! Use your knowledge of mechanisms to design a toy that includes a moving part. Follow the steps below to complete your technical drawing.

Draw: Draw a technical side-view diagram of a toy that uses a lever. Use a sharp pencil for clear, clean lines. Include an arrow to show the direction of the input force and a curved arrow to show the direction of the output movement. Clearly label the fulcrum and the lever. Add a small 'zoom-in' bubble showing how the pivot is attached using a split pin or fastener.



Label words: Pivot · Lever · Linkage · Fulcrum · Input force · Output movement · Joint · Chassis

Steps:

1. Label your drawing to show exactly where the 'pivot' is located. Explain why this point is essential for the movement of your toy.
2. Describe the input force you would use to make your mechanism move (e.g., pushing, pulling, or sliding).
3. If you replaced your wooden lever with a flexible piece of plastic, what might happen to the movement of your toy? Justify your answer.

4. Compare and contrast a fixed joint with a pivot joint. Why is a pivot necessary for your design?
5. If you wanted the output movement to be faster, how could you adjust the position of the fulcrum on your lever? Explain your reasoning.
6. What might happen to the stability of your toy if the chassis was made from very thin card instead of thick corrugated cardboard?