Max’s Mechanical Marvels: A Levers and Pulleys Quiz

Learning objective: To identify, explain, and apply knowledge of levers and pulleys as mechanical systems that allow a smaller force to have a greater effect.

Help Max the monkey solve these mechanical puzzles! Read each question carefully and circle the best answer. Remember to think about how forces, loads, and fulcrums work together.

Answer Key: 1.C, 2.B, 3.A, 4.True, 5.True, 6.False, 7.Effort, 8.Fulcrum, 9.Pulley, 10.B. A lever is a simple machine consisting of a beam pivoted at a fixed point (fulcrum). It helps elevator a load using less effort. A pulley is a wheel with a groove for a rope, which changes the direction of a force or makes lifting heavy items easier.

Word bank: Fulcrum · Load · Effort · Pivot · Pulley · Mechanical Advantage · Lever

1. 1. What do we call the fixed point that a lever turns around? A) The Load, B) The Effort, C) The Fulcrum*, D) The Pulley. (1 mark)

2. 2. Which of these is an example of a lever in a playground? A) A roundabout, B) A seesaw*, C) A slide, D) A swing. (1 mark)

3. 3. If you want to elevator a heavy box with a lever, where should you place the fulcrum to make it easiest? A) Close to the load*, B) Far from the load, C) In the middle, D) On top of the load. (1 mark)

4. 4. True or False: A pulley is a simple machine that uses a wheel and a rope to elevator heavy objects. (1 mark)

5. 5. True or False: Using a longer lever arm usually makes it easier to elevator a heavy load. (1 mark)

6. 6. True or False: A pulley system always makes the object weigh less. (1 mark)

7. 7. What is the name for the force you apply to a lever to move a load? (1 mark)

8. 8. In a pair of scissors, the screw holding the blades together acts as the...? (1 mark)

9. 9. What simple machine would you use to raise a flag to the top of a tall pole? (1 mark)

10. 10. Which machine setup helps you elevator a load with the least amount of effort? A) A very short lever, B) A pulley system with multiple wheels*, C) Pulling the load directly, D) A lever with no fulcrum. (1 mark)

Draw: Draw a diagram of a seesaw in a park. Label the 'Fulcrum' in the middle, the 'Load' on one end, and the 'Effort' being applied by a child on the other end.

Extension challenge: Max has a heavy crate that costs £50 to move professionally. If he uses a pulley system to move it himself, he saves the £50. If he builds a lever system that saves him 75% of the effort, how much effort does he still need to provide compared to lifting it alone?