

Forces in Motion: Nova's Scientific Sketchbook

Learning objective: To identify and represent the forces acting on an object, including gravity, air resistance, and friction, using force arrows.

Use your knowledge of forces to complete the diagram below. Think about how Nova the owl moves through the air and how objects behave on the ground.

Draw: Draw a two-part scene. On the left, draw Nova the owl gliding through the air. Draw arrows to represent the downward force of gravity and the opposing force of air resistance. On the right, draw Nova perched on a rough tree branch. Add a clear arrow to show the friction between her feet and the branch. Use a neat, scientific style with clear labels for each force arrow.



Label words: Gravity · Air Resistance · Friction · Upward Force · Direction of Motion · Surface

Steps:

1. Draw an arrow on your sketch to show the force of gravity acting on Nova while she is in the air. In which direction must this arrow point?
2. When Nova lands on the branch, what force acts between her talons and the wood to help her stop? Label this on your drawing.
3. Explain why Nova needs to spread her wings wide to increase air resistance when she wants to slow

down.

4. If Nova were to drop a small acorn from her nest, why does it fall towards the ground instead of floating away?

5. Identify one force that acts on Nova when she is gliding that is not acting on her when she is sitting perfectly still on the branch.