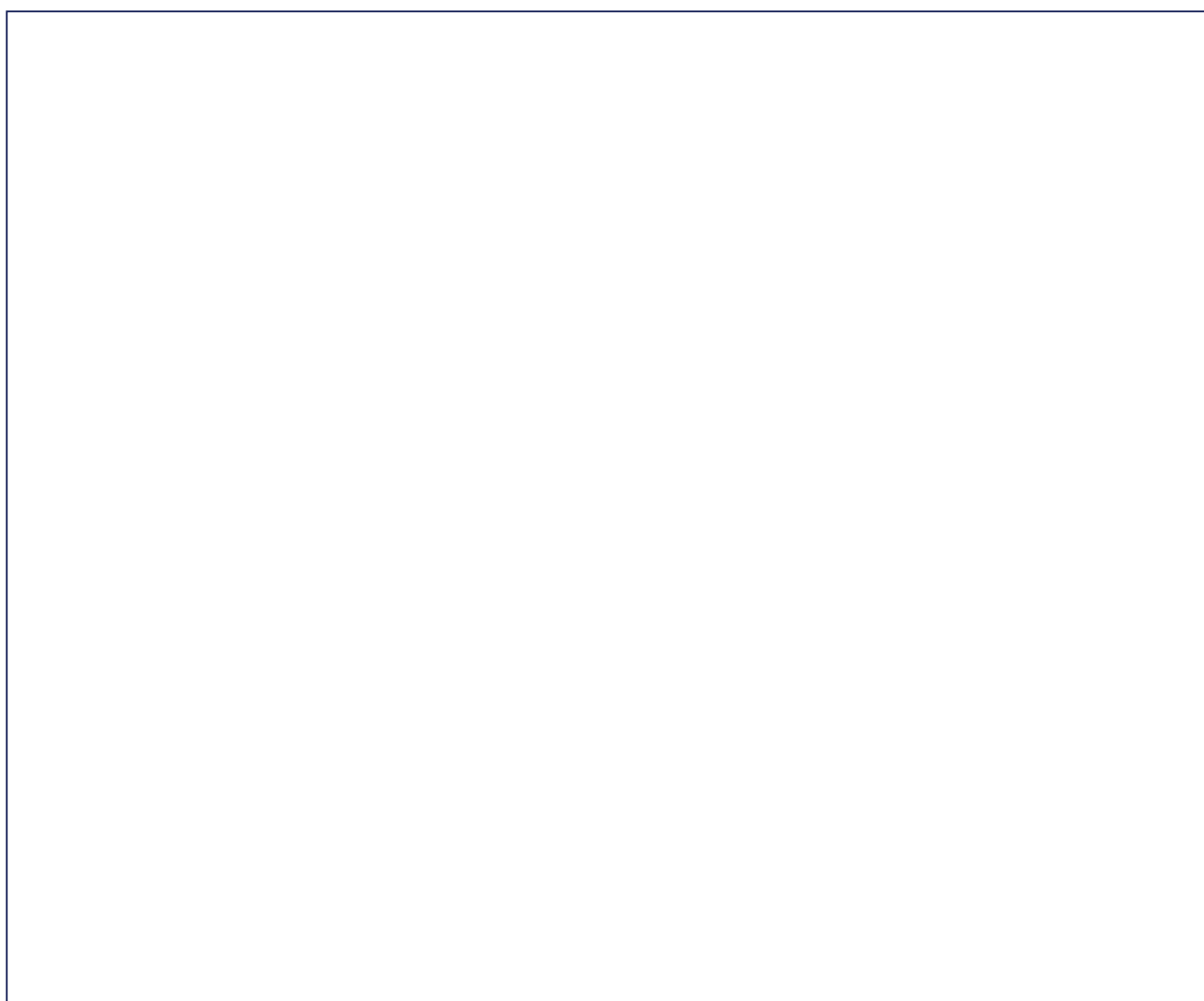


Athletics in Motion: The Science of Movement

Learning objective: To understand the biomechanics and components of athletic performance by visualising and labelling key elements of a track and field event.

Use your knowledge of athletics to complete the drawing below. Ensure your labels are accurate and clear. Use the word bank to help you identify the necessary components of a successful jump or sprint.

Draw: Draw a scene featuring Max the monkey competing in an athletics event of your choice (e.g., long jump, hurdles, or a sprint). Use a clear, technical style. Include the athlete in motion, showing 'action lines' to represent speed and direction. Ensure you draw the ground surface accurately (e.g., the texture of the track). Use labels to point to specific parts of the body or the environment to demonstrate your understanding of the physics of athletics.



Label words: Acceleration · Momentum · Trajectory · Centre of mass · Velocity · Aerodynamics · Extension · Friction

Steps:

1. Explain why an athlete might lean forward during the initial 'acceleration phase' of a 100m sprint. How does this affect their momentum?
2. Label your drawing to show the 'trajectory' of an athlete in mid-air during a long jump. Why is the angle of

takeoff critical to the total distance covered?

3. Compare and contrast the friction required for a runner on a synthetic track versus an athlete throwing a shot put. Why is grip important in both?
4. What might happen if an athlete's centre of mass is too high during a sharp turn on a curved track?
5. Justify why wearing lightweight, aerodynamic clothing provides a competitive advantage in high-velocity events.
6. Draw an arrow on your diagram to indicate the direction of the force generated by the athlete's leg muscles against the ground (ground reaction force).