



What will happen to the blue ball if it is let go of?



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Based on the image, if the blue ball is **let go of**, it **will fall towards the ground** due to gravity.

Here's a breakdown of what will happen:

● Action Due to Gravity

- **Free Fall:** Once released, the ball will be in **free fall**. This means the only significant force acting on it will be the **force of gravity**, pulling it downward toward the center of the Earth.
- **Acceleration:** The ball **will** accelerate at a rate of approximately 9.81 m/s^2 (the acceleration due to gravity, g), ignoring air resistance, increasing its speed until it hits the floor.

★ Impact and Bounce

- **Collision:** The ball will collide with the wooden floor.
- **Deformation and Rebound:** Since the ball appears to be made of a somewhat elastic material (like rubber or a similar polymer), it will briefly compress upon impact and then rebound.
- **Bounce:** It will then bounce back up into the air, though it will not reach the same height from which it was dropped because some energy will be lost as heat and sound during the collision (an inelastic collision).
- **Damping:** The ball will continue to bounce, with each bounce becoming progressively lower until all its kinetic and potential energy is dissipated, and it comes to rest on the floor.

The small metallic object visible on the floor near the wall is not directly underneath the ball, so the ball will likely hit the flat floor first.



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The blue ball is already resting on the wooden floor in this image.

If the hand holding the ball is simply **let go of** (removed), the ball will **remain in place on the floor** because the force of gravity is already balanced by the **normal force** exerted by the floor.

● Physics of the Situation

1. **State of Rest:** The ball is currently at rest on a horizontal surface.
2. **Forces are Balanced:** The force of **gravity** pulling the ball down is completely counteracted by the **normal force** (or support force) of the floor pushing the ball up.
3. **Applying Newton's First Law:** According to **Newton's First Law of Motion** (the law of inertia), an object at rest stays at rest unless acted upon by an unbalanced force. Since the forces are already balanced, simply removing the hand will not introduce a new, unbalanced force to move the ball.

The ball will **not move** unless an external force, like a push, a kick, or a strong air current, is applied to it.

Would you like to know what would happen if the ball was pushed or rolled instead?