The Movie Heist

Task Statement 1

You are the math expert for a new movie about a heist. In one scene, a team of spies steals a device from an evil company.

A spy will throw the device out of the window of a tall building. Meanwhile, a speeding truck will come by at the exact time for the device to land in the truck. Your job is to calculate the timing of the scene so this can happen in one take.

Create a presentation that shows the scene as the device exits the window with all the information needed for the device to land in the truck. Include models and explanations for your chosen values.

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Task Statement 2

You are the math expert for a new movie about a heist. In one scene, a team of spies steals a device from an evil company.

A spy will throw the device out of the window of a tall building. Meanwhile, a speeding truck will come by at the exact time for the device to land in the truck. Your job is to calculate the timing of the scene so this can happen in one take.

Create a presentation that shows the scene as the device exits the window, with all the information needed for the device to land in the truck. Include models and explanations for your chosen values.

1. Draw a picture of the scene at the moment the device is thrown out of the window. Make sure your picture includes the building, the device, and the truck along with any other details you think are important. Include realistic measurements in the calculations. If needed, include variables instead of numbers.
2. Represent the relationship between the height of the device and the time since it is thrown out the window.
3. The truck will travel at a constant speed to be in position directly under the window at the right time to catch the device. Estimate a good speed for the truck to drive or a good distance for the truck to drive, from the time the device is released to the time it is caught.
4. Create a model that relates the distance and the speed of the truck.
5. At what height above the ground will the device be caught by the truck? When will the truck need to be directly under the device to catch it?
6. How fast will the truck need to travel? How far should the truck be from the building when the device is dropped? Are these reasonable values?