

SOME MOVIE PHYSICS PROBLEMS TO SOLVE

1 THE ITALIAN JOB (Paramount pictures)

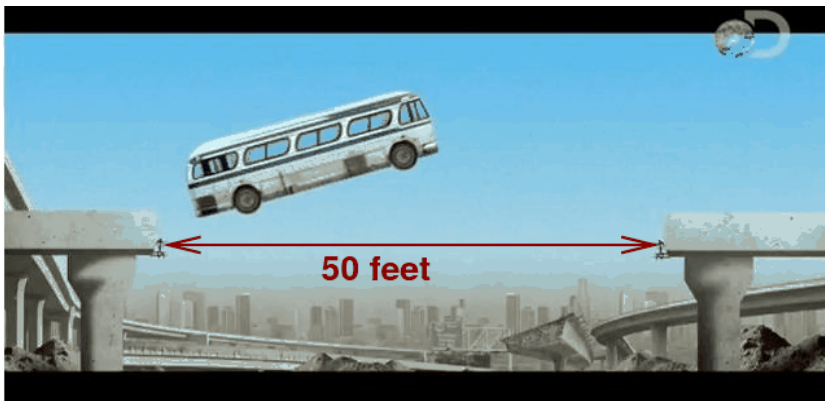


At the end of the original 'Italian Job' movie, the ten thieves were escaping across the Alps with the gold in the back of their bus. As it skidded off the road, it settled in a balanced position, with the gold at the back of the coach, overhanging the cliff and the ten thieves at the front of the coach.

<https://www.youtube.com/watch?v=SfWR0PeEnTM>

How could they save themselves AND retain the gold?

2 SPEED (Mark Gordon productions, 20th Century Fox)



In the movie 'SPEED' the bus is travelling at 67 mph when it has to jump a 50 ft gap in the motorway. Having driven off horizontally, how far will it fall by the time it reaches the other side?

You will need to bear the following facts in mind:

Downward acceleration due to gravity is 10m/s^2

Air resistance is negligible and remember to convert to metric.

3 STUNT DIRECTOR.



For a new movie stunt, you are to provide the stunt man/woman with their cue to jump. You are to calculate the position to place a mark on the roof of a train moving at 100 km/h, so that if the stunt man/woman jumps when the mark passes under the bridge, they will land on the padded roof section further back the train.

The height of the bridge above the train is 5 metres.

4 UNDERWATER SURVIVAL



In the movie 'A view to a kill' (Eon Productions) James Bond's car travels into a lake and sinks. To survive, he breathes air released from the car's tyre.

Consider the typical outward air pressure in a car tyre, along with the fact that it must be greater than inward water pressure and propose a maximum depth for which this survival technique would work.

5 SUPERMAN RESCUES LOIS LANE



DC Comics, Dovemead Films

In the original 'Superman' movie, Lois Lane falls from a helicopter and is rescued by Superman. Can you see anything wrong in terms of Conservation of Momentum and Forces when a downward travelling Lois Lane is caught by an upward travelling Superman?

6 BOND CAR JUMP

<https://www.youtube.com/watch?v=fzClbhLUUA0>



In 'The man with the golden gun' (Eon Productions), the car is driven over the broken bridge.

Not only does it have to make the jump, but the take-off ramp is also angled to impart a spin on the car to achieve a complete rotation as it flies.

Could you predict a speed, ramp angle and rotation rate for the jump to be a success?

In the film, the stunt was done without and special effects...

7 INVISIBLE MAN



If light passes through the invisible man, with no absorption, refraction, scattering etc., how can he possibly see anything?

8 LASERS IN SPACE – HEARING AND SEEING



(Lucasfilm)

While it is easy to explain why we cannot hear sounds in space, can you explain why we cannot see laser beams in space?

9 PROMETHEUS



[Image source](#)

In the film 'Prometheus' (Scott Free Productions), whilst in deep space, one of the characters claims that they are half a billion miles from Earth. Can you spot issue?

10 PARSECS...



In 'Star Wars' (Lucasfilm), Han solo defended the speed of the Millennium Falcon by claiming that it could make the Kessel run in less that 12 parsecs.

Why is this not possible, even taking sci-fi speeds into account?