

# Collisions: Physics of Collisions

## Comprehension Questions

View the clip attentively. After you finish watching, complete the following comprehension questions and tasks.

1. State the example of collisions that are shown in the video clip.

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2. When objects collide, two changes can happen to their motion. Describe these two changes.

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3. When a swimmer exerts a force on the water with their arms, an equal and opposite force pushes them forwards. Apply this same idea to explain how a rocket takes off when launching into space.

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4. If a swimmer exerts a force on the water, and the water exerts an equal and opposite force on the swimmer, how is it possible for the swimmer to accelerate through the water?

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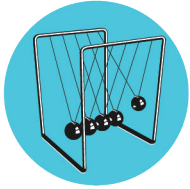
5. State the principle of the conservation of energy.

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6. Describe the energy transfers that are taking place in each of the examples below. Refer to both the useful and wasted energy types in each example.

Example	Useful forms of energy	Wasted forms of energy
a) a lightbulb being switched on		
b) a football being kicked into the air		
c) a child bouncing on a trampoline		





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7. Describe the difference between an elastic and an inelastic collision.

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8. Place the quantities below into the table to show whether they are scalar quantities or vector quantities.

speed      velocity      displacement      acceleration      distance      time

Scalar quantity	Vector quantity

9. Describe the forces acting in the following situations:

a) a car accelerating forwards from rest:

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b) a feather falling on Earth:

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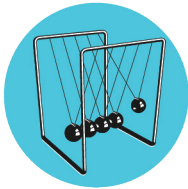
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c) a feather falling on the moon:

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10. Explain how an object falling on the moon will take:

a) a shorter time to fall through the same height as on Earth.

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b) a longer time to fall through the same height as on Earth.

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