

Your shuttlecraft is in a circular orbit around a planet. Suppose that you briefly fire your rocket engine with its exhaust pointing **toward the planet** (i.e. sideways to the direction you are traveling). What will happen?

- 1) No work is done so nothing changes at all. You stay in the same circular orbit.
- 2) You will move into a new circular orbit farther from the planet.
- 3) You will move into a new circular orbit closer to the planet.
- 4) You will go into a new orbit with a different shape and a higher energy.
- 5) You will go into a new orbit with a different shape but the same energy.
- 6) You will go into a new orbit with a different shape and a lower energy.
- 7) You will escape the planet entirely.
- 8) The answer depends on how much work your rocket engine does.

Your shuttlecraft is in a circular orbit around a planet. Suppose that you briefly fire your rocket engine with its exhaust pointing **forward** (i.e. in the direction you are traveling). What will happen?

- 1) No work is done so nothing changes at all. You stay in the same circular orbit.
- 2) You will move into a new circular orbit farther from the planet.
- 3) You will move into a new circular orbit closer to the planet.
- 4) You will go into a new orbit with a different shape and a higher energy.
- 5) You will go into a new orbit with a different shape but the same energy.
- 6) You will go into a new orbit with a different shape and a lower energy.
- 7) You will escape the planet entirely.
- 8) The answer depends on how much work your rocket engine does.

Your shuttlecraft is in a circular orbit around a planet. Suppose that you briefly fire your rocket engine with its exhaust pointing **backward** (i.e. opposite to the direction you are traveling). What will happen?

- 1) No work is done so nothing changes at all. You stay in the same circular orbit.
- 2) You will move into a new circular orbit farther from the planet.
- 3) You will move into a new circular orbit closer to the planet.
- 4) You will go into a new orbit with a different shape and a higher energy.
- 5) You will go into a new orbit with a different shape but the same energy.
- 6) You will go into a new orbit with a different shape and a lower energy.
- 7) You will escape the planet entirely.
- 8) The answer depends on how much work your rocket engine does.