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.