

- 8 Funcube-1 is a satellite that was launched into orbit around the Earth.



(Source: © Shutterstock)

- (a) The rocket carrying Funcube-1 burns fuel to accelerate upwards.

As the rocket burns fuel, the energy in its chemical store reduces and the energy in its kinetic store and gravitational store changes.

- (i) State how the kinetic store of the rocket changes as the rocket burns fuel.

(1)

- (ii) State how the gravitational store of the rocket changes as the rocket burns fuel.

(1)

- (b) The rocket engine stops burning fuel.

The rocket continues to go further away from the surface of the Earth.

The table gives some statements about the rocket's energy stores.

Add ticks (✓) to the table to show which two statements are correct.

(2)

Statement	Correct (✓)
gravitational store increases	
gravitational store stays the same	
gravitational store decreases	
kinetic store increases	
kinetic store stays the same	
kinetic store decreases	



(c) Funcube-1 goes into a circular orbit above the surface of the Earth.

(i) State the name of the force responsible for keeping Funcube-1 in orbit.

(1)

(ii) Funcube-1 has an orbital radius of 7100 km and an orbital period of 5800 s.

Calculate the orbital speed, in km/s, of Funcube-1.

(2)

orbital speed = km/s

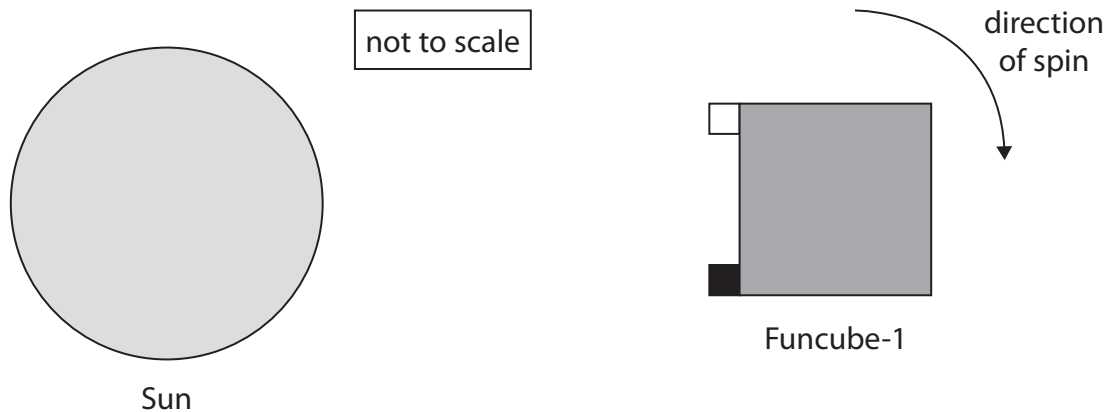


(d) Funcube-1 spins and is heated by the Sun.

The diagram shows two coloured metal bars attached to a face of Funcube-1.

The surface of one metal bar is dull and black.

The surface of the other metal bar is shiny and white.



Temperature probes measure the temperature of each metal bar.

Use ideas about thermal energy transfer to explain how the temperature of each metal bar changes as Funcube-1 spins.

(4)

(Total for Question 8 = 11 marks)



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