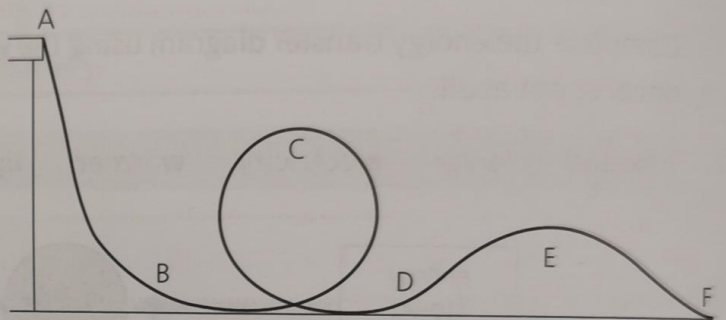


1.5 Gravitational potential energy and kinetic energy

1. Complete the table by placing a tick (✓) in the correct column or columns for each statement.

	Gravitational potential energy	Kinetic energy
Energy that something has because of its position.	✓	
Energy that something has because of its movement.		✓
This gets bigger if an object is higher off the ground.	✓	
Is measured in joules.	✓	✓
A fast-moving elephant has lots of this.		✓
A walking mouse has less of this than the elephant has.		✓

2. A student makes a track for marbles to roll down. She lets the marble go from point A.



a. At which point A, B, C, D, E, or F does the marble have the most gravitational potential energy?

A

b. At which point A, B, C, D, E, or F does the marble have *no* gravitational potential energy?

F

c. At which point A, B, C, D, E, or F does the marble have the *most* kinetic energy?

B (Just before it hits the ground)

d. Could the top of the loop (C) be higher than point A? Explain your answer.

No, some energy has been dissipated as sound and thermal energy, since energy can't be created, so it wouldn't reach a higher point

e. At point F the marble does not have the same amount of energy as it had at the start. Suggest where the energy has gone.

Some energy has been dissipated as sound and thermal energy.

3. A student has dropped a ball from different heights into wet sand.

a. Describe the energy changes from the point when he drops the ball to the point where the ball is in the sand and has stopped.

Gravitational potential, kinetic energy

b. Here are some values for the gravitational potential energy and kinetic energy of the ball at different points between his hand and the floor. They are *not* in the correct order.

Point	Gravitational potential energy (J)	Kinetic energy (J)
A	0.00	1.00
B	0.75	0.25
C	1.00	0.00
D	0.25	0.75

- i. Which point A, B, C, or D is the floor? A
- ii. Which point A, B, C, or D is his hand? C
- iii. At which point A, B, C, or D is the ball travelling the fastest? A