



LESSON 2.3

Learning Objective

(d) Recognise and give examples of potential energy

Potential energy

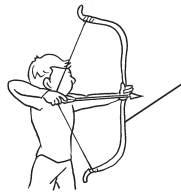
1. **Potential energy** is also known as stored energy.
2. It is the energy possessed by an object which can be converted into other forms of energy.
3. The different types of potential energy are **chemical potential energy**, **elastic potential energy** and **gravitational potential energy**.

Chemical potential energy (CPE)

- Also known as chemical energy
- Present in food such as rice, bread and noodles
- Can be transformed into energy for us to carry out life processes
- Found in fuels such as wood, oil and cooking gas
- Fuels can be burnt to produce energy needed to move vehicles
- Found in batteries
- CPE in batteries is converted into electrical energy which in turn is converted into heat, light and sound energy

Elastic potential energy (EPE)

- Found in an object that is stretched or compressed such as a spring
- Converted into kinetic and sound energy when the stretched or compressed object is released and returns to its original shape

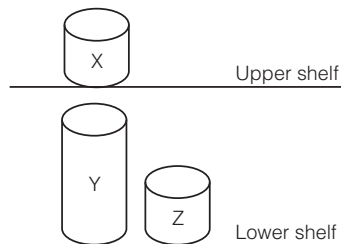


The stretched bow possesses EPE when drawn back.

Gravitational potential energy (GPE)

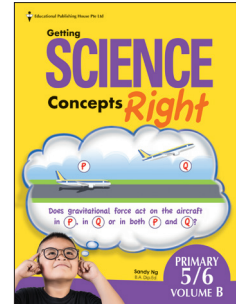
- Stored in an object when it is above the Earth's surface
- The amount of GPE an object possesses depends on its mass and its height above the Earth's surface
- Stored in water collected behind a dam
- Converted into kinetic energy and sound energy when water is released from the dam

- Three cans made of the same material are placed on the shelves as shown below. Cans X and Z have the same mass, can Y has a greater mass than cans X and Z.



- X possesses more GPE than Z as it is on a higher position further from the ground.
- Y possesses more GPE than Z as it has a greater mass.

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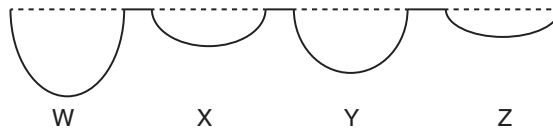
Scan the QR code for the Answer Sheet.





Practice 2.3

1. The diagram below shows the depressions in a sand pit made by four balls of different materials which were hung from the same height.

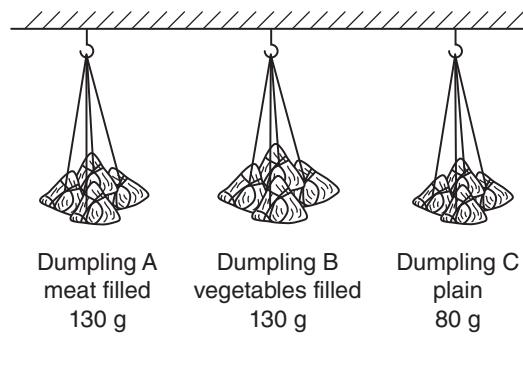


Ball	W	X	Y	Z
Depth of depression (cm)	7	3	5	2

Which of the balls possessed the most amount of gravitational potential energy before it was dropped?

- (1) W
 (2) X
 (3) Y
 (4) Z ()

2. Hwee observed some dumplings hung from a wooden pole at a stall.

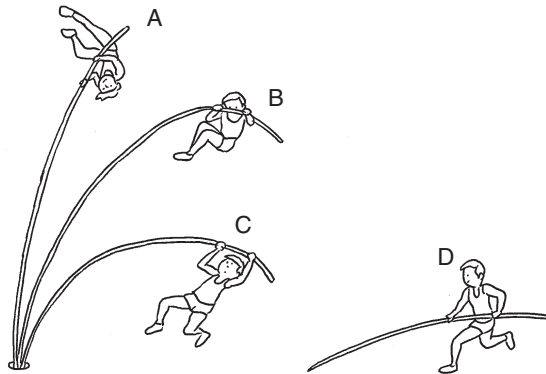


Based on the given information, which of the following statements is true?

- (1) Dumplings A and B would fall slower than dumpling C when the string is cut as they possess a smaller amount of gravitational potential energy.
 (2) Dumpling A would create a deeper dent than dumpling C when the string is cut as it possesses a bigger amount of gravitational potential energy.
 (3) Dumpling B would fall slower than dumpling C when the string is cut as it has a bigger mass.
 (4) All the dumplings possess different amounts of gravitational potential energy. ()



3. Lawrence is a pole vaulting athlete. The diagram below shows his practice vault.



- (a) At which position, A, B, C or D, would Lawrence have the greatest gravitational potential energy? Circle the position of Lawrence to illustrate your answer.
- (b) His team member, Jennifer, is 20 kg lighter than him.



Lawrence, 85 kg

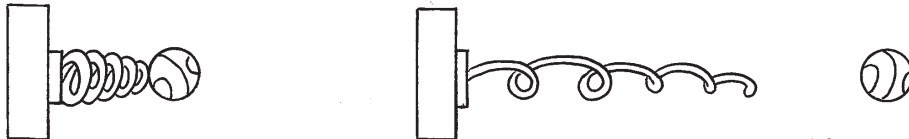


Jennifer, 65 kg

At the given position in (a), who would possess more gravitational potential energy? Explain.



4. Ferb has a spring which is attached to a wall. He can compress the spring and propel a plastic ball forward as shown in the diagrams below.



- (a) In one of the diagrams above, mark 'X' to show the object with elastic potential energy.

Ferb varied the compression of the spring and measured the distance travelled by the plastic ball in the table below.

Trial	Length of compressed spring (cm)	Distance travelled by plastic ball (cm)
1	9	8
2	7	12
3	5	16

- (b) Based on the information given, how does the compression of the spring affect the distance travelled by the plastic ball?

- (c) Explain your answer in (b).
