3.2 Potential energy is stored energy

Student worksheet answers (pages 44–45)

Potential energy is stored energy

1 What is potential energy?

Energy that is stored in objects and available to be used

2 What are the four types of potential energy? Give an example of each.

Examples may vary.

Gravitational – a person sky diving; a person about to ski jump

Chemical – a bomb exploding; a battery

Elastic – a trampoline; a bowstring

Nuclear – atomic bomb

3 In the following table, identify the type of potential energy shown in each picture.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| chemical |  | gravitational |  | elastic |
| gravitational |  | elastic |  | nuclear |
| chemical |  | chemical |  | gravitational |

4 Name two objects that have potential chemical energy transformed into another type of energy. For each object, state the type resulting energy.

*Answers will vary.* Examples include:

• A bomb into heat/light/sound

• A battery into electricity

5 Name two objects that have potential elastic energy transformed into another type of energy. For each object, state the type resulting energy.

*Answers will vary.* Examples include:

• A trampoline into kinetic energy

• A bow and arrow into kinetic energy

6 Name two objects that have potential gravitational energy transformed into another type of energy. For each object, state the type resulting energy.

*Answers will vary.* Examples include:

• A skydiver about to jump out of a place into kinetic energy

• A roller coaster on a downward hill into kinetic energy

Extend your understanding

7 Potential energy is used in children’s playgrounds. Choose five pieces of play equipment shown in the diagram below. For each item selected, name the type of potential energy it uses and explain how this results in motion.

*Answers will vary.* Examples include:

• Springboard – uses elastic potential energy to propel you up to jump into water

• Basketball hoop – uses gravitational potential energy to allow the ball to move down through the basket when shot

• Springy horse ride – uses elastic potential energy to propel you upright if you adjust your weight so gravity pulls you down

• Swing – uses gravitational potential energy to pull you down when you use the chemical potential energy in your body to swing higher

• Slide – uses gravitational potential energy to pull you down after you have climbed up