

POWER UP!

THE SCIENCE OF ENERGY



ONTARIO
**SCIENCE
CENTRE**

An agency of the
Government of Ontario

HOW IT WORKS:

- There are five rounds of trivia, each with five multiple choice questions.
- You have 30 seconds to answer each question. Write down your answer (A, B, C or D) on a sheet of paper.
- Each question is worth 1 point, for a total of 25 possible points.
- What's the prize? Bragging rights and a virtual high five, of course!

GROUND RULES:

- Record your answers so that you can keep score after each round.
- Be kind and respectful to your fellow players.
- Have fun!

Round 1:

GENERAL ENERGY



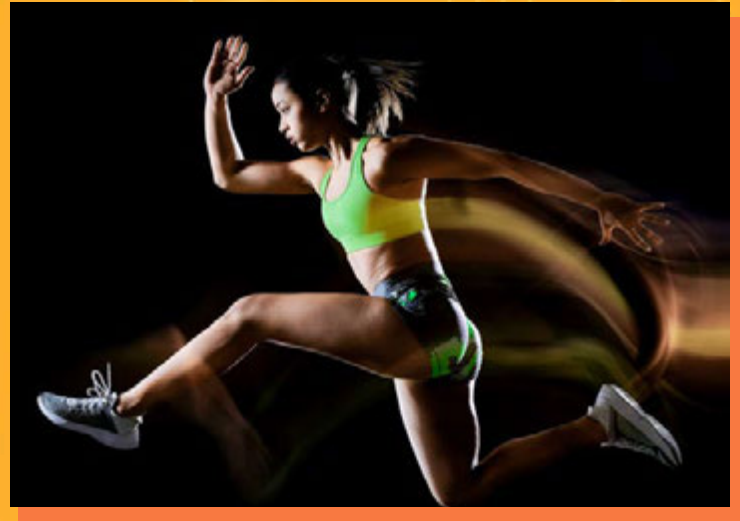
1. What type of energy does this image depict?

A Elastic energy

B Kinetic energy

C Potential energy

D Light energy



1. What type of energy does this image depict?

A

B

Kinetic energy

C

D



2. Gravitational potential energy is stored within an object due to its position relative to other objects. Where would you find the maximum potential energy on a roller coaster?

A

At the top of a loop

B

At the bottom of the tallest hill

C

At the beginning of the ride

D

At the top of the tallest hill



2. Gravitational potential energy is stored within an object due to its position relative to other objects. Where would you find the maximum potential energy on a roller coaster?

A

B

C

D

At the top of the tallest hill



3. Which statement about energy is true?

A Energy can be created

B Energy can be destroyed

C Energy cannot be created or destroyed

D Energy can be created and destroyed

3. Which statement about energy is true?

A

B

C

Energy cannot be created or destroyed

D



4. Batteries convert _____ energy into _____ energy.

A

Mechanical into chemical

B

Mechanical into electrical

C

Chemical into electrical

D

Elastic into light



4. Batteries convert _____ energy into _____ energy.

A

B

C

Chemical into electrical

D



5. There is electricity in our bodies! A medical test called an electrocardiogram (EKG) is used to measure electrical activity in which organ?

A The brain

B The liver

C The lungs

D The heart

5. There is electricity in our bodies! A medical test called an electrocardiogram (EKG) is used to measure electrical activity in which organ?

A

B

C

D

The heart



Round 2:

ELECTRICITY

1. Electricity is the movement of what negatively charged subatomic particles?

A

Electrons

B

Neutrons

C

Protons

D

Molecules

1. Electricity is the movement of what negatively charged subatomic particles?

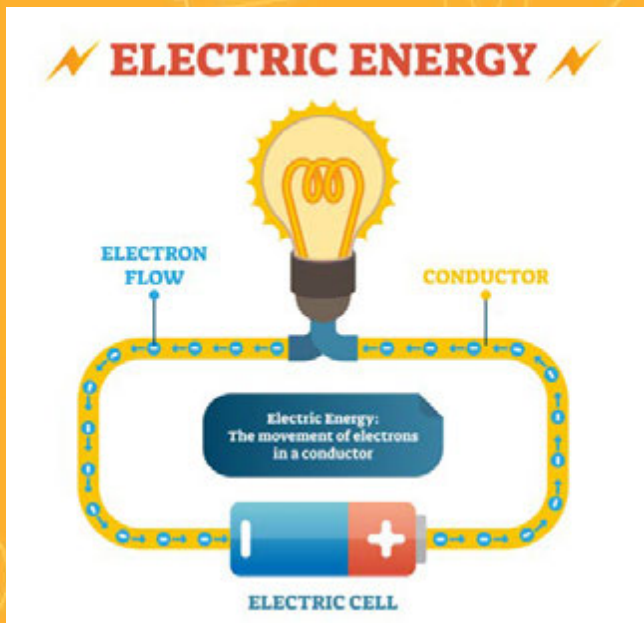
A

Electrons

B

C

D



2. Static electricity occurs when negative charges from two separate objects interact. What happens when these charges meet?

A

They are attracted to each other

B

They repel each other

C

They jump over each other

D

They bounce off each other



2. Static electricity occurs when negative charges from two separate objects interact. What happens when these charges meet?

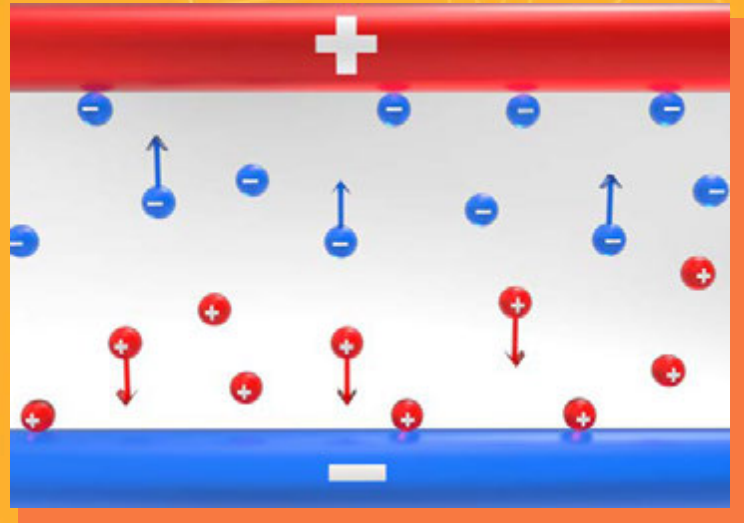
A

B

They repel each other

C

D



3. Electric current cannot flow easily through rubber, plastic, wood or glass. What are these types of materials called?

A

Conductors

B

Insulators

C

Polymers

D

Wires

3. Electric current cannot flow easily through rubber, plastic, wood or glass. What are these types of materials called?

A

B

Insulators

C

D



4. What unit is used to measure electric current?

A

Volts

B

Ohms

C

Amperes

D

Watts



4. What unit is used to measure electric current?

A

B

C

Amperes

D



5. There are two types of current electricity: alternating current (AC) and direct current (DC). This simple circuit is using DC. How are the electrons behaving?

A

They are flowing back and forth in the circuit

B

They are flowing in one direction

C

They are not moving

D

They are disappearing



5. There are two types of current electricity: alternating current (AC) and direct current (DC). This simple circuit is using DC. How are the electrons behaving?

A

B

They are flowing in one direction

C

D



Round 3:
**NON-RENEWABLE
ENERGY**



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1. Non-renewable energy resources are natural resources that will deplete over the next thousands or millions of years. What are examples of non-renewable energy?

A

Nuclear, oil and natural gas

B

Wind and solar

C

Geothermal and biofuel

D

Nuclear and tidal

1. Non-renewable energy resources are natural resources that will deplete over the next thousands or millions of years. What are examples of non-renewable energy?

A

Nuclear, oil and natural gas

B

C

D



2. In Canada, nuclear power plants use CANDU reactors to split uranium atoms in order to give off heat energy. What is this splitting process called?

A

Fusion

B

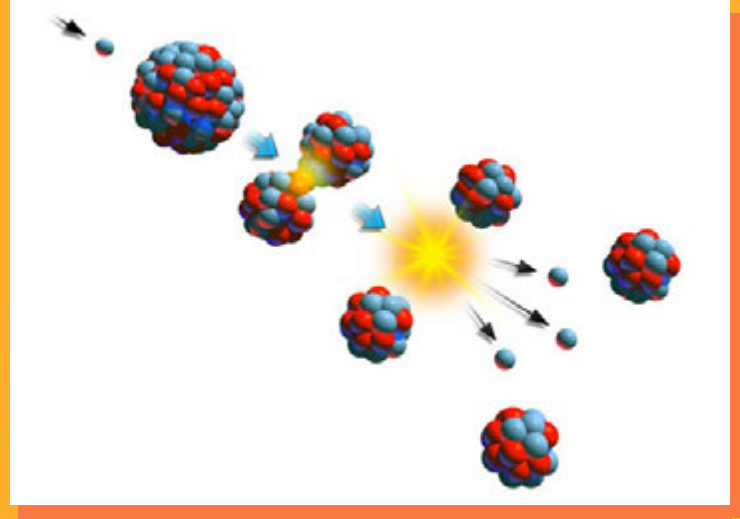
Plowing

C

Ripping

D

Fission



2. In Canada, nuclear power plants use CANDU reactors to split uranium atoms in order to give off heat energy. What is this splitting process called?

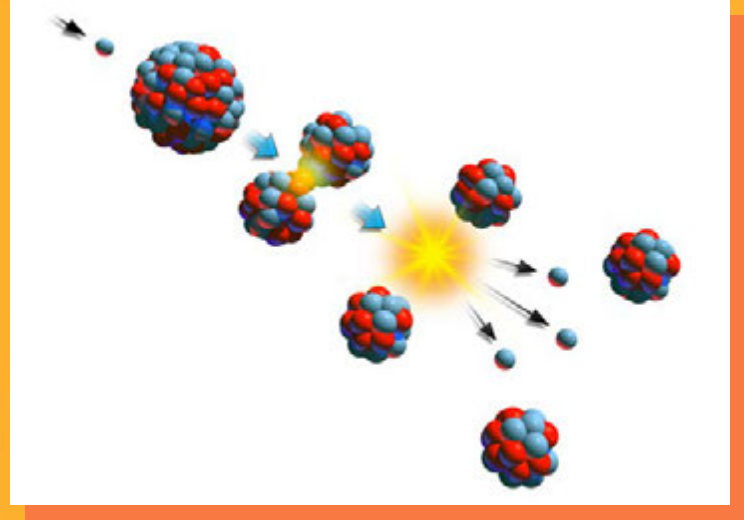
A

B

C

D

Fission



3. What percentage of Ontario's electricity is produced by the province's three nuclear facilities?

A About 60%

B About 40%

C About 30%

D About 10%



3. What percentage of Ontario's electricity is produced by the province's three nuclear facilities?

A

About 60%

B

C

D



4. Fossil fuels are formed from the ancient remains of plants and animals. Which of the following are different types of fossil fuels?

A

Glass, diamonds and copper

B

Oil, tar and wind

C

Oil, natural gas and petroleum

D

Natural gas, aluminum and gold

4. Fossil fuels are formed from the ancient remains of plants and animals. Which of the following are different types of fossil fuels?

A

B

C

Oil, natural gas and petroleum

D



5. What colourless, odourless and flammable chemical compound is the main component of natural gas?

A

Butane

B

Carbon dioxide

C

Ethanol

D

Methane

5. What colourless, odourless and flammable chemical compound is the main component of natural gas?

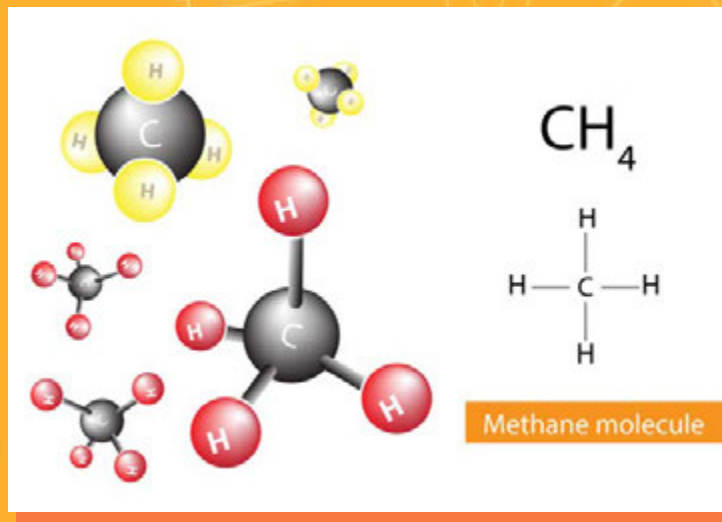
A

B

C

D

Methane



Round 4: **RENEWABLE ENERGY**



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1. Which of these energy sources are renewable?

A

Hydro

B

Wind

C

Solar

D

All of the above

1. Which of these energy sources are renewable?

A

B

C

D

All of the above



2. What is the main source of energy in Canada?

A

Hydro

B

Nuclear

C

Natural gas

D

Wind

2. What is the main source of energy in Canada?

A

Hydro

B

C

D



3. Through what process does the Sun get its energy?

A

Nuclear fission

B

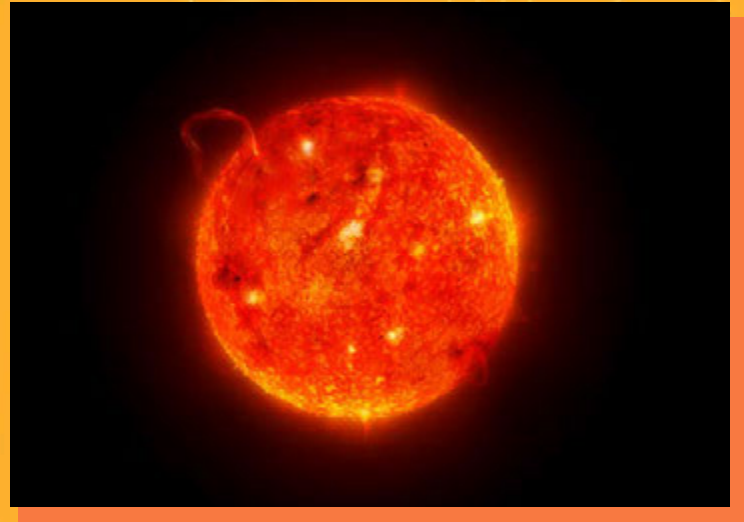
Nuclear fusion

C

Gravity

D

Star power



3. Through what process does the Sun get its energy?

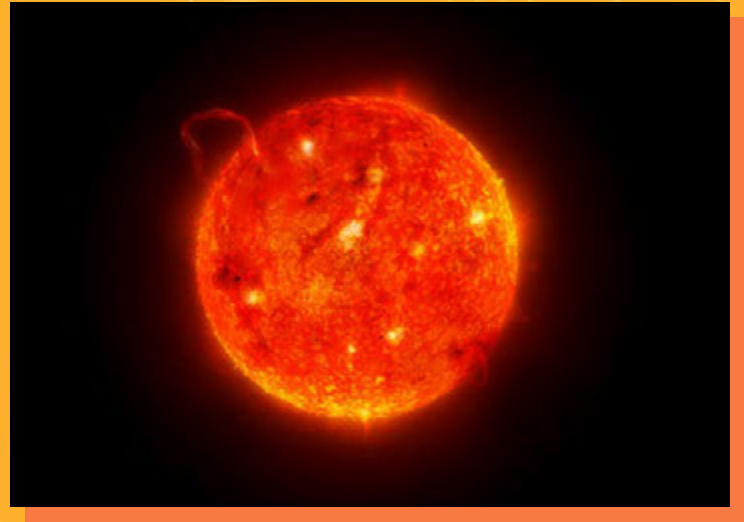
A

B

Nuclear fusion

C

D



4. What type of renewable energy uses the Moon's gravitational pull on Earth?

A

Geothermal

B

Tidal

C

Solar

D

Lunar



4. What type of renewable energy uses the Moon's gravitational pull on Earth?

A

B

Tidal

C

D



5. Which of these are sources of biofuel?

A

Landfills

B

Food waste compost

C

Cow farts

D

All of the above

5. Which of these are sources of biofuel?

A

B

C

D

All of the above



Round 5:
**GENERAL ENERGY
KNOWLEDGE**



1. What form of energy keeps the planets in orbit around the Sun?

A Kinetic energy

B Nuclear energy

C Elastic energy

D Gravitational energy



1. What form of energy keeps the planets in orbit around the Sun?

A

B

C

D

Gravitational energy



2. What type of light does sunscreen help protect us from?

A

X-ray

B

Ultraviolet

C

Infrared

D

Microwave



2. What type of light does sunscreen help protect us from?

A

B

Ultraviolet

C

D



3. How do musical instruments produce sound energy?

A

Through rhythm

B

Through vibrations

C

Through harmony

D

Through sonic boom



3. How do musical instruments produce sound energy?

A

B

Through vibrations

C

D



4. What type of energy transformation occurs when a bolt of lightning strikes the CN Tower?

A

Electrical to thermal

B

Gravitational to light

C

Electrical to chemical

D

All of the above



4. What type of energy transformation occurs when a bolt of lightning strikes the CN Tower?

A

Electrical to thermal

B

C

D



5. Which phenomena releases the most energy?

A

Lightning strikes

B

Volcano eruptions

C

Solar wind

D

Gamma-ray bursts

5. Which phenomena releases the most energy?

A

B

C

D

Gamma-ray bursts



Image source:
NASA

TALLY YOUR SCORE:

Time to tally up your score! Give yourself one point for each correct answer up to a total possible score of 25 points.

ANSWER KEY

ROUND 1:
General Energy

1. B
2. D
3. C
4. C
5. D

ROUND 2:
Electricity

1. A
2. B
3. B
4. C
5. B

ROUND 3:
Non-renewable
Energy

1. A
2. D
3. A
4. C
5. D

ROUND 4:
Renewable
Energy

1. D
2. A
3. B
4. B
5. D

ROUND 5:
General Energy

1. D
2. B
3. B
4. A
5. D

THANK YOU FOR PLAYING!

Lead Partner



Supporting Partner

