

**Student Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Year 8 Level 1 Physical Sciences Test**

**ENERGY**

/40

**Science Achievement Standard**

* They identify different forms of energy and describe how energy transfers and transformations cause change in simple systems

**Processing and analysing data and information**

Construct and use a range of representations, including graphs, keys and models to represent and [analyse](http://www.australiancurriculum.edu.au/glossary/popup?a=S&t=Analyse) patterns or relationships, including using [digital technologies](http://www.australiancurriculum.edu.au/glossary/popup?a=S&t=Digital+technologies) as appropriate [(ACSIS144)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACSIS144)

**Physical sciences**

Energy appears in different forms including movement (kinetic energy), heat and potential energy, and causes change within systems [(ACSSU155)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACSSU155)

**This test will consist of two sections;**

**Section 1: Multiple Choice**

* Questions 1-10
* 10 marks total
* 10 minutes allowed

**Section 2: Written section**

* Questions 11 – 18
* 30 marks
* 30 minutes allowed

**Test rules**

No communication is allowed between students in the presence of the test, if you ignore this rule you will receive a score of zero.

**Equipment needed**

Blue or black pen or lead pencil

Ruler

Eraser

Scientific calculator

**SECTION ONE: Multiple Choice 10 Marks**

*Instructions → Place your chosen answers letter on the line provide under the question.*

Q1. Kate accidentally drops a chocolate cake on the floor. Select the most likely sequence of energy transformations that occur:

1. Heat energy → gravitational potential energy → kinetic energy → sound energy
2. Gravitational potential energy → kinetic energy → sound energy →heat energy
3. Kinetic energy → gravitational potential energy → heat energy → sound energy
4. Sound energy → kinetic energy → heat energy → gravitational potential energy

ANSWER = ……………….

Q2. Energy is measured using the unit?

1. Joules
2. Watts
3. Neutrons
4. Grams

ANSWER = ……………

Q3. Stored energy is called?

1. Light energy
2. Kinetic energy
3. Potential energy
4. Sound energy

ANSWER = …………….

Q4. How many types of potential energy have you learnt about?

1. 1
2. 5
3. 7
4. 4

ANSWER = ………………

Q5. When energy is passed from one object to another we call this a?

1. Energy transfer
2. Energy transport
3. Energy exchange
4. Energy transfiguration

ANSWER = ……………….

Q6. The law of energy conservation is;

1. That energy can never be created or destroyed, it just transfers from one form to another.
2. That energy can be created and destroyed.
3. That energy is only released when you feel heat.
4. That if something is not moving it does not have energy.

ANSWER = ………………..

Q7. Energy transformations are shown using an?

1. Flow diagram
2. Energy flow diagram
3. Energy transfer chart
4. Transfer table

ANSWER = ……………….

Q8. An energy rating label found on appliances shows its energy efficiency by what symbol?

1. Dots
2. Ticks
3. Crosses
4. Stars

ANSWER = ………………..

Q9. Reducing the amount of energy we use reduces the amount of \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ put into the atmosphere.

1. Nitrogen gas
2. Greenhouse gases
3. Oxygen gas
4. Chlorine gas

ANSWER = ………………

Q10. The National House Energy Rating Scheme suggests you take steps to make your house more energy efficient and therefore cheaper to run, heat and cool. Which of the following would they **disapprove** of?

1. Insulation in walls, roof and floor
2. 6 Star reverse cycle air conditioning system
3. Eaves over windows for shade
4. Using incandescent light bulbs

ANSWER = ………………

**SECTION TWO: Written Section 30 marks**

Please write your answer on lines provided and make sure you proof read your answers if you get time.

**Question 11 (4 marks)**

What sort of energy do these different things use? The first one has been done for you.

|  |  |
| --- | --- |
| Riding a bike  A TV  Your body  Playing football  A computer | Electrical energy  Kinetic energy  Electrical energy  Kinetic energy  Chemical energy |

**Question 12 (4 marks)**

Finish off the sentences with these words;

many power change everything

Energy is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that makes things work. We need energy for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ we do. There are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ different kinds of energy. Energy can \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from one kind into another.

**Question 13 (1 mark)**

1. What is often a product of most energy transfers? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. State one thing our body uses energy for, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Question 14 (5 marks)**

Here are some ways energy changes, look at each energy transfer and try to work out what the two main kinds of energy are.

KINETIC ELECTRICAL CHEMICAL SOUND HEAT LIGHT

1. A drum changes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy.
2. An electric heater changes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy.
3. A light bulb changes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy.
4. Our bodies change \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy.
5. A boiling electrical kettle that whistles changes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy.

**Question 15 (2 marks)**

A battery stores energy and so does a blown up balloon. Think about what happens if you let the balloon go before tying the end. What has the balloons potential energy changed into? Draw an energy flow diagram to show the energy change.

**Question 16 (3 marks)**

A very easy way to see energy changing from one form to another is to rub your hands together really hard. Keep going for as long as you can.

1. What sort of energy is that movement? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. How did your hands feel when you were rubbing them together? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Draw an energy flow diagram to show the energy change taking place.

**Question 17 (5 marks)**

Energy can be said to be moving (kinetic energy) or stored (potential energy). Something which is moving like a car is using kinetic energy, something which stores energy like a battery has potential energy.

Complete the table below buy putting the following words into the right category.

a car driving at 50km/h a piece of coal a salad sandwich

wind blowing through tree leaves AA size battery water flowing in a stream

a motorcycle waiting at a red light an apple in a lunch box

a wave at the beach gas in a BBQ gas bottle

|  |  |
| --- | --- |
| Kinetic energy (moving) | Potential Energy (stored) |
|  |  |

**Question 18 (6 marks)**

Study the energy column graph below and then answer the questions.

1. What uses the most energy? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What percentage (%) does transport use? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Which of the things use 11% of all the energy? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. What percentage does industry use? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. What is the total percentage (%) of energy used in Northern Ireland? Show your working \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Student Name: ANSWER KEY**

**Year 8 Level 1 Physical Sciences Test**

**ENERGY**

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**SECTION ONE: Multiple Choice 10 Marks**

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3. Kinetic energy → gravitational potential energy → heat energy → sound energy
4. Sound energy → kinetic energy → heat energy → gravitational potential energy

ANSWER = b

Q2. Energy is measured using the unit?

1. Joules
2. Watts
3. Neutrons
4. Grams

ANSWER = a

Q3. Stored energy is called?

1. Light energy
2. Kinetic energy
3. Potential energy
4. Sound energy

ANSWER = c

Q4. How many types of potential energy have you learnt about?

1. 1
2. 5
3. 7
4. 4

ANSWER = d

Q5. When energy is passed from one object to another we call this a?

1. Energy transfer
2. Energy transport
3. Energy exchange
4. Energy transfiguration

ANSWER = a

Q6. The law of energy conservation is;

1. That energy can never be created or destroyed, it just transfers from one form to another.
2. That energy can be created and destroyed.
3. That energy is only released when you feel heat.
4. That if something is not moving it does not have energy.

ANSWER = a

Q7. Energy transformations are shown using an?

1. Flow diagram
2. Energy flow diagram
3. Energy transfer chart
4. Transfer table

ANSWER = b

Q8. An energy rating label found on appliances shows its energy efficiency by what symbol?

1. Dots
2. Ticks
3. Crosses
4. Stars

ANSWER = d

Q9. Reducing the amount of energy we use reduces the amount of \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ put into the atmosphere.

1. Nitrogen gas
2. Greenhouse gases
3. Oxygen gas
4. Chlorine gas

ANSWER = b

Q10. The National House Energy Rating Scheme suggests you take steps to make your house more energy efficient and therefore cheaper to run, heat and cool. Which of the following would they **disapprove** of?

1. Insulation in walls, roof and floor
2. 6 Star reverse cycle air conditioning system
3. Eaves over windows for shade
4. Using incandescent light bulbs instead of fluorescent blubs

ANSWER = d

**SECTION TWO: Written Section 30 marks**

Please write your answer on lines provided and make sure you proof read your answers if you get time.

**Question 11 (4 marks)**

What sort of energy do these different things use? The first one has been done for you.

1 MARK PER CORRECT LINE

|  |  |
| --- | --- |
| Riding a bike  A TV  Your body  Playing football  A computer | Electrical energy  Kinetic energy  Electrical energy  Kinetic energy  Chemical energy |

**Question 12 (4 marks)**

Finish off the sentences with these words; 1 MARK PER CORRECT WORD

many power change everything

Energy is the POWER that makes things work. We need energy for EVERYTHING we do. There are MANY different kinds of energy. Energy can CHANGE from one kind into another.

**Question 13 (1 mark)**

1. What is often a product of most energy transfers? HEAT ½ mark
2. State one thing our body uses energy for, TALKING/ EATING/WALKING ETC... ½ MARK

**Question 14 (5 marks)**

Here are some ways energy changes, look at each energy transfer and try to work out what the two main kinds of energy are.

KINETIC ELECTRICAL CHEMICAL SOUND HEAT LIGHT

½ MARK PER ANSWER

1. A drum changes KINETIC energy into SOUND energy.
2. An electric heater changes ELECTRICAL energy into HEAT energy.
3. A light bulb changes ELECTRICAL energy into LIGHT energy.
4. Our bodies change CHEMICAL energy into KINETIC energy.
5. A boiling electrical kettle that whistles changes ELECTRICAL energy into HEAT AND/OR SOUND energy.

**Question 15 (2 marks)**

A battery stores energy and so does a blown up balloon. Think about what happens if you let the balloon go before tying the end. What has the balloons potential energy changed into? Draw an energy flow diagram to show the energy change.

½ MARK OFF FOR EACH MISTAKE

ELASTIC POTENTIAL ENERGY → SOUND ENERGY & HEAT ENERGY

**Question 16 (3 marks)**

A very easy way to see energy changing from one form to another is to rub your hands together really hard. Keep going for as long as you can.

1. What sort of energy is that movement? KINETIC ½ MARK
2. How did your hands feel when you were rubbing them? WARM/HOT ½ MARK
3. Draw an energy flow diagram to show the energy change taking place.

½ OFF FOR EACH MISTAKE

KINETIC ENERGY → HEAT ENERGY

**Question 17 (5 marks)**

Energy can be said to be moving (kinetic energy) or stored (potential energy). Something which is moving like a car is using kinetic energy, something which stores energy like a battery has potential energy.

Complete the table below buy putting the following words into the right category.

a car driving at 50km/h a piece of coal a salad sandwich

wind blowing through tree leaves AA size battery water flowing in a stream

a motorcycle waiting at a red light an apple in a lunch box

a wave at the beach gas in a BBQ gas bottle

½ FOR EACH CORRECT ANSWER

|  |  |
| --- | --- |
| Kinetic energy (moving) | Potential Energy (stored) |
| A CAR DRIVING AT 50KM/H  WIND BLOWING THROUGH TREE LEAVES  WATER FLOWING IN A STREAM  A WAVE AT A BEACH | A PIECE OF COAL  A SALAD SANDWICH  AA SIZE BATTERY  A MOTORCYCLE WAITING AT A RED LIGHT  AN APPLE IN A LUNCH BOX  GAS IN A BBQ GAS BOTTLE |

**Question 18 (6 marks)**

Study the energy column graph below and then answer the questions.

1 MARK Q’s a-d, Q e 1 MARK WORKING & 1 MARK ANSWER

1. What uses the most energy? RESIDENTIAL
2. What percentage (%) does transport use? 28 % WILL ACCEPT 29% OR 27%
3. Which of the things use 11% of all the energy? SERVICES AND BUILDINGS
4. What percentage does industry use? 17% WILL ACCEPT 16% OR 18%
5. What is the total percentage (%) of energy used in Northern Ireland? Show your working

44% + 17% + 28% + 11% = 100%

ASWER TO E WILL VARY DEPENDING ON HOW THEY READ THE GRAPH 1º OFF EACH READING IS ALLOWED!