

Power, energy and electricity bills

Grade 8 science (Year 9 · Class 8) · Test

Name: _____ Date: _____ Class: _____ Mark: ____ / 20

This test has eight questions on power, energy and electricity bills and is worth 20 marks. Write the formula, show each step and give units. You may use a calculator.

Level: Grade 8 science (Year 9 · Class 8) · **Curriculum:** MS-PS3

Time: 40 minutes · 8 questions · Total: 20 marks · Calculator allowed

Question 1 Meaning of power (2 marks)

- State what is meant by electrical power. (1 mark)
- State the unit of power in full and its symbol. (1 mark)

Question 2 Cool box (2 marks)

A car cool box works on 12 V and draws 3.5 A.

- Write the formula for power. (1 mark)
- Calculate the power of the cool box. (1 mark)

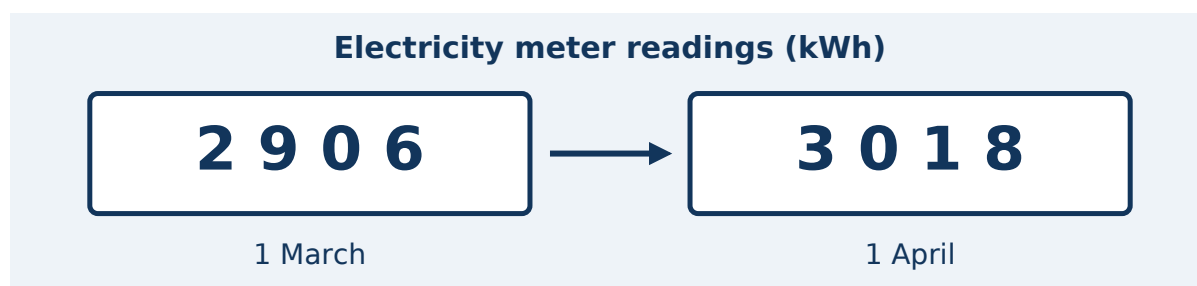
Question 3 Hair dryer (3 marks)

A hair dryer has a power of 1.8 kW and is used for 10 minutes.

- Calculate the energy transferred in kWh. (2 marks)
- Calculate the energy in joules. (1 mark)

Question 4 Monthly bill (3 marks)

Look at the meter readings of Ifeanyi's home in Abuja.



Meter readings for one month.

The price is 0.22 dollars per kWh.

- a. Calculate the energy used. (1 mark)
- b. Calculate the cost. (2 marks)

Question 5 Blender fuse (3 marks)

A blender is rated 1380 W on a 230 V supply. Fuses of 3 A, 5 A and 13 A are available.

- a. Calculate the current. (2 marks)
- b. Choose the best fuse and give a reason. (1 mark)

Question 6 Why kilowatt-hours? (3 marks)

- a. Explain why a 2 kW heater costs more to run for one hour than a 100 W television. (2 marks)
- b. Explain why electricity bills use kilowatt-hours instead of joules. (1 mark)

Question 7 Television or oven (3 marks)

A television of power 120 W is on for 4 hours. An oven of power 2.4 kW is on for 25 minutes.

- a. Calculate the energy used by each in kWh. (2 marks)
- b. State which uses more energy and by how much. (1 mark)

Question 8 Correct the statement (1 mark)

A student writes: 'A 2 kW heater uses 2 kWh of energy.' Correct this statement. (1 mark)