

Worksheet: The Electron Volt



Q1: What is 2×10^{-16} J in kiloelectron volts?

- A 1.25 keV
- B 8×10^{-7} keV
- C 1,250 keV
- D 2 keV
- E 8×10^{-4} keV

Q2: What is 14 eV in joules? Give your answer to 3 significant figures.

- A 4.46×10^{17} J
- B 2.29×10^{-20} J
- C 2.24×10^{-18} J
- D 1.14×10^{-20} J
- E 8.75×10^{19} J

Q3: What is 30 keV in joules?

A 5.3×10^{-21} J

B 4.8×10^{-18} J

C 0.030 J

D 5.3×10^{-24} J

E 4.8×10^{-15} J

Q4: What is 8×10^{-19} J in electron volts?

A 5 eV

B 0.125 eV

C 0.2 eV

D 8 eV

E 4 eV

Q5: How many electron volts are in 1 keV?

A 1,000

B 100

C 0.001

D 10,000

E 10

Q6: What is 4.00×10^{-12} J in megaelectron volts ?

A 0.8 MeV

B 25.0 MeV

C 25,000 MeV

D 4 MeV

E 0.04 MeV

Q7: How many electron volts are in 1 MeV?

A 10^9

B 10^4

C 10^6

D 10^3

E 10^2

Q8: An electron is accelerated across a potential difference of -7 V . The electron moves in a vacuum. What is the kinetic energy, in electron volts, of the electron once it has crossed this potential difference?

- A -14 eV
- B 14 eV
- C 7 eV
- D -7 eV
- E 0

Q9: What is 930 MeV in joules?

- A $1.49 \times 10^{-10}\text{ J}$
- B 930 J
- C $1.49 \times 10^{-13}\text{ J}$
- D $5.81 \times 10^{27}\text{ J}$
- E $5.81 \times 10^{24}\text{ J}$

Q10: How many giga-electron volts are there in 1 J? Use a value of -1.60×10^{-19} C for the charge of one electron.

A 1.60×10^{-19} GeV

B 6.25×10^{18} GeV

C 6.25×10^9 GeV

D 1.60×10^{-28} GeV

E 1.60×10^{-10} GeV

Q11: An electron is accelerated across a potential difference of exactly -1 V. The electron moves in a vacuum.

► What is the kinetic energy, in joules, of the electron once it has crossed this potential difference? Use a value of -1.60×10^{-19} C for the charge of an electron.

A 8.00×10^{-20} J

B 6.30×10^{18} J

C 1.60×10^{-19} J

D 1.00 J

E 3.10×10^{18} J

► If this value of energy is used as a unit (electron volt, eV), what is the kinetic energy of the electron once it has crossed the potential difference, in electron volts?

A 0.500 eV

B 3.90×10^{37} eV

C 1.00 eV

D 6.25×10^{18} eV

E 1.90×10^{37} eV