

Worksheet: The Electromagnetic Spectrum



Q1: What is the name of the type of electromagnetic radiation that has the longest wavelengths?

- A Gamma rays
- B Ultrasonic waves
- C Microwaves
- D Radio waves
- E X-rays



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Q2: The table shows a set of types of electromagnetic waves and the orders of magnitude of their wavelengths.

Radio	Microwave	Infrared	Visible	Ultraviolet	X-Ray	Gamma Ray
>1 m	10^{-2} m	10^{-5} m	10^{-7} m	10^{-8} m	10^{-10} m	$<10^{-15}$ m



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► Using the values from the table, how many wavelengths of ultraviolet radiation would have the same total length as one wavelength of infrared radiation? Answer in standard form.

A 10^5

B 10^{-3}

C 10^{-5}

D 10^3

E 10^6

► Using the values from the table, how many wavelengths of the longest wavelength gamma radiation would have the same total length as one wavelength of X-ray radiation? Answer in standard form.

A 10^{-3}

B 10^3

C 10^2

D 10^5

E 10^{-5}

Q3: Which of the following could be a source of X-ray radiation?

- A High-speed electrons impacting on a metal plate
- B Decaying atomic nuclei
- C Thermal motion of atoms and molecules
- D None of the answers is correct.
- E Alternating electric currents

Q4: Which of the following could be a source of infrared radiation?

- A Alternating electric currents
- B Decaying atomic nuclei
- C Direct electric currents
- D None of the answers is correct.
- E Thermal motion of atoms and molecules

Q5: Which of the following could be a source of radio waves?

- A High-speed electrons impacting on a metal plate
- B Decaying atomic nuclei
- C Alternating electric currents
- D None of the answers is correct.
- E Direct electric currents

Q6: What is the name of the type of electromagnetic radiation that has the lowest frequencies?



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- A X-rays
- B Radio waves
- C Ultrasonic waves
- D Gamma rays
- E Microwaves

Q7: What is the name of the type of electromagnetic radiation that has the shortest wavelengths?

- A X-rays
- B Gamma rays
- C Ultrasonic waves
- D *P*-waves
- E Microwaves

Q8: What is the name of the type of electromagnetic radiation that has the highest frequencies?

- A Ultrasonic waves
- B Longitudinal waves
- C S-waves
- D X-rays
- E Gamma rays

Q9: Which of the following types of waves is a part of the electromagnetic spectrum?

- A Gamma rays
- B S-waves
- C Longitudinal waves
- D Ultrasonic waves

Q10: Which of the following types of waves are **not** a part of the electromagnetic spectrum?

A Microwaves

B X-rays

C Infrared waves

D P-waves

E Gamma rays

Q11: Which of the following could be a source of microwave radiation?

A Thermal motion of atoms and molecules

B Direct electric currents

C None of the answers is correct.

D High-speed electrons impacting on a metal plate

E Alternating electric currents