

Radiation Claim Check

Evaluate how evidence and frequency shape health claims.

HS-PS4-4 "Evaluate the validity and reliability of claims in published materials of the effects that different frequencies of electromagnetic radiation have when absorbed by matter..."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each claim about radiation and health, circle each detail that helps you judge a source's reliability, and number the statements that connect frequency with energy or tissue effects.

Sorting Evidence From Advertising

- ① At lunch, Maya reads a health agency web page about sunlight. The page names its medical reviewers, links to studies, and dates its update. It explains that ultraviolet, or UV, radiation has a higher frequency than visible light. Higher-frequency electromagnetic radiation carries more energy per photon. When UV is absorbed by skin cells, it can damage molecules, including DNA, raising the risk of sunburn and skin cancer. The page recommends shade, protective clothing, and sunscreen. Its claims match evidence from health research, although readers should still check whether the links lead to current, independent studies.
- ② Later, Maya sees a video advertisement for a pendant that blocks "all harmful radiation." The seller says that blue light from phones is "as dangerous as UV" because both are light. The video shows glowing graphics and customer comments, but it gives no author, date, measurements, or research links. This claim ignores frequency. Blue visible light has lower frequency and less energy per photon than UV radiation. Under ordinary phone use, blue light is not known to cause the same DNA damage in skin as UV. Blue light can affect sleep when bright screens are used late, but that is a different effect and does not prove the pendant works.
- ③ Frequency is important, but a careful reader does not treat every radiation claim as equally trustworthy. Very high-frequency X-rays and gamma rays carry more energy per photon than UV and can damage living tissue when absorbed. Exposure also matters: how much radiation is absorbed, for how long, and which tissue receives it affect risk. A reliable published source identifies its author or organization, provides dates and evidence, distinguishes among frequencies, and avoids promises such as "zero risk" or "complete protection." Before accepting a claim, compare it with independent health agencies or peer-reviewed research rather than relying on dramatic images, testimonials, or product sales.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 Which source in the passage is more reliable, the health agency web page or the pendant advertisement? Give two passage details that support your evaluation.

2 What reasoning error does the pendant seller make when claiming that blue light is as dangerous as UV because both are light?

3 According to the passage, name two factors besides frequency that can affect the risk of radiation exposure to living tissue.

4 Why are customer comments and glowing graphics weak evidence for the pendant's claim?

3 YOUR TURN _____ Your own words

Evaluate this online claim in exactly 3 sentences: "Wi-Fi signals are more dangerous to skin than sunlight because they pass through walls." State whether the claim needs more evidence, compare Wi-Fi and UV frequencies or energies, and name one piece of evidence you would check.

PART 1 • READ AND MARK

Underline each claim about radiation and health, circle each detail that helps you judge a source's reliability, and number the statements that connect frequency with energy or tissue effects. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	Which source in the passage is more reliable, the health agency web page or the pendant advertisement? Give two passage details that support your evaluation.	The health agency web page is more reliable. It names medical reviewers, links to studies, and includes an update date.
2	What reasoning error does the pendant seller make when claiming that blue light is as dangerous as UV because both are light?	The seller ignores frequency. Blue light has a lower frequency and less energy per photon than UV, so being the same general type of radiation does not mean it has the same tissue effect.
3	According to the passage, name two factors besides frequency that can affect the risk of radiation exposure to living tissue.	Accept any two: how much radiation is absorbed, how long exposure lasts, and which tissue receives the radiation.
4	Why are customer comments and glowing graphics weak evidence for the pendant's claim?	They do not provide an identified author, date, measurements, or research evidence, and they do not prove that the pendant works.

PART 3 • YOUR TURN (SAMPLE ANSWER)

The claim is not reliable without an identified author and independent evidence. Wi-Fi uses much lower-frequency electromagnetic radiation than UV sunlight, so its photons carry less energy. I would check current independent studies that measure how much Wi-Fi radiation is absorbed by skin and describe its effects.

Accept evaluations that identify missing or weak source evidence and accurately explain that lower-frequency Wi-Fi has less energy per photon than UV. Students may name current independent studies, measured exposure, absorbed amount, author credentials, or research links as evidence to check.