

How do Wifi and Cell Phones Work?

Part 1. Vocabulary

Directions: Match the letter with the correct definitions

- a. Electrical impulses
- b. Antenna
- c. Gravitational waves
- d. Electromagnetic waves
- e. Radio Wave synthesis

Definitions

- 1. Fluctuations in electromagnetic fields, propagating as radiant energy.
- 2. Electrons flowing along potential difference
- 3. Carefully choreographed, rhythmic dance of electrons
- 4. Metal - tongued voodoo device that swallow electrical impulses and spits out radio waves
- 5. Fluctuations in gravitational field, propagating as radiant energy

Part 2. Fill in the blanks

Directions: Match the letter with the correct word to fill in the blanks.

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|-------------------|----------------------|
| a. communications | b. rhythmic |
| c. send | d. electron |
| e. ping | f. Electric impulses |
| g. encode | h. interference |
| i. code | j. message |
| k. outward | l. electromagnetic |
| m. encrypted | n. device |
| o. wireless | p. antenna |
| q. conducting | r. transmitter |
| s. cables | t. decode |

When you press _____ on your messaging app, your mobile OS sets off a chain of events that ultimately _____ the message as a careful choreography of an _____ dance. This dance results in the _____ ebbs and flows in the _____ field in the surrounding space, which radiates _____ towards a cell tower. The receiving _____ on the cell tower feels these ebbs and flows on its _____ surface, inducing an electron dance very similar to the one at the _____.

This electron dance is a set of _____ in tiny copper wires, which aren't _____ by the hardware at the cell tower. The decoded information is then carried on high - throughput _____ for thousands of miles across country, continent, and even ocean through Transatlantic _____ cables to a cell tower near your friend across the ocean. Then, from your friend's phone to another _____ jump and finally, your friend hears the familiar _____. Your phone broadcasts your _____ in all directions for anyone to listen to. Your message will be _____ and only the cell tower can decode your message. With every message you transmit, you also include a _____ that uniquely identifies your _____. This is how the cell tower knows it's you. Devices can speak at different times, different frequencies, or different codes, to avoid _____.