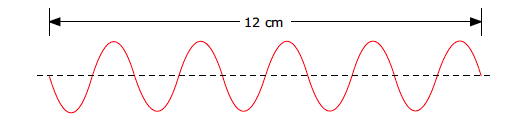
**Year 9 Energy Revision Solutions**

1. a) Transverse b) Longitudinal

c) 4.5 d) 4

e) i) A ii) B iii) A

2. a) and b) 

B

A

c) 5

d) 12 / 5 = 2.4 cm

3. a) C b) D c) C d) B

4. a) True b) False c) False d) True

5. a) speed, transverse, frequencies, wavelengths, energies

b) nucleus, atoms, penetrating, cancer, sterlise

c) imaging

d) hot, Sun, tanning, cancer

e) electromagnetic spectrum, white, red, orange, yellow, green,

blue, indigo, violet

f) hotter, more, toasters, heaters, fibre, remote controls

g) infrared, radio, Satellites, atmosphere, mobile phones, cooking,

microwave

h) frequency, energy, antennas, television, radio, long, stars,

galaxies, telescopes

6. i) Gamma rays ii) Radio waves

iii) Ultra violet, X rays and gamma rays

7.

|  |  |
| --- | --- |
| Use | Radiation Type |
| To carry signals to orbiting satellites | Radio |
| To carry signals in fibre optic telephone cables | Infrared and Visible Light |
| To sterilise medical instruments | Gamma |
| To produce shadow images of bones and internal organs  To kill harmful bacteria in food | X ray |
| In the remote control for TV and DVD sets | Infrared |
| In rapid cooking | Microwave |
| Enables us to see the world around us | Visible Light |
| In security marking of expensive goods | Ultra violet |

8.

|  |  |  |
| --- | --- | --- |
|  | **Sound** | **Light** |
| Speed | 330 -350 m/s | 300 000 000 m/s |
| Wave type | Longitudinal | Transverse |
| Source of wave | Vibrations | Luminous objects |
| Can it travel through a vacuum? | No | Yes |
| Can it travel through water? | Yes | Yes |
| Can it travel through an opaque solid? | Yes | No |
| How can it be detected? | By the Ear | By the Eye |

9. a) False b) False c) True d) False

e) True

10. a) Glass

b) Air

The speed of sound through a medium depends on how close the particles are to each other. The closer the particles the faster sound can travel through them. The particles in glass are closer than those in water, which are closer than air and therefore sound travels faster in glass and slower in air.

11. There is a vacuum between the Earth and the Moon and sound cannot travel through a vacuum as there are no particles to vibrate.

12. Lightning bolt B is closer to you than A.

13. Hammer, anvil and stirrup

14. Sound is caused by the vibration of particles moving in a wavelike

Motion.

15. A group of text on a white background

Description automatically generated

16. Rarefactions circled in green and compressions circled in red. Diagram of a diagram showing a wave formation

Description automatically generated with medium confidence

17. a) outer ear

sound waves are collected

consists of the auricle, ear canal and eardrum (outer layer only)

b) middle ear

sound is amplified

consists of the eardrum, ossicles and oval window

c) inner ear  
  sound is changed into an electrical signal and sent along the

auditory nerve to the brain

consists of the cochlea

18. A diagram of a reflection of a reflection

Description automatically generated

19. They are the same angle.

20. The image is **upright**, the **same size** and the same distance from the

mirror. The left and right sides are interchanged in the image. So, your left hand becomes the right hand of your image. When this happens, your image is said to be **laterally inverted**.

21.

A close-up of a person's face

Description automatically generated

22.

A diagram of a sound wave

Description automatically generated