Waves

Answers

GCSE science knowledge recall

This topic online

Q	Answer	Remember
1	transverse	Ripples on water and all electromagnetic waves are transverse.
2	rarefactions	Compressions are squashed together, rarefactions are spread out - a longitudinal wave.
3	no	A floating duck bobs up and down but stays put - waves carry energy, not the medium.
4	amplitude	Measure from the middle line to a peak, not from trough to peak.
5	hertz	1 Hz is one wave passing a point each second.
6	wavelength	$v = f \lambda$. This one works for every type of wave.
7	200	50 × 4 = 200 m/s.
8	0.2	T = 1 ÷ f. Period and frequency are each other's reciprocal.
9	equal	Both angles are measured from the normal, the line at right angles to the surface.
10	wavelength	Crest to crest or trough to trough - the symbol is λ (lambda).
11	ultrasound	Partly reflected at boundaries between tissues, which is how pregnancy scans build a picture.
12	S	S waves are transverse. An S-wave shadow zone shows the outer core is liquid.
13	radio waves	Order from long to short: radio, microwave, infrared, visible, ultraviolet, X-ray, gamma.
14	gamma rays	Highest frequency, shortest wavelength and most energy per wave.
15	3×10^8 m/s	300 million metres per second - light from the Sun takes about 8 minutes to reach us.
16	visible light	It is a tiny slice of the spectrum, from red to violet.
17	refraction	It happens because the wave changes speed at the boundary.
18	towards	It slows down in glass and bends towards the normal; leaving the glass it speeds up and bends away.
19	One side of each wave front reaches the glass first and slows down while the rest is still moving faster in air, so the wave front turns.	Think of a car with one front wheel driving onto sand - it swerves.
20	gamma rays	Changes in electron energy levels give out the other parts; nuclear changes give out gamma.

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Q	Answer	Remember
21	microwaves	Microwaves pass through the atmosphere, and water in food absorbs them.
22	infrared	Warmer objects give out more infrared, so they glow brighter on the camera.
23	X-rays	X-rays pass through soft tissue but are absorbed by dense bone.
24	ultraviolet	Sun cream and sunglasses block UV.
25	convex	Convex lenses converge light; concave lenses spread it out.
26	object height	Magnification has no units because the two heights cancel.
27	red	It absorbs every other colour and reflects red into your eyes.
28	black body	A perfect absorber is also the best possible emitter.
29	increase	That is why heated metal glows red, then orange, then white as the peak shifts.
30	They are ionising radiation, which can damage cells and DNA and so may cause mutations and cancer.	Radiographers stand behind a screen or leave the room to keep their own dose low.

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