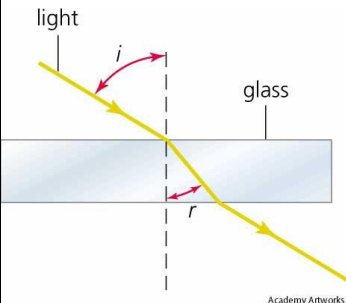
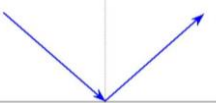


P8 Waves Fact Sheet

Transverse and Longitudinal Waves	
1. What do waves transfer? (1)	Energy
2. Name 2 types of wave (2)	<ul style="list-style-type: none"> • transverse • longitudinal
3. Give an example of a transverse wave (1)	Light, any wave on the electromagnetic spectrum
4. Give an example of a longitudinal wave (1)	Sound
5. Give an example of waves which can be transverse or longitudinal (1)	Mechanical waves
6. a. What do we call the distance between A and B? b. What do we call the distance between C and D?	a. Amplitude b. wavelength
<p style="font-size: small;">© www.scienceaid.net</p>	
7. Areas where particles are squashed together in a longitudinal wave are called.... (1)	compressions
8. Areas where particles are spread out in a longitudinal wave are called.... (1)	rarefactions
9. What do we call the maximum displacement of a point on a wave away from its undisturbed position?	Amplitude
10. What do we call the distance from a point on one wave to the equivalent point on the adjacent wave?	Wavelength
11. What do we call the speed at which energy is transferred by a wave?	Wave speed
12. What do we call the number of waves per second? (1)	frequency
13. What are the units for frequency? (1)	Hertz/ Hz
14. Describe the oscillations in a transverse wave (1)	Perpendicular to the direction of energy transfer
15. Describe the oscillations in a longitudinal wave (1)	Parallel to the direction of energy transfer

16. A wave has a frequency of 20Hz. Calculate its period. The equation is given on the data sheet: Period = $1 \div \text{frequency}$	Period = $1 \div 20$ = 0.05s
Wave speed	
17. What are the units for wave length?	m
18. What are the units for speed?	m/s
19. State the equation for calculating wave speed, in terms of frequency and wavelength	Wave speed = frequency x wave length
20. A wave has a wavelength of 3m and a frequency of 10Hz. Calculate the speed of the wave	= frequency x wave length = 10×3 = 30 m/s
21. A wave has a wavelength of 50m and a frequency of 100Hz. Calculate the speed of the wave	= frequency x wave length = 100×50 = 5000 m/s
Electromagnetic spectrum	
22. All electromagnetic waves travel at the same in a vacuum (e.g. space) (1)	Speed
23. List waves in the electromagnetic spectrum, starting with the longest wavelength/ lowest frequency/ least energy	<ul style="list-style-type: none"> • radio waves • microwaves • infra-red radiation • visible light • ultraviolet • x-rays • gamma rays
Uses of electromagnetic waves	
24. State 2 uses of radio waves	TV and radio
25. State 2 uses of microwaves	<ul style="list-style-type: none"> • Cooking • Satellite communication
26. State 2 uses of infrared	<ul style="list-style-type: none"> • Electric heaters • Cooking • IR cameras • Remote controls
27. State a use of visible light	<ul style="list-style-type: none"> • Fibre optic communications • Traffic lights

28.State 2 uses of ultraviolet	<ul style="list-style-type: none"> • Energy efficient lamps • Sun tanning
29.State 2 uses of X rays	<ul style="list-style-type: none"> • Medical imaging • Medical treatments
30.State 2 uses of gamma rays	<ul style="list-style-type: none"> • Medical imaging • Treatment for cancer
Dangers of electromagnetic waves	
31.What makes gamma rays?	Changes in an atom's nucleus
32.Which electromagnetic waves can cause the most damage to humans? Why?	UV, X-ray and Gamma because they are the highest energy
33.State 2 variables which determine how much harm is done by radiation	<ul style="list-style-type: none"> • Type of radiation • Dose
34.Name two side effects if exposed to too much UV	<ul style="list-style-type: none"> • Sunburn • Skin cancer • Premature skin aging
35.Name 2 electromagnetic waves which are ionising	<ul style="list-style-type: none"> • X rays • Gamma rays]
36.List harmful effects of x rays and gamma rays	<ul style="list-style-type: none"> • Gene mutation • Cancer
Refraction	
37.What is it called when waves appear to bend?	Refraction
<p>38.What does this diagram show? (1)</p> 	refraction
39.When does refraction not happen? (1)	When the wave travels along the normal

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Reflection	
40. What does this diagram show? (1)	
	Reflection
41. The angle of incidence is to the angle of reflection (1)	Equal
42. Describe specular reflection.	Wave reflected in a single direction and by a smooth surface.
43. Describe diffuse reflection.	Rays are scattered in lots of different directions and by a rough surface.
Radio Waves	
44. What are EM waves made up from?	Oscillating electric and magnetic fields
45. The energy of radio waves is transferred to what part of the material the receiver is made from.	The electrons
46. Long wave radio has a range of wavelengths between ___ and ___.	1-10km
47. What process causes long wave radio signal to "bend" around the Earth?	Diffract
48. Sort wave radio has a range of wavelengths between ___ and ___.	10m -100m
49. What part of the Earth's atmosphere allow short wave radio to be reflected?	Ionosphere
50. The ac induced by the radio receiver is _____ to the radio wave that generated it.	Identical