

AP Physics 2

Name: _____ Score: _____

1. A travelling wave carries:
 - ☐ matter from place to place
 - ☐ only heat
 - ☐ nothing at all
 - ☐ energy without moving matter along
2. A wave has frequency 50 Hz and wavelength 2 m. What is its speed, in $\frac{\text{m}}{\text{s}}$?
_____ m/s
3. Which type of wave can be polarised?
 - ☐ neither
 - ☐ transverse only
 - ☐ both equally
 - ☐ longitudinal only
4. In a vacuum, radio waves and X-rays travel at:
 - ☐ it depends on brightness
 - ☐ radio is faster
 - ☐ X-rays are faster
 - ☐ the same speed, c
5. A siren moves toward you. Compared with its true note, you hear a:
 - ☐ the same pitch
 - ☐ higher pitch
 - ☐ no sound
 - ☐ lower pitch
6. Two waves of amplitude 3 cm meet exactly in phase. What is the amplitude where they overlap, in cm?
_____ cm
7. Diffraction is the:
 - ☐ speeding up of waves
 - ☐ bouncing of waves off a mirror

☐ spreading of waves through gaps and around edges

☐ cancelling of two waves

8. A device with thousands of fine slits that splits light into sharp spots is a diffraction _____.

9. Soap-bubble colours are caused by pigments in the soap.

☐ True ☐ False

10. Sound is a longitudinal wave.

☐ True ☐ False

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1. **energy without moving matter along**

A wave transfers energy; the medium only vibrates in place.

2. **100 m/s**

$$v = f\lambda = 50 \times 2 = 100 \frac{\text{m}}{\text{s}}.$$

3. **transverse only**

Only transverse waves vibrate in a plane, so only they can be polarised.

4. **the same speed, c**

All EM waves travel at the speed of light c in a vacuum.

5. **higher pitch**

Approaching bunches the waves, giving a higher observed frequency (higher pitch).

6. **6 cm**

Constructive: $3 + 3 = 6$ cm.

7. **spreading of waves through gaps and around edges**

Diffraction is the spreading of waves as they pass gaps or edges.

8. **grating**

A diffraction grating gives very sharp, bright maxima.

9. **False**

Soap is colourless; the colours come from thin-film interference.

10. **True**

Sound vibrates the air along the direction of travel – longitudinal.