

AP Physics 2

Name: _____ Score: _____

1. A travelling wave carries:

- ☐ matter from place to place
- ☐ energy without moving matter along
- ☐ nothing at all
- ☐ only heat

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?

- ☐ longitudinal only
- ☐ transverse only
- ☐ both equally
- ☐ neither

4. In a vacuum, radio waves and X-rays travel at:

- ☐ radio is faster
- ☐ X-rays are faster
- ☐ the same speed, c
- ☐ it depends on brightness

5. A siren moves toward you. Compared with its true note, you hear a:

- ☐ lower pitch
- ☐ higher pitch
- ☐ the same pitch
- ☐ no sound

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:

- ☐ bouncing of waves off a mirror
- ☐ spreading of waves through gaps and around edges

- ☐ speeding up of waves
- ☐ cancelling of two waves

8. Sound cannot be polarised because it is a longitudinal wave.

- ☐ True ☐ False

9. Electromagnetic waves can travel through empty space with no medium.

- ☐ True ☐ False

10. In the Doppler effect, the source's own frequency changes as it moves.

- ☐ True ☐ False

AP Physics 2

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. **True**

Sound vibrates along its travel direction, so there is no cross-direction to filter.

9. **True**

EM waves need no medium — that's how sunlight crosses space to Earth.

10. **False**

The source's frequency is unchanged; only the observed frequency shifts.