28 Waves are emitted from two coherent sources.

Which statement about the waves must be correct?

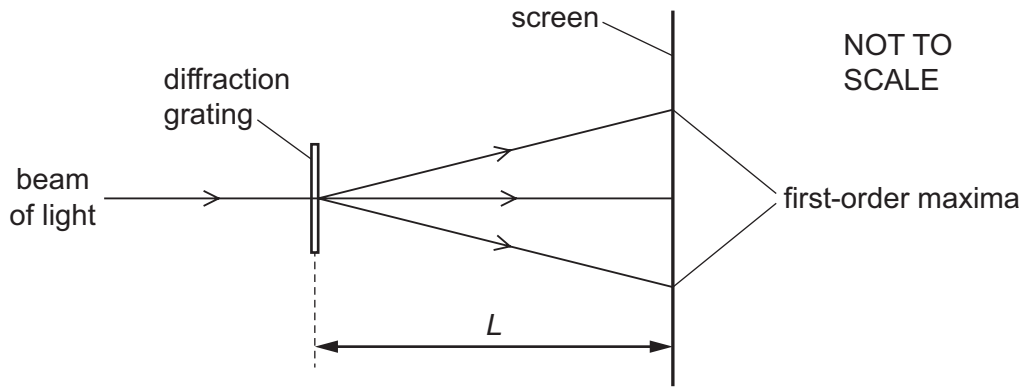
A They are in phase.

B They are transverse waves.

C They have a constant phase difference.

D They have the same amplitude.

29 The diagram shows a screen that is a distance *L* from a diffraction grating. The grating has a total number of *N* lines. Any two adjacent lines are a distance *d* apart. A beam of parallel light of wavelength λ is incident normally on the grating.



Which quantities affect the distance between the first-order diffraction maxima on the screen?

	d	λ	*L*	*N*
A	✓	✓	✓	✗
B	✓	✓	✗	✗
C	✓	✗	✓	✓
D	✗	✓	✗	✓

key

✓ = affects the distance

✗ = does not affect the distance

30 A wire carries a current of 0.10 μA. The potential difference across the wire is 10 mV.

How much energy is dissipated by the wire in a time of 10 s?

A 1.0 pJ **B** 10 pJ **C** 1.0 nJ **D** 10 nJ

31 What is the definition of the potential difference across an electrical component?

A energy transferred per unit charge

B energy transferred per unit current

C energy transferred per unit resistance

D energy transferred per unit time