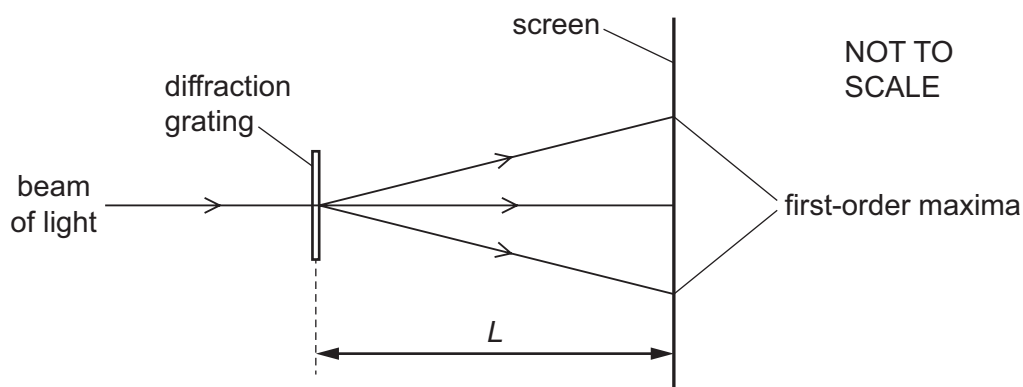


28 Waves are emitted from two coherent sources.

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  $\lambda$  is incident normally on the grating.



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

	$d$	$\lambda$	$L$	$N$
A	✓	✓	✓	✗
B	✓	✓	✗	✗
C	✓	✗	✓	✓
D	✗	✓	✗	✓

key

✓ = affects the distance

✗ = does not affect the distance

30 A wire carries a current of  $0.10\mu\text{A}$ . The potential difference across the wire is  $10\text{ mV}$ .

How much energy is dissipated by the wire in a time of  $10\text{ s}$ ?

- A  $1.0\text{ pJ}$
- B  $10\text{ pJ}$
- C  $1.0\text{ nJ}$
- D  $10\text{ nJ}$

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