20 Two guitar strings are stretched by tensile forces.

String X is stretched by a tensile force F that causes an extension x.

String Y is stretched by a tensile force $2F$ that causes an extension $2x$.

The strings obey Hooke's law.

What is the ratio $\frac{\text{strain energy in stretched string X}}{\text{strain energy in stretched string Y}}$?

A 4 **B** 2 **C** $\frac{1}{2}$ **D** $\frac{1}{4}$

21 Two lasers emit light in a vacuum. One laser emits red light and the other emits green light.

Which property of the light from the two lasers **must** be different?

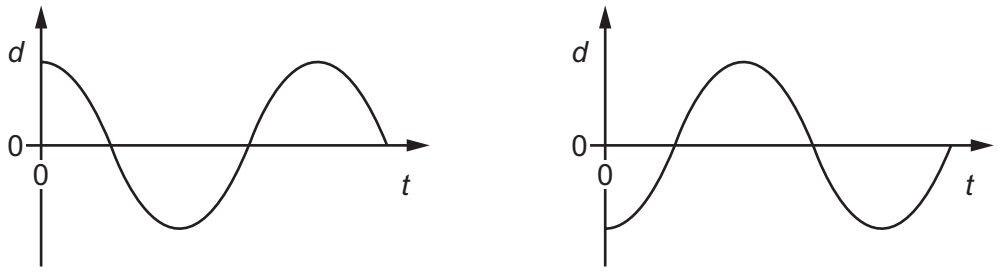
A amplitude

B frequency

C intensity

D speed

22 Two particles in a progressive wave are a distance 10 cm apart. The two graphs show the variation with time t of the displacement d of the two particles.



What could be represented by the two graphs?

A particles in a longitudinal wave with a compression and the nearest rarefaction separated by 10 cm

B particles in a longitudinal wave with a compression and the nearest rarefaction separated by 20 cm

C particles in a transverse wave with a peak and the nearest trough separated by 20 cm

D particles in a transverse wave with two adjacent peaks separated by 10 cm