

**6 (a)** Monochromatic light is diffracted by a diffraction grating. By reference to this, explain what is meant by

**(i)** diffraction,

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.....  
.....[2]

**(ii)** coherence,

.....  
.....  
.....[1]

**(iii)** superposition.

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.....  
.....[1]

**(b)** A parallel beam of red light of wavelength 630 nm is incident normally on a diffraction grating of 450 lines per millimetre.

Calculate the number of diffraction orders produced.

number of orders = ..... [3]

**(c)** The red light in **(b)** is replaced with blue light. State and explain the effect on the diffraction pattern.

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.....  
.....[3]