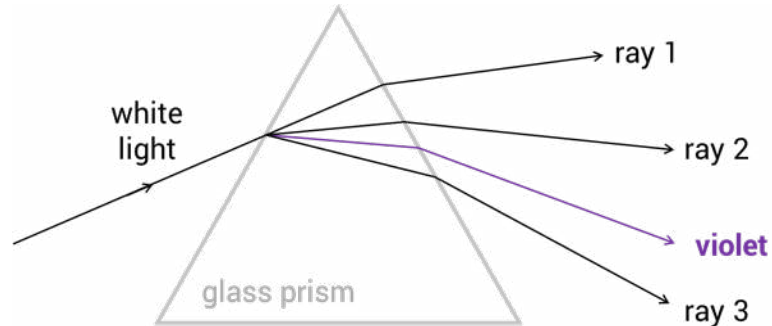


0	1
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In 1666, Isaac Newton discovered that white light is a combination of all of the colours of the visible spectrum. An experimental setup similar to that which was originally used by Newton is shown in the below diagram.



0	1	.	1
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The **correct** path of a ray of **violet** light through and out of the prism is as shown above. Three possible paths of a ray of **red** light are shown, but only one of these is correct. Which one is it?

[1 mark]

0	1	.	2
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Explain your previous answer.

[2 marks]

0	1	.	3
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A helium-neon laser produces red light of wavelength of 632.8 nm. Calculate the frequency of this light. The speed of light in vacuum is approximately  $3 \times 10^8$  m/s.

Frequency = \_\_\_\_\_ Hz

[3 marks]

0	1	.	4
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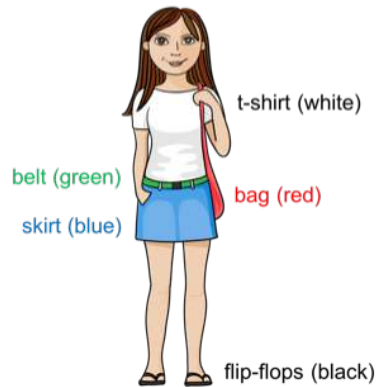
Calculate the period of this light (in other words the time for one complete oscillation of light of this wavelength).

Period = \_\_\_\_\_ s

[2 marks]

0 2

A girl attends a rock concert wearing the below items of clothing.



0 2 . 1

White, red, green and blue lights are used on stage as part of the concert. Complete the below table to show what colours her t-shirt, belt, skirt and bag will look in each of these different colours of light. The 'white light' column has been done for you.

Item	White light	Red light	Green light	Blue light
T-shirt	White			
Belt	Green			
Skirt	Blue			
Bag	Red			
Flip-flops	Black			

[5 marks]

0 2 . 2

Explain why her t-shirt appears white and her flip-flops appear black when illuminated with **white light**.

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[2 marks]

0 2 . 3

At a given point in the concert, the girl is illuminated by white light. What colour will her bag appear to be when viewed through a green filter? Explain your answer.

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[2 marks]