Physics - Key stage 4 - Waves

Lenses

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Shared example

	The image produced by a magnifying glass is 10 cm. If the object is 2 cm, calculate the magnification.	A 4 mm object is magnified to be 20 cm. What is the magnification?
Values **E**quation **S**ubstitute **R**earrange **A**nswer **U**nits		

Independent practice

1. Calculate the magnification produced by a lens that makes a 0.1 cm object appear 25 cm tall.
2. Work out the magnification of a lens that makes a 2 cm object appear 0.4 m tall.
3. A 50 cm image is produced by a 70 cm object. What is the magnification?
4. A projector makes a 24 mm slide appear to be 11.41 m. What is the magnification?

Independent practice - answers

1. Calculate the magnification produced by a lens that makes a 0.1 cm object appear 25 cm tall. - **250**
2. Work out the magnification of a lens that makes a 2 cm object appear 0.4 m tall. - **20**
3. A 50 cm image is produced by a 70 cm object. What is the magnification? - **0.71**
4. A projector makes a 24 mm slide appear to be 11.41 m. What is the magnification? - **475**

Shared example

	A lens has a magnification factor of 4. How large will a 7 cm object viewed through the lens be?	An image formed by a lens is 0.1 m tall. Work out the real height of object of the magnification of the lens is 3.
Values **E**quation **S**ubstitute **R**earrange **A**nswer **U**nits		

Independent practice

1. The nucleus in a picture of a cell measures 4 mm across. If the magnification of the picture is 300, what is the actual size of the nucleus?
2. A human hair has a width of 180 µm. How wide will it appear to be under a microscope with a magnification of 30?
3. A virus has a width of 30 nm what size will it appear to be when it has been magnified x250,000?
4. The largest cinema screen was 35 m tall. The lens used in the projector had a magnification of 1591. How tall was the film?

Independent practice - answers

1. The nucleus in a picture of a cell measures 4 mm across. If the magnification of the picture is 300, what is the actual size of the nucleus? - **1.3×10^{-5} m**
2. A human hair has a width of 180 µm. How wide will it appear to be under a microscope with a magnification of 30? - **5.4 mm**
3. A virus has a width of 30 nm what size will it appear to be when it has been magnified x250,000? - **7.5 mm**
4. The largest cinema screen was 35 m tall. The lens used in the projector had a magnification of 1591. How tall was the film? - **22 mm**