ROYAL OBSERVATORY GREENWICH

The Rosetta Mission to Comet 67P

Key Stage 3

Topics covered: Speed, distance and time, converting units, standard form, comets, spacecraft, solar system

Watch the video "The Rosetta Mission", https://vimeo.com/141524496

On 12th November 2014 a lander called Philae detached from the ESA spacecraft Rosetta and landed on Comet 67P/Churyumov-Gerasimenko. At this point, Rosetta was 510 million km away from the Earth!

If you know how fast something is moving, s (metres per second) and you know the distance that it has travelled, d (metres) you can calculate how long it takes to cover that distance, t (seconds) by using equation 1.

$$t = \frac{d}{s} \quad (1)$$

1. Convert 510,000,000 km into metres. This is your value for d. Write it in standard form.

2. The signal that Rosetta sent back to astronomers on Earth was travelling at 300,000,000 m/s, the speed of light in a vacuum. Write this in standard form. This is your value for s.

3. Calculate the time it takes for the signal to get to the Earth in seconds. Convert this into minutes.

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The Rosetta Mission to Comet 67P: ANSWERS

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1. 5.1×10^{11} m
2. 3×10^{8} m
3. 1700 s = 28.3 mins (28 mins 20 s)