# Maths skills – M0.1 Recognise and make use of appropriate units in calculations

### Quiz – converting between units

Answers to all of these questions should use standard form e.g. use 5.6 x 103 rather than 5600, use 4.2 x 10-2 rather than 0.042.

1. How many?

| mm in a m |  |  | µm in a mm |  |
| --- | --- | --- | --- | --- |
| µm in a m |  |  | nm in a µm |  |
| nm in a mm |  |  | nm in a m |  |
| mm in a µm |  |  | m in a µm |  |
| µm in a nm |  |  | mm in a nm |  |
| µ*l* in a litre |  |  | m*l* in a litre |  |
| µ*l* in a m*l* |  |  | ms in a s |  |
| µs in a ms |  |  |  |  |

1. Convert each of the following into metres.

| (a) | 70 nm |  |
| --- | --- | --- |
| (b) | 5 µm |  |
| (c) | 1 mm |  |
| (d) | 0.2 mm |  |

1. Convert each of the following into µm.

| (a) | 4 m |  |
| --- | --- | --- |
| (b) | 200 nm |  |
| (c) | 17 mm |  |
| (d) | 0.3 nm |  |

1. Areas. How many?

| (a) | μm2 in a m2 |  |
| --- | --- | --- |
| (b) | μm2 in a mm2 |  |

1. Volumes. How many?

| (a) | mm3 in a cm3 |  |
| --- | --- | --- |
| (b) | μm3 in a mm3 |  |

1. Convert each of these into more sensible units using standard form to express your answers if appropriate.

| (a) | 0.0003 μm |  |
| --- | --- | --- |
| (b) | 0.004 km |  |
| (c) | 4500000 nm |  |
| (d) | 0.0007 s |  |

### Quiz – Rates of change

1. Express these rates of change with the correct units:

| (a) | 2 μg per cm3 |  |
| --- | --- | --- |
| (b) | 200 kJ per m2 per year |  |
| (c) | 10 g per dm3 |  |
| (d) | 15 cm3 per minute |  |

1. In an experiment you were measuring the growth rate of *Salmonella*. You started with 100 *Salmonella* and after 2 hours you had 6500 *Salmonella*. What is the bacterial growth rate?

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1. In an experiment you were measuring the growth rate of *Salmonella*. You started with 80 *Salmonella* and after 4 hours you had 5000 *Salmonella*. What is the bacterial growth rate?

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1. How would you express the following in numbers and units?
2. A woodlouse crawled 5 cm in 10 min.

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1. A patient’s drip flowed with 10 drips every 30 s.

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1. The growth of a slime mould colony was 40 cells per millimetre cubed per hour.

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1. A breathing rate of 20 breaths in 30 s.

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1. A change in temperature of 1.2 degrees over three years.

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### Produced in collaboration with the University of East Anglia