

Swimming pool calculations

Name _____ Date _____



Imagine a swimming pool the same shape and size as the classroom.

1. By measuring the length, width and height of the classroom/swimming pool calculate its volume in m^3 .

1 m^3 = 1000 litres.

2. What is the volume from question 1 expressed in litres?

3. If the water is pumped in at a rate of 2 litres per second, how long, to the nearest minute, would it take to fill the pool from empty? Give your answer in hours and minutes.

4. Suppose the pool owner has a water meter. The water company charges 0.1p per litre of water used. The pool must have its water completely replaced twice a week for health reasons. How much will it cost the owner in water charges each week?

Teaching notes and curriculum mapping



Adult Numeracy

MSS1/L2.2 Calculate, measure and record time in different formats.

- (a) understand dates and times written in different formats
- (b) know how to use measuring instruments such as timers on clocks, appliances, watches, etc
- (c) know relationship between units of time (sec, min, hr, day, week, month, etc.)

MSS1/L2.5 Calculate with units of measure within the same system

- (a) know the relationship between metric units
- (b) know the relationship between common imperial units, where appropriate

MSS1/L2.9 Understand and use given formulae for finding volumes of regular shapes (e.g. a cuboid or cylinder)

- (a) know that measurements must be in the same units before calculating volume
- (b) recognise the symbol for pi, and know its approximate value
- (c) know how to make substitutions in a formula and work out the result

<http://www.excellencegateway.org.uk/page.aspx?o=sflcurriculum>

Functional Maths

Ideal for underpinning the following Coverage and Range statements.

Level 1

Solve problems requiring calculation, with common measures, inc. Money, time, length, weight, capacity and temperature

Level 2

Find area, perimeter and volume of common shapes

Use, convert and calculate using metric and, where appropriate, imperial measures

<http://www.ofqual.gov.uk/qualification-and-assessment-framework/89-articles/238-functional-skills-criteria>

Sample answer for a room that is 10m x 8m x 2m

Volume of room / swimming pool = $10 \times 8 \times 2 = 160\text{m}^3$

$160 \times 1000 = 160\,000$ litres

$160\,000 \div 2 = 80\,000$ seconds to refill pool

$80\,000 \div 60 = 1333$ minutes (to nearest minute)

$1333 \div 60 = 22.22$ hours. **22 hours 13 seconds to fill the pool**

$160\,000 \times 0.1\text{p} = 16\,000$ pence = £160.

So two complete water replacements per week = $2 \times £160 = £320$