

The room – part 1

You must show all your working even if you use a calculator.
Ask for extra paper or use the back of the sheet.

Name _____ Date _____

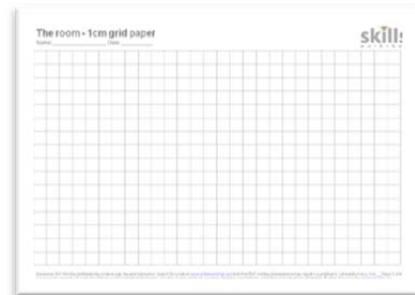


The room is three metres wide and four metres long.
The ceiling is three metres high.

There is a door, one metre wide and two metres tall, on one of the short walls.

The window is on one of the long walls.
It is two metres wide and one metre tall. It is one metre off the floor.

Draw each of the walls, the floor and the ceiling using one centimetre to represent each metre.



Work out how many square metres of carpet you will need to buy. *

If it costs £15 per square metre, how much will you pay? *

If the shop gives you a 20% discount, how much less will you pay? *

For each question marked with a * show how you have checked your answer.

The room – part 2

You must show all your working even if you use a calculator.
Ask for extra paper or use the back of the sheet.

Name _____ Date _____

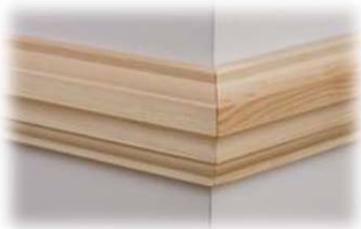
Before the new carpet arrives, you decide to decorate the room.
All the woodwork, except the window frame, needs replacing.



What size door will you need to buy?

What length of wood will you need to make a new door frame?

How much skirting board will you need?



You decide to put a dado rail half way up the wall. What length of dado rail will you need?
(Allow for the door and window).

The ceiling needs a coat of paint. 1 litre of paint will cover six square metres. How much paint will you need? *



You decide to wallpaper the walls. Each roll of wallpaper is half a metre wide and twelve metres long. How many rolls will you need?

For each question marked with a * show how you have checked your answer.

The room – answers and mapping

Tutor guidance

Accept any sensible answer that is supported by diagrams, explanations or working out.

Draw each of the walls, the floor and the ceiling using one centimetre to represent each metre.

Check with your tutor. You should have drawn four 4cm x 3cm rectangles (ceiling, floor and two long walls - one with a window in the correct place) and two 3m x 3m squares (short walls – one with a door in the correct place).

Work out how many square metres of carpet you will need to buy. $4\text{m} \times 3\text{m} = 12\text{ m}^2$

If it costs £15 per square metre, how much will you pay? $12 \times £15 = £180$

If the shop gives you a 20% discount, how much less will you pay? $£180 - £36 = £144$

What size door will you need to buy? 2m long, 1 m wide

What length of wood will you need to make a new door frame? Approx. $(2 \times 2\text{m}) + 1\text{m} = 5\text{m}$ but you will need more due to wastage. This will depend on the lengths that the door frame wood is sold in.

How much skirting board will you need?

Perimeter = $4\text{m} + 4\text{m} + 3\text{m} + 3\text{m} = 14\text{m}$. Subtract the width of the door. $14 - 1 = 13\text{m}$ but you will need more than that due to wastage. This will depend on the lengths that the skirting board is sold in.

You decide to put a dado rail half way up the wall. What length of dado rail will you need? (Allow for the door and window).

Perimeter = $4\text{m} + 4\text{m} + 3\text{m} + 3\text{m} = 14\text{m}$. Subtract the width of the door and the window (because the dado rail is half way up the wall at 1.5 m and so is not needed where the window is) $14 - 3 = 11\text{m}$

The ceiling needs a coat of paint. 1 litre of paint will cover six square metres. How much paint will you need?

Area of ceiling is $4\text{m} \times 3\text{m} = 12\text{ m}^2$ $12\text{m} \div 6 = 2$ litres paint

You decide to wallpaper the walls. Each roll of wallpaper is half a metre wide and twelve metres long. How many rolls will you need?

This will vary as there will be wastage depending upon exactly where the door and window are positioned. Due to the dado rail, each length will have to be cut into two lengths creating further wastage. Approx. lengths (not allowing for door and window) would be 8 x 3 metre lengths along each long wall (ie 2 x 24 m) and 6 x 3 metre lengths along each short wall (ie 2 x 18). This is a total of 28 (16 + 12) lengths (drops) of paper. Each roll of wallpaper is 12m long so there are 4 x 3m drops per roll. $28 \div 4$ drops = 7 roll

Ideas for developing process skills

Encourage students to:

- highlight information they need, cross out unneeded information
- show all their working out (note that calculators are permitted at all levels of FM assessment but learners should get into the habit of recording their calculations)
- check all their calculations or procedures and show proof that they have done so
- draw conclusions
- discuss and justify their choice of method and their answers
- explain their answers and conclusions to others – verbally and in writing
- investigate other options / situations (e.g. some question topics could be researched on the web)
- create new questions about given information and try them out on other students
- mark each other's work

The room – answers and mapping

FUNCTIONAL MATHEMATICS Coverage and Range statements (indicative only)

This resource is ideal for underpinning many Functional Maths coverage and range statements at Level 1 and Level 2 (see highlighted areas of the table below). Coverage and range statements provide an indication of the type of mathematical content candidates are expected to apply in functional contexts. Relevant content can also be drawn from equivalent National Curriculum levels & Adult Numeracy standards. **However, in Functional Maths exams it is the process skills that are assessed; these are key to successful Functional Maths teaching and learning and must always be developed and stressed during teaching (see below).** Ofqual (2009), *Functional Skills criteria for Mathematics: Entry 1, Entry 2, Entry 3, level 1 and level 2*. <http://www.ofqual.gov.uk/>

Level 2

a) understand and use positive and negative numbers of any size in practical contexts	g) find area, perimeter and volume of common shapes ✓
b) carry out calculations with numbers of any size in practical contexts, to a given number of decimal places	h) use, convert and calculate using metric and, where appropriate, imperial measures
c) understand, use and calculate ratio and proportion, including problems involving scale	i) collect and represent discrete and continuous data, using information and communication technology (ICT) where appropriate
d) understand and use equivalences between fractions, decimals and percentages	j) use and interpret statistical measures, tables and diagrams, for discrete and continuous data, using ICT where appropriate.
e) understand and use simple formulae and equations involving one or two operations	k) use statistical methods to investigate situations
f) recognise and use 2D representations of 3D objects ✓	l) use probability to assess the likelihood of an outcome

Level 1

a) understand and use whole numbers and understand negative numbers in practical contexts ✓	g) use data to assess the likelihood of an outcome
b) add, subtract, multiply and divide whole numbers using a range of strategies ✓	h) solve problems requiring calculation, with common measures, including money, time, length, weight, capacity & temperature ✓
c) understand and use equivalences between common fractions, decimals and percentages ✓	i) convert units of measure in the same system ✓
d) add and subtract decimals up to two decimal places	j) work out areas and perimeters in practical situations ✓
e) solve simple problems involving ratio, where one number is a multiple of the other	k) construct geometric diagrams, models and shapes ✓
f) use simple formulae expressed in words for one- or two-step operations	l) extract and interpret information from tables, diagrams, charts and graphs
	m) collect and record discrete data and organise and represent information in different ways
	n) find mean and range

Process Skills (all levels)

Representing – selecting the mathematics and information to model a situation	Analysing – processing and using mathematics	Interpreting – interpreting and communicating the results of the analysis
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Skill Standards (Level 2)

<ul style="list-style-type: none"> understand routine and non-routine problems in familiar and unfamiliar contexts and situations ✓ identify the situation or problems and identify the mathematical methods needed to solve them ✓ choose from a range of mathematics to find solutions ✓ 	<ul style="list-style-type: none"> apply a range of mathematics to find solutions ✓ use appropriate checking procedures and evaluate their effectiveness at each stage 	<ul style="list-style-type: none"> interpret and communicate solutions to multistage practical problems in familiar and unfamiliar contexts and situations ✓ draw conclusions and provide mathematical justifications ✓
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Skill Standards (Level 1)

<ul style="list-style-type: none"> understand practical problems in familiar and unfamiliar contexts and situations, some of which are non-routine ✓ identify and obtain necessary information to tackle the problem ✓ select mathematics in an organised way to find solutions ✓ 	<ul style="list-style-type: none"> apply mathematics in an organised way to find solutions to straightforward practical problems for different purposes ✓ use appropriate checking procedures at each stage ✓ 	<ul style="list-style-type: none"> interpret and communicate solutions to practical problems, drawing simple conclusions and giving explanations ✓
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The room - 1cm grid paper

Name _____ Date _____

