



Ratio, scale and proportion

Functional Maths tasks



Name _____ Date _____

Spanish Flan (serves 8)

260 g sugar, 60 ml water, 10 ml vanilla essence, 400 ml milk,
260 ml whipping cream, 6 eggs, 2 egg yolks.

** Note: Spanish flan is similar to crème caramel.

1. What is the ratio of **water: vanilla** essence in its simplest form? _____

Show your working out here.

2. Write out the recipe for 4 people.

Spanish Flan – serves 4.

3. How much water is needed for a larger flan that uses 600 ml milk? _____

Show your working out here.



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4. Dominique makes purple paint by mixing blue and red paint in the ratio 1 : 3

a) How much red paint does she use with 2 tins of blue paint? _____

Show your working out here.

b) How much blue paint does she use with 12 tins of red paint? _____

Show your working out here.

5. Simon makes fruit punch by mixing orange juice and mango juice the ratio 3 : 2

a) How much mango juice does he mix with 6 litres orange juice? _____

Show your working out here.

b) How much orange juice does he mix with 10 litres mango juice? _____

Show your working out here.



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6. A recipe for risotto uses 300g rice. The recipe is for 4 people.

a) How much rice is needed for 8 people? _____

Show your working out here.

b) How much rice is needed for 20 people? _____

Show your working out here.

c) How much rice is needed for 2 people? _____

Show your working out here.

7. A recipe for soup uses 450g parsnips. The recipe is for 6 people.

a) What weight of parsnips is needed to make soup for 12 people? _____

Show your working out here.

b) What weight of parsnips is needed to make soup for 4 people? _____

Show your working out here.



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8. Sarah is paid £40 for 5 hours work.

a) How much is she paid for 10 hours' work? _____

Show your working out here.

b) How much is she paid for 1 hour's work? _____

Show your working out here.

c) How much is she paid for 3 hours' work? _____

Show your working out here.

9. Karim works from Monday to Friday each week. He is paid £245 a week.
He works from 9am to 5pm each day with an hour's unpaid lunch hour.

a) How much does he earn per day? _____

b) How much does he earn per hour? _____

Show your working out here.

Show how you can check your answers.



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10. A large map of Europe has a scale of 1: 600 000. Calculate the actual distance, in km, that the following lengths on the map represent.

a) 1cm _____

Show your working out here.

b) 20cm _____

Show your working out here.

11. The actual distance between two cities, Budapest and Warszawa is 600 km. What is the distance between these two cities on the map? _____

Show your working out here.

Show how you can check your answer.

Ratio, scale and proportion. Mapping document

This resource also covers many adult numeracy curriculum <http://www.excellencegateway.org.uk/sflcurriculum> elements. For related resources and further curriculum links please visit the download page for this resource [skillsworkshop](http://www.skillsworkshop.org)

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

Tips

- Calculators can be used at all levels of Functional Maths but students must show their working out.
- It should be stressed that relatively few points are gained simply for getting the correct answer.
- Emphasis should be on showing clear working out and explanations, justifying methods and conclusions. Marks should also be awarded for clear evidence of checking work (e.g. reverse calculations, estimating a sensible answer first by using rounding, etc.).
- Encourage clear logical layout and provide extra paper if needed.

Answers

1. 60:10 simplifies to 6:1 (divide both sides by 10)
2. 130g sugar, 30ml water, 5ml vanilla, 200ml milk, 130ml cream, 3 eggs, 1 egg yolk (halve each amount)
3. 90ml (add on half as much again $60 + 30 = 90$)
4. a) 6 tins red paint (double both sides of the ratio)
b) 4 tins blue (divide 12 by 3)
5. a) 4 litres mango juice (1 part = 2 litres, so 2 parts = 4 litres)
b) 15 litres orange juice. (Divide the 10l by 2 to find one part(5l) then multiply that by 3)
6. a) 600g rice (double)
b) 1500g rice (1.5kg). Multiply 300g by 5
c) 150g (halve 300)
7. a) 900g parsnips (double 450g)
b) 300g parsnips (divide 450g by 3 to find the amount for 2 people, then double it to find the amount for 4 people.
8. a) £80 (double £40)
b) £8 per hour (Divide £40 by 5)
c) £24 (multiply £8 by 3)
9. a) £49 per day (divide £245 by 5)
b) £7 per hour (divide £49 by 7 hours)
10. a) 6 km ($1\text{cm} \times 600\,000 = 600\,000\text{ cm} = 6000\text{ m} = 6\text{ km}$)
b) 120 km (multiply 6 km from the previous answer by 20)
11. 100cm (1m)
($600\text{ km} = 600\,000\text{ m} = 60\,000\,000\text{ cm}$. Divide 60 000 000 by 600 000 = 100)