Garden Project

LEVEL: E3 L1 L2 (circle your level)

NAME .....

DATE .....

Functional Skills Maths

Where you see this notebook you must clearly show how you get your answers.
Marks may be awarded for your working out.

Garden project

Name _____ Date _____

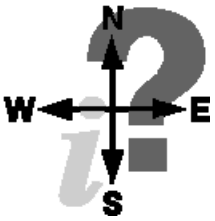
You are planning your new garden.

You have a garden plot that is 10X10 metres square.

You plan to use ½ of the plot for a rectangular patio. The rest will be lawn and a rectangular or square pond.

Q1. Use the paper to draw a scale plan of your garden using 1 square to represent 1 square metre.

- **Mark the house wall and label**
- **Mark the fences and label**
- **Draw on your plan where North is**
- **Draw in your patio (near the house)**
- **Draw on your pond and lawn**



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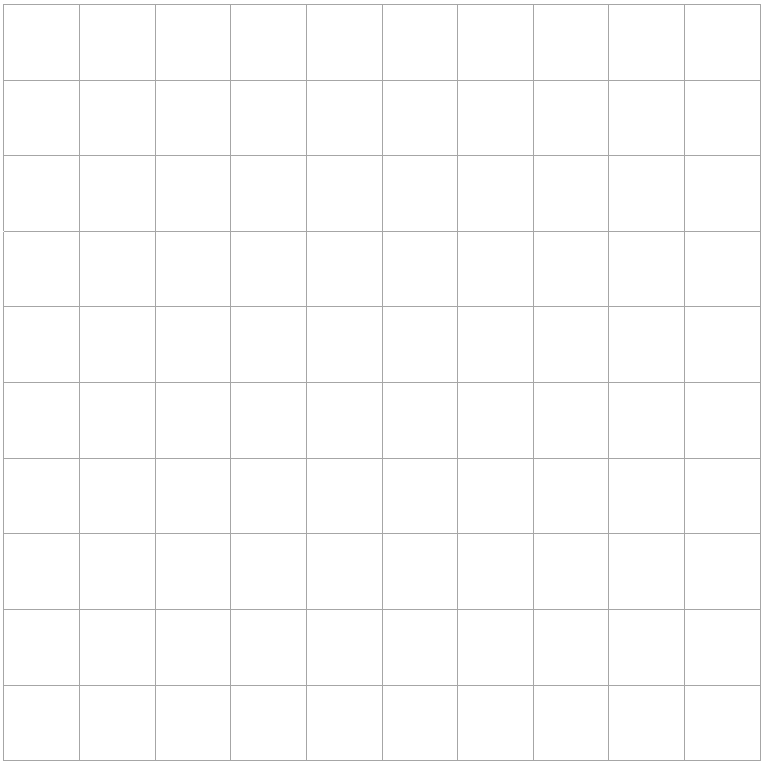
Garden project

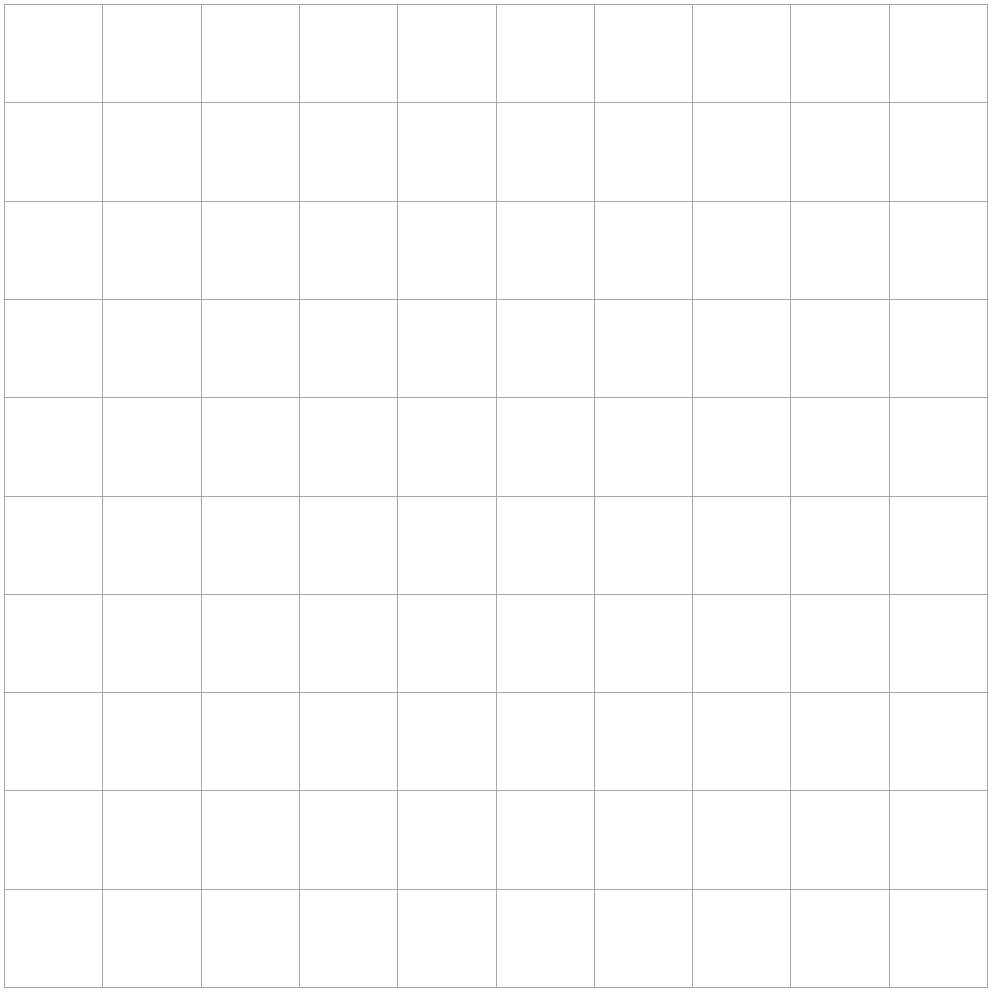
Name _____ Date _____

PLAN

1a. Draw your rough plan here.



1b. Draw your final plan here



Garden project

Name _____ Date _____

TURF

Turf rolls are 1m long and ½ m wide and cost £14.99 for 5 rolls.

2. Round the cost of turf to the nearest 10p. .....

3. Now work out how much the lawn would cost?

.....

FENCE

Fencing panels are 2m wide.

4. How many fence panels would you need to stop your dog getting into next door's garden?

.....

5. Each fence panel cost £10. How much would the fence cost altogether?

.....

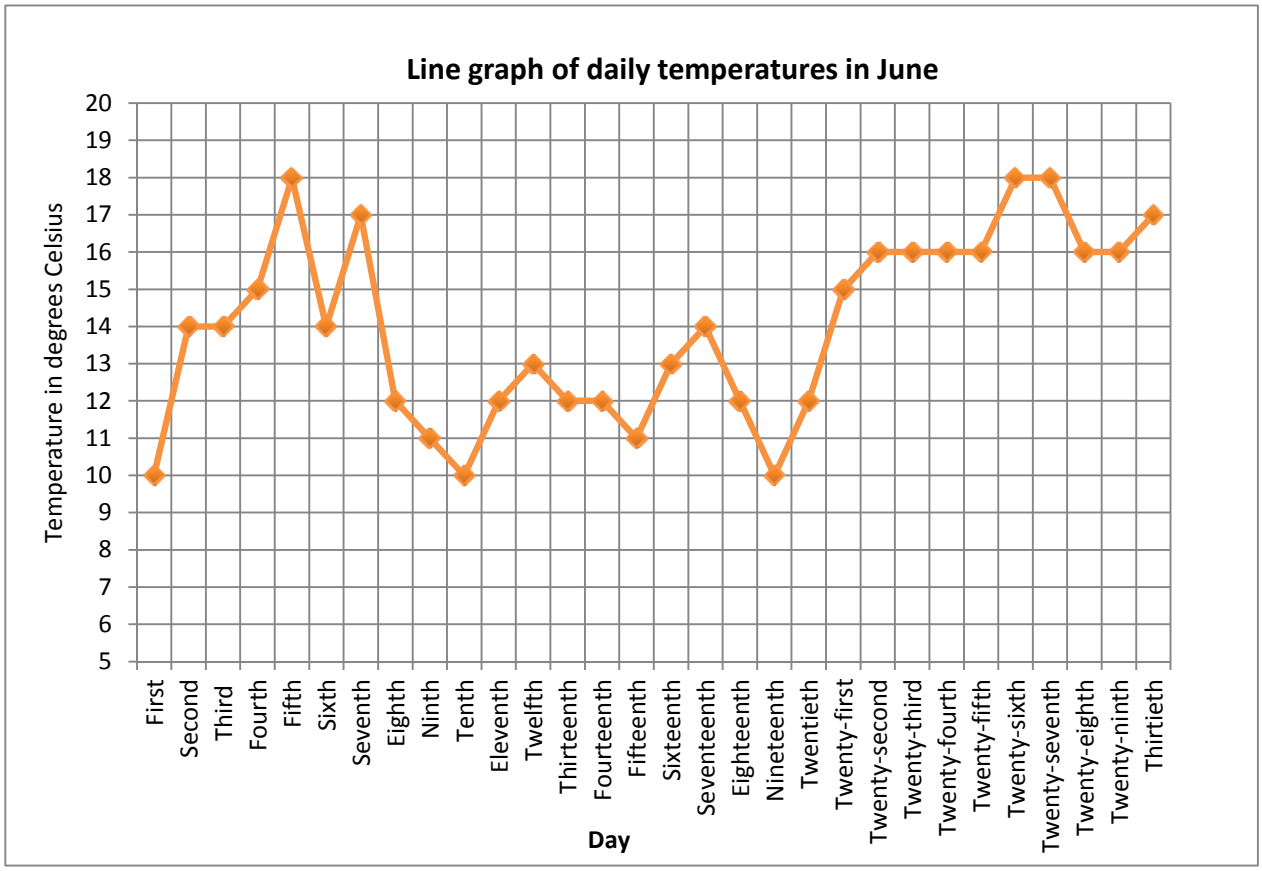
6. If each fence panel cost £20. How much would the fence cost altogether?

.....

Garden project

Name _____ Date _____

Here is a graph about the temperatures in the garden.
It shows the midday temperatures in June.



7. What temperature was recorded on the 16th June?

……

8. Did the temperature rise or fall between the 3rd and the 5th of the month?

……

9. By how much?

……

10. Describe the temperature trend in June.

……

……

Garden project

Name _____ Date _____

Below is a record of the temperatures in November in the garden at 7am.

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1 **8°C**	2 **6°C**	3 **4°C**	4 **6°C**	5 **7°C**	6 **9°C**	7 **4°C**
8 **8°C**	9 **7°C**	10 **6°C**	11 **5°C**	12 **6°C**	13 **7°C**	14 **10°C**
15 **6°C**	16 **4°C**	17 **6°C**	18 **10°C**	19 **9°C**	20 **8°C**	21 **7°C**
22 **6°C**	23 **5°C**	24 **5°C**	25 **4°C**	26 **3°C**	27 **0°C**	28 **0°C**
29 **1°C**	30 **2°C**					

11. Create and use a tally chart to record the different daily temperatures.

TALLY CHART

12. Use the tally chart to produce a frequency table below.

FREQUENCY TABLE

13. Which temperature occurred the most often?

……

14. Describe the temperatures during the last 7 days of November.

……

Teaching notes

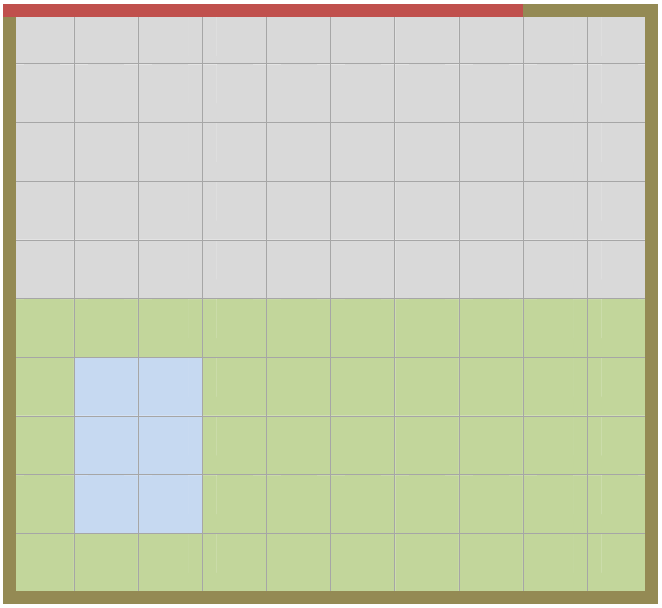
Ideal for mixed ability groups.

- Point out to learners that there is not simply one correct answer to Q1-6.
- Graph or gridded paper can be used if preferred. In this case leaners should draw out a 10m x 10m plot to a suitable scale.
- E3 learners will need support. The pond could be omitted for E3 (or included in the patio area).
- You might want E3 learners to have the wall of the house exactly the same width as the plot. L1 and L2 could be encouraged to position the house wall differently and might need more fencing.
- E3 will need support working with the ½ m width of the rolls of turf. Encourage drawing on the grid to work out how much is turf is needed.
- Prices of fence panels and turf could be altered for L1-2.
- Q7-9 are Level 1-2 (Q10 is L2).
- You might want to use separate sheets of papers for the tally and frequency chart.
- Ask for proof of checking calculations – especially at Levels 1 and 2.

Answers

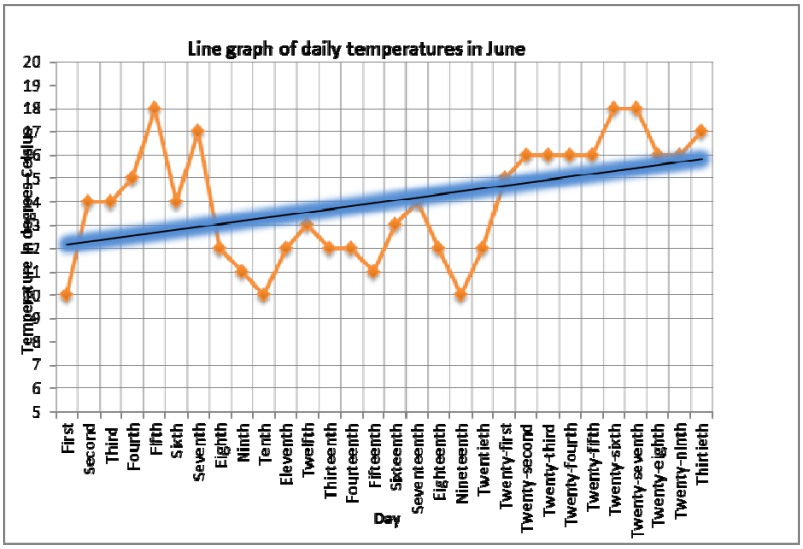
1. Sample answer only. Many other layouts are possible and answers will vary according to the size of the pond and the length of the house wall.

Red line = wall of house
Green = lawn
Brown line = fence panels
Blue = pond



2. Turf rounds to £15 for 5 rolls (£3 per roll)
3. Lawn needs 88 rolls. So you will have to buy 90 rolls.
90 x 3 = £270
4. 16 fence panels
5. 16 x £10 = £160
6. 16 x £20 = £320

7. 13°
8. The temperature rose from 14°C on the 3rd Nov to 18°C on the 5th Nov
9. 4°C



10. The temperatures are quite erratic but the overall trend is upwards. (L2 learners can discuss line of best fit / trend line).

11. Your tally may look slightly different but the numbers of tally marks should be the same.

0°C	1°C	2°C	3°C	4°C	5°C	6°C	7°C	8°C	9°C	10°C
||	|	|	|	||||	|||	𝍸 ||	||||	|||	||	||

12. Frequency table

0°C	1°C	2°C	3°C	4°C	5°C	6°C	7°C	8°C	9°C	10°C
2	1	1	1	4	3	7	4	3	2	2

13. 6°C
14. The general trend is that the morning temperatures became colder towards the end of November.

Garden project: E3-L2 Functional Maths

Curriculum mapping, answers and teaching notes

This resource is ideal for underpinning many Functional Maths (FM) coverage and range statements – particularly at E3 and L1. However, in FM it is the process skills that are assessed; these are key to successful FM learning and must always be developed and stressed during teaching (see next page).

FUNCTIONAL MATHEMATICS **Coverage and Range statements (indicative only)**

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 and the Adult Numeracy standards.

✓ *indicates the main coverage and range skills covered in this resource (and the relevant question nos.), although these will vary with the student group and how the resource is used by the teacher.*

Entry Level 3

a) Add and subtract using three-digit numbers
b) Solve practical problems involving multiplication and division by 2, 3, 4, 5 and 10 ✓Q3,4,5,6
c) Round to the nearest 10 or 100 ✓Q2
d) Understand and use simple fractions ✓Q1,3
e) Understand, estimate, measure and compare length, capacity, weight and temperature ✓Q1
f) Understand decimals to two decimal places in practical contexts ✓Q2
g) Recognise and describe number patterns
h) Complete simple calculations involving money and measures ✓Q3,4
i) Recognise and name simple 2D and 3D shapes and their properties ✓Q1
j) Use metric units in everyday situations ✓Q1,3,4
k) Extract, use and compare information from lists, tables, simple charts and simple graphs ✓Q11,12

Level 1

a) Understand and use whole numbers and understand negative nos. in practical contexts
b) Add, subtract, multiply and divide whole numbers using a range of strategies ✓Q3,5,6
c) Understand and use equivalences between common fractions, decimals and percentages
d) Add and subtract decimals up to two decimal places
e) Solve simple problems involving ratio, where one number is a multiple of the other
f) Use simple formulae expressed in words for one- or two-step operations
g) Solve problems requiring calculation, with common measures, including money, time, length, weight, capacity and temperature ✓Q3,4
h) Convert units of measure in the same system
i) Work out areas and perimeters in practical situations ✓ Q1, Q3
j) Construct geometric diagrams, models, shapes✓ Q1
k) Extract and interpret information from tables, diagrams, charts and graphs ✓Q7,8,9,10,13,14
l) Collect and record discrete data and organise and represent information in different ways ✓Q11,12
m) Find mean and range
n) Use data to assess the likelihood of an outcome

Level 2

a) Understand and use positive and negative numbers of any size in practical contexts
b) Carry out calculations with numbers of any size in practical contexts, to a given number of decimal places
c) Understand, use and calculate ratio and proportion, including problems involving scale
d) Understand and use equivalences between fractions, decimals and percentages
e) Understand and use simple formulae and equations involving one or two operations
f) Recognise and use 2D representations of 3D objects ✓Q1
g) Find area, perimeter and volume of common shapes
h) Use, convert and calculate using metric and, where appropriate, imperial measures ✓Q3
i) Collect and represent discrete and continuous data, using information and communication technology (ICT) where appropriate
j) Use and interpret statistical measures, tables and diagrams, for discrete and continuous data, using ICT where appropriate. ✓Q7,8,9,10,13,14
k) Use statistical methods to investigate situations ✓Q11,12
l) Use probability to assess the likelihood of an outcome

References: Ofqual (2009), *Functional Skills criteria for Mathematics: Entry 1, Entry 2, Entry 3, level 1 and level 2.* http://www.ofqual.gov.uk/files/2009-11-functional-skills-criteria-for-mathematics.pdf

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 at www.skillsworkshop.org

Garden project Curriculum mapping, answers and teaching notes

FUNCTIONAL MATHEMATICS PROCESS SKILLS				
Process Skills (all levels)	**Entry 3 skills standards**	**Level 1 skill standards**	**Level 2 skill standards**	**Skillsworkshop tips** To develop this skill, encourage learners to:
Representing ***Selecting the mathematics and information to model a situation*** ■ **Recognise that a situation has aspects that can be represented using mathematics** ■ **Make an initial model of a situation using suitable forms of representation** ■ **Decide on the methods, operations and tools, including ICT, to use in a situation** ■ **Select the mathematical information to use**	• Understand practical problems in familiar contexts and situations ✓ • Begin to develop own strategies for solving simple problems ✓ • Select mathematics to obtain answers to simple given practical problems that are clear and routine ✓	• 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 ✓	• 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 ✓	**Represent** ■ Highlight information they need and/or cross out unneeded information. ✓ ■ Arrange or reorganise given or selected information as needed e.g. in a table or list. ■ Show all their working out. ✓ Note that calculators are permitted at all levels of FM assessment but learners should record all their working out – whether or not one is used.
Analysing ***Processing and using mathematics*** ■ **Use appropriate mathematical procedures** ■ **Examine patterns and relationships** ■ **Change values and assumptions or adjust relationships to see the effects on answers in models** ■ **Find results and solutions**	• Apply mathematics to obtain answers to simple given practical problems that are clear and routine ✓ • Use simple checking procedures	• Apply mathematics in an organised way to find solutions to straight-forward practical problems for different purposes ✓ • Use appropriate checking procedures at each stage	• apply a range of mathematics to find solutions ✓ • use appropriate checking procedures and evaluate their effectiveness at each stage	**Analyse** ■ Check all their calculations or procedures and show proof that they have done so. ✓ ■ Investigate other situations / related topics on the web. ✓ ■ Create new questions about given information and try them out on others. ✓ ■ Mark each other's work. ✓
Interpreting ***Interpreting and communicating the results of the analysis*** ■ **Interpret results and solutions** ■ **Draw conclusions in light of situations** ■ **Consider the appropriateness and accuracy of results and conclusions** ■ **Choose appropriate language and forms of presentation to communicate results and solutions**	• Interpret and communicate solutions to practical problems in familiar contexts and situations ✓	• Interpret and communicate solutions to practical problems, drawing simple conclusions and giving explanations ✓	• interpret and communicate solutions to multistage practical problems in familiar and unfamiliar contexts and situations • draw conclusions and provide mathematical justifications	**Interpret** ■ Draw conclusions ■ Discuss and justify their choice of method and their answer. ■ Explain their answers and conclusions to others – verbally ✓ and in writing. **✓ = tip that works particularly well with this resource**