

**OXFORD CAMBRIDGE AND RSA EXAMINATIONS**

**FUNCTIONAL SKILLS ASSESSMENT PILOT**

**LEVEL 2 FUNCTIONAL SKILLS MATHEMATICS**

**TASK AND ANSWER BOOKLET**

This assessment may be taken within these dates:

**TASK AND ANSWER BOOKLET 2010**

**TIME: 1 HOUR 30 MINUTES**

**INSTRUCTIONS**

Fill in all the boxes below. Make sure your personal details are entered correctly. Use BLOCK LETTERS.

Centre name

Centre number

Your OCR candidate number

Your surname or family name

Your first forename (if any)

Your second forename (if any)

Date of birth

**YOU NEED**

- This task and answer booklet
- The Resource booklet for this test
- A pen with black ink
- A calculator
- A ruler

**YOU HAVE 1 HOUR AND 30 MINUTES TO COMPLETE THE 3 TASKS.**

- Read the tasks inside this booklet carefully before starting the tasks
- Write your answers in this booklet
- **For each task, clearly show how your working leads to your answer**
- When you have finished, hand this booklet to the supervisor

QCA Accreditation Number – 500/8908/0

<b>FOR EXAMINER USE ONLY</b>		
Task No.	Mark	Total
1a	/1	
1b	/1	
1c	/3	
1d	/5	
1e	/4	
1f	/4	
1 check	/2	/20
2a	/2	
2b	/6	
2c	/2	
2d	/8	
2 check	/2	/20
3a	/4	
3b	/3	
3c	/6	
3d	/5	
3 check	/2	/20
<b>Total</b>	<b>/60</b>	<b>/60</b>

**This document consists of 13 printed pages**

## Task 1 Mobile phone pouch

**You will need the information on page 2 of the Resource Booklet**  
**You must clearly show how your working leads to each answer**  
**2 marks are available in each task when you show you have checked your work**

Jan has a market stall. She sells art and craft items.  
 She has an idea to make mobile phone pouches and sell them.  
 This is how she plans to make the pouches.



Cut out the fabric,  
fold in half.



Then stitch the sides together,  
leaving an open top



Finally turn inside out  
and pop the mobile in!

Jan looks on a consumer website for the sizes and weights of the ten most popular mobiles.

- (a) What is the modal thickness for the mobiles in Jan's list?

*15mm*

Examiner  
use only

1

(1 mark)

- (b) What is the modal width for these mobiles?

*48mm*

Examiner  
use only

1

(1 mark)

- (c) On average, how long are these mobiles?  
 Show and explain how you used Jan's information to decide.

$$100 + 86 + 87 + 89 + 97 + 96 + 104 + 106 + 97 + 94 = 956$$

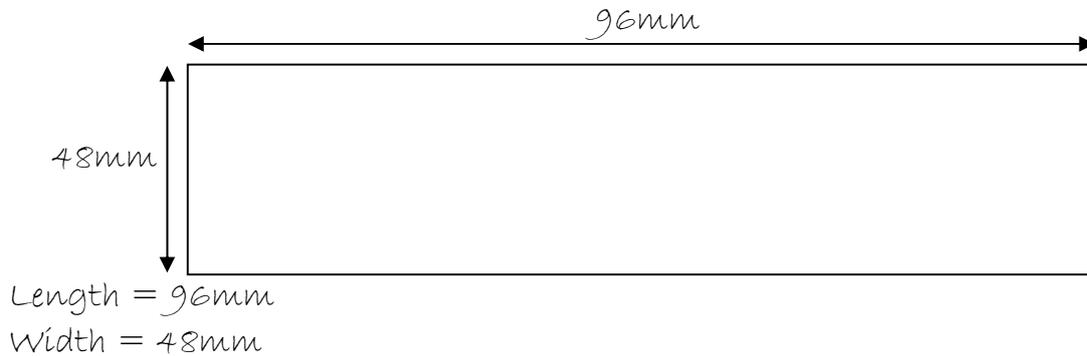
$$\frac{956}{10} = 95.6\text{mm i.e. } 96\text{mm}$$

Examiner  
use only

2

(3 marks)

- (d) Draw full-size the piece of fabric Jan needs to cut out for a pouch.  
Give the dimensions of the piece of fabric.  
Write down any working or assumptions that you use.



(5 marks)

Examiner  
use only

2

- (e) Jan buys very cheap pieces of fabric. These come in 1.6 m widths and are about half a metre in length. They cost 50p each. Jan has free use of a sewing machine. She can make a mobile pouch in about 10 minutes.

NOTE: The national minimum wage is about £6 an hour.

Roughly how much does the material and labour cost to make a single pouch?

$$\text{Area of pouch} = 9.6 \times 4.8 = 46.08\text{cm}^2$$

$$\text{Area of fabric} = 160\text{cm} \times 50\text{cm} = 8000\text{cm}^2$$

$$\text{Number of pouches} = 8000 \div 46.08 = 173$$

$$\text{Therefore cost of material} = 50 \div 173 = 0.289\text{p}$$

Takes 10 minutes per pouch so 6 per hour

$$\text{Labour costs} = £6 \div 6 = £1$$

$$\text{Total cost} = £1 + 0.283\text{p} = £1.0$$

(4 marks)

Examiner  
use only

3

(f) Before starting to sell the pouches Jan does some market research. She makes sample mobile pouches and asks some people what they would be prepared to pay for a pouch.

(i) Use the results of Jan's survey to suggest what she should charge for a pouch, and explain why.

*£4.50 to get the most money.*

Examiner  
use only

1

(3 marks)

(ii) How much profit would Jan make on each pouch?

*Profit = £4.50 - £1. = £3.50*

Examiner  
use only

1

(1 mark)

*Task 1 checking award for correct calculations*

Examiner  
use only

1

**TASK CHECKING (2 marks)**



## Task 2 Chairs

**You will need the information on page 3 of the Resource Booklet**  
**You must clearly show how your working leads to each answer**  
**2 marks are available in each task when you show you have checked your work**

A drama group is putting on *Grease* in a local hall.  
The society wants to put as many chairs as possible in the hall for the audience.

The chairs are to be arranged in two equal size blocks.  
Because of local Health and Safety regulations there must be at least a 2 m gangway round the two blocks of chairs.

(a) What are the dimensions of one of the blocks of chairs?

Length is  $14 - 2 - 2 = 10\text{m}$   
Width is  $20 - 2 - 2 - 2 = 14 \div 2 = 7\text{m}$

Examiner  
use only

2

(2 marks)



This shows the main measurements of one of the chairs to be used.

There should be leg room of at least 30 cm in front of each chair.



The chairs may be stacked for carrying.

The chairs are fixed together to form rows.



- (b) (i) How many chairs will fit in a row across one block?

*One block is 7m wide. One chair is 47 cm wide.*

*Therefore  $700 \div 47 = 14.89$*

Examiner  
use only

1

(2 marks)



- (ii) How many chairs can be set out for the audience?

*A row needs 47cm space.*

*Length = 10m therefore  $10 \div 0.47 = 21.27$ , ie 21 rows.*

*21 rows of 14 chairs = 294 chairs.*

Examiner  
use only

2

(4 marks)



For the rest of this task you will need to make some **sensible** estimates.

- (c) (i) What load, in kg, can someone of your age comfortably carry?

*I guess 5 kg*

Examiner  
use only

0

(1 mark)



- (ii) Roughly how long would it take to carry this load for a distance of 10 m?

*I guess 15 seconds*

Examiner  
use only

1

(1 mark)



Three members of the drama group, all about your age, set out the chairs in the hall.  
All the chairs are stored by the stage.  
Each chair weighs 4 kg.

- (d) (i) How many chairs could someone of your age carry in a stack?

*4 chairs*

Examiner  
use only

1

(1 mark)



- (ii) Sarah sets out the back row. Estimate the total distance she walks doing this. Explain how you arrived at your answer.

*14 chairs across a block. This means 3 trips with 4 chairs 3 times and 1 trip with two chairs at the end.*

*I guess the distance is 13m. So she will walk  $13 \times 4$  m but she has to walk back so the distance she will walk is  $2 \times 13 \times 4 = 104$  m*

Examiner  
use only

2

(2 marks)



- (iii) How long would it take the three members of the drama group to set out all the chairs in both blocks? Jot down any assumptions you make.

Distance to the front = 2m. Distance to the back = 13m so mean distance is 7.5m.

It takes her 20 seconds to walk with the chairs and 20 seconds to walk back so the time per trip is 40 seconds.

needs 4 trips per row and there are 21 rows so  $21 \times 4 = 84$  trips  $\times$  40 seconds = 3360 seconds = 56 mins.

(5 marks)

Examiner  
use only

4

Task 2 checking

Examiner  
use only

1

**TASK 2 CHECKING (2 marks)**



### Task 3 Rainfall

**You will need the information on page 4 of the Resource Booklet  
 You must clearly show how your working leads to each answer  
 2 marks are available in each task when you show you have checked your work**

Alain has two children and lives in Durham.  
 He is worried about his water bills.  
 Alain's water costs him 0.2 p a litre.



He finds this information on the Internet.

- Each time a toilet is flushed 8 litres of water is used
- A washing machine uses 65 litres a wash.

Alain and his children keep a tally for a week of how many times the toilet is flushed and the washing machine used.

Day	Toilet flushed	Washing machine machine used
Mon	### ## /	
Tue	### ## //	/
Wed	### ##	
Thu	### ## ##	/
Fri	### ## ## /	
Sat	### ## ## ##	/
Sun	### ## ## ## //	

- (a) (i) How much water for flushing the toilet and using the washing machine do Alain and his children use in a week?

$$108 \times 8 + 3 \times 65 = 1059 \text{ litres}$$

(2 marks)

Examiner use only

2

- (ii) Find how much this water will cost for a year.

$$1059 \times 2p = 2118p \text{ in a week.}$$

$$211.8 \times 52 = \pounds 1101.4$$

(2 marks)

Examiner use only

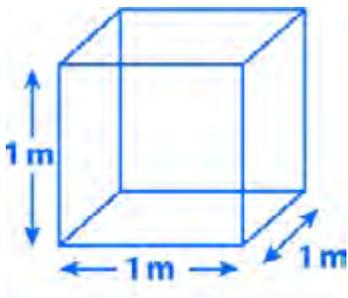
1



1 mm depth of rain falling on 1 square metre (100 cm x 100 cm) is equal to 1 litre of water.

A cubic metre is 1000 litres.

These show a cubic metre.



Alain calculates:

one inch of rain falling on a rectangular area measuring 5 m by 8 m is equal to a cubic metre of water.

(b) Test out Alain's calculation. Show all your working.

$$1\text{mm on } 1\text{ m}^2 \rightarrow 1\text{ litre}$$

$$1\text{mm on } 40\text{m}^2 \rightarrow 40\text{ litres}$$

$$254\text{mm on } 40\text{m}^2 \rightarrow 254 \times 40 = 10160\text{ litres}$$

Examiner  
use only

2

(3 marks)



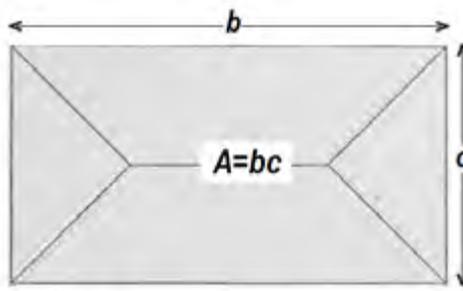
Alain found this formula in a book about collecting rainwater.

$W = kAr$

$W$  litres is the volume of water collected from a roof of area  $A \text{ m}^2$  seen from above (the plan).  
 $k$  is a number which depends on the type of roof.  
 $r$  mm is the total depth of rain that has fallen.

The value of  $k$  is:

- 0.8 for a normal tiled roof
- 0.4 for a flat roof covered in gravel
- 0.5 for a flat brick roof.



The monthly rainfall figures for Durham and a plan of the roof of Alain's house are shown in the Resource Booklet.

(c) (i) About what depth of rain falls in Durham in a year?

$$116 + 15 + 39 + 85 + 20 + 78 + 132 + 95 + 99 + 45 + 40 + 59 = 863 \text{ mm}$$

(1 mark)

Examiner use only

1



(ii) In a year could Alain collect enough rainwater from his roof to use for the toilet and washing machine?

$$\begin{aligned} \text{Area} &= 10 \times 8 = 80 \text{ m}^2 \\ W &= 0.8 \times 80 \times 863 = 55282 \text{ litres} \\ 1059 \times 52 &= 55068 \text{ litres} \\ \text{So enough water can be collected} \end{aligned}$$

(5 marks)

Examiner use only

4



It will cost £1800 to buy and fit a complete rainwater collection system. Alain will then save money on his water bill every year.

(d) (i) In how many years will Alain have saved the cost of the system?

$$\frac{1800}{1059} = 1.69 \text{ years}$$

Examiner  
use only

0

(3 marks)



(ii) Would you advise Alain to buy and fit the rainwater collection system?  
Give two reasons for your answer.

Yes - he covers the cost in less than 2 years

Examiner  
use only

1

(2 marks)



Task 3 checking

Examiner  
use only

0

**TASK 3 CHECKING (2 marks)**



Total marks

**11 /20**

TOTAL MARKS FOR PAPER

**37 /60**

**THIS IS THE END OF THE TEST**

**OXFORD CAMBRIDGE AND RSA EXAMINATIONS**  
**FUNCTIONAL SKILLS ASSESSMENT PILOT**  
**LEVEL 2 FUNCTIONAL SKILLS MATHEMATICS**  
**09866RB**

**SAMPLE ASSESSMENT MATERIAL 2010**

**RESOURCE BOOKLET**

This booklet contains information needed to answer the tasks for the OCR Functional Skills Mathematics sample assessment 2010.

### Task 1 Mobile phone pouch

These are the 10 most popular mobile phones according to a website.



Model	Size (mm)	Weight (g)
W395	48 x 100 x 15	109
880	47 x 86 x 15	96
P280	48 x 87 x 15	85
88D	49 x 89 x 14	81
K180	48 x 97 x 17	110
K77i	47 x 96 x 15	74
W9 E75	47 x 104 x 16	100
3GS5	48 x 106 x 15	131
GGG13	48 x 97 x 15	133
E75	47 x 94 x 15	126

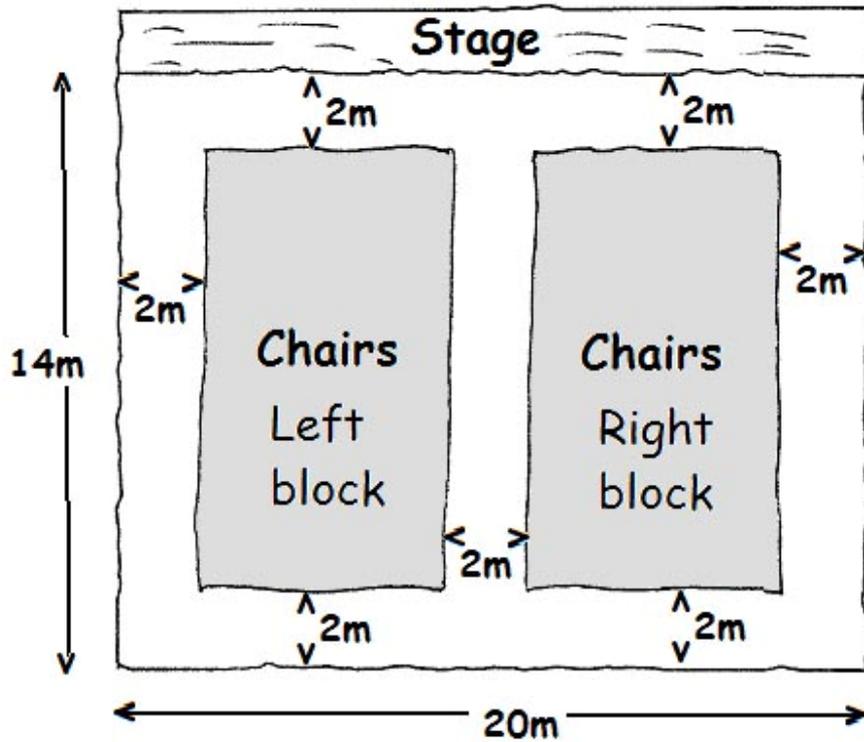
Jan did a survey, asking her customers what they would be prepared to pay for one of her mobile phone pouches.

Here are the results of her survey.

How much would you be prepared to pay for one of these mobile phone pouches?	
£0 to £1.49	//
£1.50 to £2.49	### ## ## ## ## ## //
£2.50 to £3.49	### ## ## //
£3.50 to £4.49	///
£4.50 to £5.49	//

## Task 2 Chairs

This plan shows the arrangement of chairs, laid out in two blocks, in the hall



This shows the main measurements of one of the chairs to be used.

There should be leg room of at least 30 cm in front of each chair.



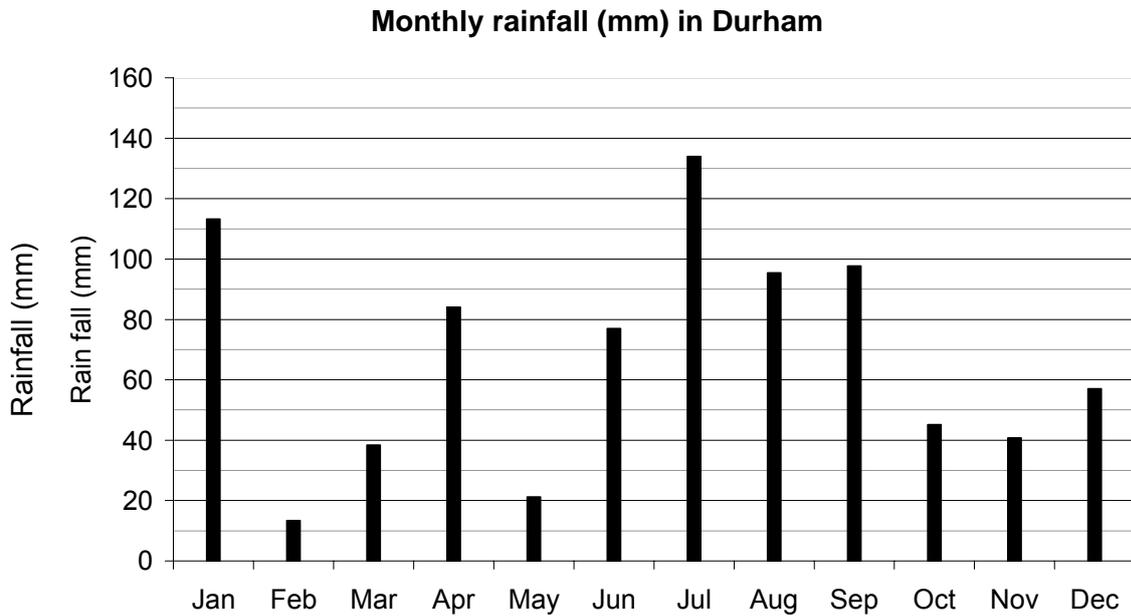
The chairs may be stacked for carrying.

The chairs are fixed together to form rows.



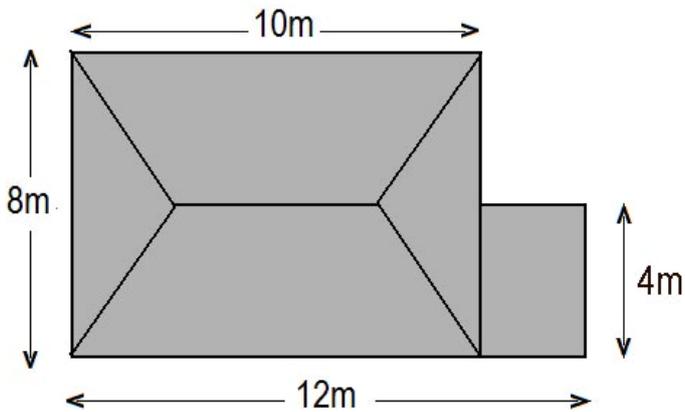
### Task 3 Rainfall

Alain uses this information to calculate the amount of rainwater collected.



East Water charges Alain 0.2 p a litre for his water.

This is a rough plan of the roof of Alain's house.  
It is a normal tiled roof.



**OCR FUNCTIONAL SKILLS  
QUALIFICATION IN MATHS AT LEVEL 2**

**Specimen Mark Scheme**

The maximum mark for this paper is [60].

OCR Level 2 Functional Skills Maths Referencing for Coverage and Range

<b>Our ref</b>	<b>Coverage and Range</b>
N1	understand and use positive and negative numbers of any size in practical contexts
N2	carry out calculations with numbers of any size in practical contexts, to a given number of decimal places
N3	understand, use and calculate ratio and proportion, including problems involving scale
N4	understand and use equivalences between fractions, decimals and percentages
A1	understand and use simple formulae and equations involving one- or two-step operations
G1	recognise and use 2D representations of 3D objects
G2	find area, perimeter and volume of common shapes
G3	use, convert and calculate using metric and, where appropriate, imperial measures
S1	collect and represent discrete and continuous data, using information and communication technology (ICT) where appropriate
S2	use and interpret statistical measures, tables and diagrams, for discrete and continuous data, using information and communication technology (ICT) where appropriate
S3	use statistical methods to investigate situations
S4	use probability to assess the likelihood of an outcome

N – Number  
A – Algebra  
G – Geometry  
S – Statistics

<b>Representing</b>	<b>Our Ref</b>
Understand routine and non-routine problems in familiar and unfamiliar contexts and situations.	R1
Identify the situation or problems and identify the mathematical methods needed to solve them.	R2
Choose from a range of mathematics to find solutions.	R3
<b>Analysing</b>	
Apply a range of mathematics to find solutions.	A1
Use appropriate checking procedures and evaluate their effectiveness at each stage.	A2
<b>Interpreting</b>	
Interpret and communicate solutions to multistage practical problems in familiar and unfamiliar contexts and situations.	I1
Draw conclusions and provide mathematical justifications	I2

## Mark Scheme

\*Denotes closed response question

### Task 1 Mobile phone pouch

	Process	Award	on evidence of ...	Skill Standard
(a)	Finding modal mobile thickness* (S2, S3)	1	15 or 1.5 (condone lack of units)	R1 A1
Commentary on mark given			Advice on how the candidate could improve	
Full marks				

	Process	Award	on evidence of ...	Skill Standard
(b)	Finding modal mobile width* (S2,S3)	1	48 or 4.8 (condone lack of units)	
	[A]	2		
Commentary on mark given			Advice on how the candidate could improve	
Full marks				

	Process	Award	on evidence of ...	Skill Standard
(c)	Finding typical length of a mobile phone (L) (S2, S3, N2)	3	<p>3: calculation of mean length = <math>956 \div 10 = 95.6\text{mm}</math> and stated as the "average"</p> <p>2: for clear attempt to find mean length. (1 each for 956 or <math>\div 10</math> seen)</p> <p>Or</p> <p>3: Calculation of median = 96.5 mm stated to be the "average".</p> <p>2: As above but lacking overt statement.</p> <p>1: Clear attempt to order lengths</p> <p>Or</p> <p>Should candidate mistake length for width impose penalty of 1 and give full follow through on this for the rest of the question. (“total width” = 477, mean width= 47.7, median width = 48)</p>	R1 R2 I1
	[B]	3		
<b>Commentary on mark given</b>			<b>Advice on how the candidate could improve</b>	
Loses 1 mark out of 3 because hasn't stated that s/he has found/calculated the average (mean)			Candidates need to realise that, at this level, they should outline or explain what it is they are calculating	

	Process	Award	on evidence of ...	Skill Standard
(d)	Drawing full-sized plan of fabric needed (G1, G3, N1, N3)	5	<p>1: Recognising that overlap is needed (may be implied not necessary to explicitly state).</p> <p>1: Account taken of thickness of mobile – allow follow through from (a) – but must be explicitly stated.</p> <p>1: Choosing a representative mobile length – seen or implied allow maximum, minimum, mean or median (allowing full follow through from (c)). “Playing safe” by using maximum dimensions is perfectly acceptable.</p> <p>1: Drawing of full-size consistent with above (but must have evidence of recognition that 2 x mobile representative length used)</p> <p>1: Drawing labelled with two principal dimensions, consistent with the above.</p>	R3 R2 A1 I2 I1
	[C]	5		
<b>Commentary on mark given</b>		<b>Advice on how the candidate could improve</b>		
<p>Loses 1 mark because there is no allowance for thickness.</p> <p>Loses 1 mark for no overlap</p> <p>Loses 1 mark because there is no recognition of the need to double the material to make the pouch.</p>		<p>Candidates should recognise that questions are often structured or scaffolded and use information obtained in earlier questions – clearly “follow through” marks will be awarded if appropriate but here there is no recognition of the fact that the phone has thickness and the pouch needs to be sewn together.</p>		

	Process	Award	on evidence of ...	Skill Standard
(e)	Costing the price of one pouch (G3, N1, N2)	4	<p>2: Clear attempt to find answer by fitting onto a sketch and answer (<math>N</math>) <b>or</b></p> <p>1: Evidence of the above but no final answer,</p> <p><b>Or</b></p> <p>1: Calculation of area of fabric (<math>A</math>) and            Calculation of number of pouches = <math>\frac{0.8}{A} \approx N</math>            (as inappropriate method maximum of 1)            -----</p> <p>1: Calculation of wage for 10 minutes = <math>\pounds 6 \div 6 = \pounds 1</math></p> <p>1: Cost of 1 pouch = <math>50\text{p} \div N = 1\text{p}</math> and            Total cost = <math>\pounds 1 + "1\text{p}" = \pounds 1.01</math></p>	R1      A1      I1 A1
	[D]	4		
<b>Commentary on mark given</b>		<b>Advice on how the candidate could improve</b>		
Loses 1 mark out of the 4		The candidate has used the area of the pouch and the area of the fabric. This calculation does not take into account the practical issues of actually cutting pieces from the length of fabric. The practical reality of the activity is one that needs to have been discussed with candidates.		

	Process	Award	on evidence of ...	Skill Standard
(f)(i)	Choosing price per pouch based on survey result (S2, S3, N1)	3	3: Most people willing to pay between £1.50 to £2.49 so choose £2 or similar + logical reason or 2: in range 1.50 to 2.49 or valid reason outside or 1: any price within table of results	R2      A1 I1
<b>Commentary on mark given</b>			<b>Advice on how the candidate could improve</b>	
Loses 1 mark for giving a reason that could be considered "not valid". Loses 1 mark for choosing price which is within range on the table but not based on the survey.			The reason quoted may be considered valid by candidates but the business world is not really driven by "ease of calculation" issues. Candidates should have the opportunity of discussing reasons in class	

	Process	Award	on evidence of ...	Skill Standard
(f)(ii)	Calculating unit profit* (N2)	1	Profit therefore = £2 - £1.01 = £0.99	I1
	[E]	4		
<b>Commentary on mark given</b>			<b>Advice on how the candidate could improve</b>	
Full marks gained			Follow through	

	<b>Process</b>	<b>Award</b>	<b>on evidence of ...</b>	<b>Skill Standard</b>
<b>Checking</b>	<b>Evidence of candidate checking procedures</b>	<b>2</b>	<b>2:</b> Clear evidence of a checking procedure being applied <b>1:</b> Any recognition that answers are appropriate/expected or inappropriate/not expected or no obvious errors <b>0:</b> Obvious incorrect answers or no evidence of checking or considering appropriateness of answer	<b>A2</b>
		<b>Total 20</b>		<b>R=7 A=7 I=6</b>
<b>Commentary on mark given</b>		<b>Advice on how the candidate could improve</b>		
Gains 1 mark out of the possible 2 marks.		There are no obvious errors. Nevertheless candidates ought to be encouraged to ask if an answer is sensible and also encouraged to check answers – either by estimation or perhaps repeating a calculation or at least performing the reverse calculation. Checking answers/being able to check answers are sensible etc is part of being functional.		

**Task 2 Chairs**

	Process	Award	on evidence of ...	Specification Criteria
(a)	Finding dimensions of a block of chairs* (G1, G3, N1, N2)	1 1	Calculating length = $14 - 2 - 2 = 10\text{m}$ Calculating width = $20 - 2 - 2 - 2 = 14\text{m}$ for both blocks ie 7m for 1 block	R1 I1
	[A]	2		
<b>Commentary on mark given</b>		<b>Advice on how the candidate could improve</b>		
Full marks given				

	Process	Award	on evidence of ...	Specification Criteria
(b)(i)	Calculating number of chairs in a row* (N2, G1)	2	Row is 7m, chair is 0.47m wide. 2: Number of chairs = $7 \div 0.47 = 14.89\dots$ ie 14 chairs Condone 15 chairs iff appropriate comment made. 1: Answer left as decimal or rounded up with no comment.	R2 I2
	[B]	2		
<b>Commentary on mark given</b>		<b>Advice on how the candidate could improve</b>		
Loses 1 mark		Candidate needs to appreciate that a fraction of a chair is not possible and the answer should be rounded down here, (in some situations such an answer should be rounded up)		

	Process	Award	on evidence of ...	Specification Criteria
(b)(ii)	Estimating total number of chairs in hall (N2, G1, G3)	4	1: Each row is "worth" $0.47\text{ m} + 0.3 = 0.77$ 1: Number of rows = $"10" \div "0.77" = 12.98$ or 12.88 number of rows per block = 12 or 13 Allow rounding up if reference is made to it 1: Number of chairs in block "12" x "R" 1: Number of chairs in the hall = $2 \times \text{above} = 336$ or $2 \times 182 = 364$ . Accept answer between 300 and 400 Allow full follow through at each stage	R3      A1      I2 A1
	[C]	4		
Commentary on mark given			Advice on how the candidate could improve	
Loses 1 mark because there is no allowance for leg room (30cm). Loses 1 mark because there is no allowance for 2 blocks of chairs.			Candidates need to realise/remember that they have to look back at information given on earlier pages and to read the information given in the resource booklet.	

	Process	Award	on evidence of ...	Specification Criteria
(c)(i)	Estimating comfortable load to carry (G3)	1	1: Accept answer between (10 and 25) kg (W)	R1 R2
Commentary on mark given			Advice on how the candidate could improve	
No marks given			An inappropriate weight. Candidates need to have opportunities to make judgements such as here or about the amount of liquid a cup or mug will hold etc	

	Process	Award	on evidence of ...	Specification Criteria
(c)(ii)	Estimating time to carry load above 10m (G3, N2)	1	1: Statement of between 10 and 20 seconds (7)	
	[D]	2		
Commentary on mark given			Advice on how the candidate could improve	
Full marks given				

	Process	Award	on evidence of ...	Specification Criteria
(d)(i)	Calculating number of chairs in a stack (G3, N2)	1	1: " $W \div 4$ . Accept between 2 and 5 – typically 4 would be about right – allowing for the fact it is a stack of chairs.	11
	[E]	1		
Commentary on mark given			Advice on how the candidate could improve	
Full marks given			The candidate could have looked back to their answer to part c(i) and compared their answers.	

	Process	Award	on evidence of ...	Specification Criteria
(d)(ii)	Estimating distance walked to fill back row (N2, G3)	2	<p>Many possible responses, award in the spirit of below eg distance from centre of stage to corner of block is about 14m, to middle of gangway = 12m, so mean distance could be 13m. Need 3 journeys per block so <math>3 \times 13 = 39\text{m}</math> double this for return gives 78m per block or 156m for both blocks.</p> <p>1: estimating distance for 1 journey 1: final distance from estimating/calculating number of journeys (for a stated single journey seen or implied as the total number of journeys – no credit here).</p>	A1 I2
	[F]	2		
<b>Commentary on mark given</b>			<b>Advice on how the candidate could improve</b>	
Full marks given			Follow through marks apply here even though the candidate has forgotten that there are 2 blocks.	

	Process	Award	on evidence of ...	Specification Criteria
(d)(iii)	Calculating time to lay out the whole hall by three people (N2, G3)	5	<p>Many possible responses, award in the spirit of below. Allow full follow through wherever possible and be sensitive to working implied if this may be reasonably assumed.</p> <p>1: Distance to back row = 13m and Distance to front row = 2m seen or implied</p> <p>1: Mean distance = "7.5"m ie 15m including return or equivalent calculation – condone slip of not including walking back "empty" time or equivalent including assuming this to be a fraction of the time walking "full" i.e. with no load</p> <p>1: "3" journeys per row per block = 6 per row in total and so total distance travelled = "6" x "15" = 90m</p> <p>1: Time = 10* "90" ÷ their "7"</p> <p>1: 3 workers so "Time" ÷ 3</p> <p>If less than 5 scored, award 1 for any pertinent and obviously sensible comment made about times – such as allowing resting, tidying up etc.</p>	R1      A1      I1 A1      I2
	[G]	5		
<b>Commentary on mark given</b>			<b>Advice on how the candidate could improve</b>	
Loses 1 mark because there is no recognition that 3 people are involved.			The candidate, however, still benefits from "follow through" marks	

	Process	Award	on evidence of ...	Specification Criteria
Checking	Evidence of Candidate checking procedures	2	<b>2:</b> Clear evidence of a checking procedure being applied <b>1:</b> Any recognition that answers are appropriate/expected or inappropriate/not expected or no obvious errors <b>0:</b> Obvious incorrect answers or no evidence of checking or considering appropriateness of answer	A2
		<b>Total 20</b>		<b>R=6    A=7 I=7</b>
<b>Commentary on mark given</b>			<b>Advice on how the candidate could improve</b>	
Gains 1 mark out of the possible 2 marks.			There are no obvious errors. Nevertheless candidates ought to be encouraged to ask if an answer is sensible and also encouraged to check answers - either by estimation or perhaps repeating a calculation or at least performing the reverse calculation. Checking answers/being able to check answers are sensible etc is part of being functional.	

**Task 3 Rainfall**

	Process	Award	on evidence of ...	Specification Criteria
(a)(i)	Calculating total water used by toilet and washing machine in a week (N2, S2)	2	1: Toilet flushes = 108, washing machine uses = 3 1: $108 \times 8 + 3 \times 65 = 1059$ litres	R1 A1
<b>Commentary on mark given</b>		<b>Advice on how the candidate could improve</b>		
Full marks given				

	Process	Award	on evidence of ...	Specification Criteria
(a)(ii)	Costing annual cost of water for toilet flushes and using washing machine* (N2)	2	1: $1059 \times 52 \times 0.2 = 11013.6p$ 1: = £110.14 allow follow through	R1 R2
	[A]	4		
<b>Commentary on mark given</b>		<b>Advice on how the candidate could improve</b>		
1 mark given		It is assumed that the candidate has mis-read the cost of 0.2p as 2p. Candidates need to be encouraged to read questions carefully and highlight or write down salient points		

	Process	Award	on evidence of ...	Specification Criteria
(b)	Checking a rainfall calculation (N2, G2, G3)	3	1: A cubic metre is 1000 litres 1: 1mm gives $100 \times 100 \times 0.1\text{cm}^3 = 1000\text{cm}^3 = 1 \text{ litre}$ 1: $2.54/2.5 \times 500 \times 800 = 1016000/100000\text{cm}^3 = 1016/1000\text{litres}$ (so he is about right)	R1      A1      I1
	[B]	3		
<b>Commentary on mark given</b>		<b>Advice on how the candidate could improve</b>		
Loses 1 mark for incorrect conversion between metric and imperial units		Candidates should know and be able to use the common conversions.		

	Process	Award	on evidence of ...	Specification Criteria
(c)(i)	Finding annual rainfall $r$ from chart of monthly figures (S2)	1	1: Total is approximately 846mm. Accept between 800 and 900mm ( $r$ )	I1
	[C]	1		
<b>Commentary on mark given</b>		<b>Advice on how the candidate could improve</b>		
Full marks awarded				

	Process	Award	on evidence of ...	Specification Criteria
(c)(ii)	Deciding by calculation if collected rainwater sufficient to use for toilets and washing machine. (A1, N2, G2)	5	<p>2: Area of roof (A) = (8 x 10) + (2 x 4) = 88m<sup>2</sup> 1 for each term.</p> <p>2: Volume (V) = [0.8] x ["A"] x ["r"] / [1000] or (1: 2 or 3 terms correct)</p> <p>1: So yes sufficient water could be collected (allow full follow through on candidates' figures)</p>	R3 A1 A1 I1 I2
	[D]	5		
<b>Commentary on mark given</b>			<b>Advice on how the candidate could improve</b>	
Candidate loses 1 mark because the "side extension" to the house has been ignored.			A common problem is a failure to read diagrams and tables.	

	Process	Award	on evidence of ...	Specification Criteria
(d)(i)	Calculating (informally) payback times (N2)	3	<p>1: Annual saving = "V" x 0.2 (ignore units) (cannot be more than total toilet + washing machine annual consumption)</p> <p>1: payback time = 1800 ÷ ("V" x 0.2) (follow through)</p> <p>1: Answer to above must be result of correct units.</p>	R2 R1 I1
		3		
<b>Commentary on mark given</b>			<b>Advice on how the candidate could improve</b>	
No marks awarded			The candidate has done the calculation based on the water used and not on the actual water and hence the money saved	

	Process	Award	on evidence of ...	Specification Criteria
(d)(ii)	Deciding on the advantages or disadvantages of installing a rainwater collection system (N1, N2)	2	1: each of two reasons supporting their decision e.g. good for environment too long to pay back (allow follow through) Allow mixture of positive and negative comments.	I1 I2
	[F]	2		
<b>Commentary on mark given</b>			<b>Advice on how the candidate could improve</b>	
1 mark awarded			Credit is given from follow through but only one reason is provided	

	Process	Award	on evidence of ...	Specification Criteria
Checking	Evidence of Candidate checking procedures	2	2: Clear evidence of a checking procedure being applied 1: Any recognition that answers are appropriate/expected or inappropriate/not expected or no obvious errors 0: Obvious incorrect answers or no evidence of checking or considering appropriateness of answer	A2
		Total 20		R=7 A=6 I=7
<b>Commentary on mark given</b>			<b>Advice on how the candidate could improve</b>	
No marks given			There is no recognition that an answer (3d(i)) is inappropriate	