



Cambridge International AS & A Level

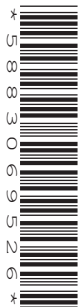
INFORMATION TECHNOLOGY

9626/02

Paper 2 Practical

October/November 2023

2 hours 30 minutes



You will need: Candidate source files (listed on page 2)

INSTRUCTIONS

- Carry out every instruction in each task.
- Save your work using the file names given in the task as and when instructed.
- You must **not** have access to either the internet or any email system during this examination.
- You must save your work in the correct file format as stated in the tasks. If work is saved in an incorrect file format, you will **not** receive marks for that task.

INFORMATION

- The total mark for this paper is 90.
- The number of marks for each question or part question is shown in brackets [].

This document has **8** pages. Any blank pages are indicated.

You have been supplied with the following source files:

n23climate.csv
n23soil.csv

You will create a spreadsheet for a quantity surveyor to calculate the amount of concrete required for the foundations for a wall or building.

You must use the most efficient method to solve each task. All documents produced must be of a professional standard and suit the business context.

All costs must be displayed in dollars (\$).

1 metre = 1000 millimetres.

1 Create a new spreadsheet that looks like this:

	A	B	C	D	E	F	G
1	QS-Assist						
2	What are you constructing?				By A Candidate, ZZ999, 9999		
3	Freestanding wall	Y					
4	Building						
5	Soil and climate data entry						
6	Soil type:						
7	Climate type:						
8	Cost calculator – freestanding brick walls				Cost calculator – rectangular buildings		
9							
10	Freestanding wall data entry				Data entry		
11	Length of wall:	2	Enter in metres		Length of building:	4	Enter in metres
12					Width of building:	3	Enter in metres
13	Foundations – footings				Foundations – footings		
14	Width:		in metres		Width:		in metres
15	Depth:		in metres		Depth:		in metres
16	Length:		in metres		Length:		in metres
17	Volume:		cubic metres		Volume:		cubic metres
18	Concrete cost:				Concrete cost:		

Merge cells as shown. Centre align all cells in columns B and F.

Place your name, centre number and candidate number in the merged cell E2:G2.

Save your spreadsheet with the file name **QSA_** followed by your centre number_candidate number, e.g. QSA_ZZ999_9999 [4]

2 Examine the data in the files:

n23climate.csv
n23soil.csv

Import these files into your workbook, using appropriate worksheet names. The data in these worksheets will be used by formulae you create in your main spreadsheet.

Format the **Frost factor** data as percentage values. [2]

- 3 In the worksheet created in step 1 make sure that cells B3 and B4 can only contain a blank cell or the letter Y in upper or lower case. Add appropriate text for the user. Do **not** include a drop down menu. [6]
- 4 In cells B6 and B7 make sure that users can select from drop down lists the soil type and climate type. Use the worksheets imported in step 2. [7]
- 5 Enter a function in cell B14 to look up the width of the footing in metres. Use the soil data imported in step 2. [7]
- 6 Enter a function in cell B15 to look up the depth of the footing in metres. Use the soil data imported in step 2. [3]
- 7 Edit the formula placed in step 6 to increase the depth of the footing by the *Frost factor* percentage. Use the climate data imported in step 2.

$$\text{Depth of footing} = \text{Value depending on soil type} \times (1 + \text{Frost factor percentage})$$
 [7]
- 8 Enter a formula in cell B16 to calculate the length of the footing in metres.

$$\text{Length of footing} = \text{Length of the wall} + \text{Width of the footing} - 0.1$$
 [1]
- 9 Enter a formula in cell B17 to calculate the volume of the footing rounded up to the nearest 0.1 m^3 .

$$\text{Volume} = \text{Width} \times \text{Depth} \times \text{Length}$$
 [3]
- 10 Place formulae in cells F14 and F15 to copy the values from cells B14 and B15. [1]
- 11 Enter a formula in cell F16 to calculate the length of the rectangular footing in metres.

$$\text{Length of footing} = 2 \times (\text{Length of the building} + \text{Width of the building}) - 0.4$$
 [1]
- 12 Enter a formula in cell F17 to calculate the volume of the footing rounded up to the nearest 0.1 m^3 .

$$\text{Volume} = \text{Width} \times \text{Depth} \times \text{Length}$$
 [1]
- 13 Enter formulae in cells B18 and F18 to calculate the cost of the concrete, rounded to and displayed to the nearest dollar. Concrete costs \$124.3654 per cubic metre. [3]
- 14 Edit the formulae placed in steps 5 to 13 so that if the soil is **not** suitable for strip foundations appropriate messages are displayed in these cells. [4]

15 Place formulae in your spreadsheet so that when the letter Y is placed in cell:

- B3, the contents of cells in the range E8:G18 are **not** visible
- B4, the contents of cells in the range A8:C18 are **not** visible.

Save this spreadsheet as **QSA1_** followed by your centre number_candidate number, e.g. QSA1_ZZ999_9999

[8]

16 Test your spreadsheet with the following test data. Save each test as a spreadsheet with the given file name followed by your centre number_candidate number, e.g. QSA2_ZZ999_9999

File name and respective Test data

QSA2_ A freestanding wall 12 metres long built on gravel in a climate that is never frosty.

QSA3_ A building 4 metres long and 3 metres wide built on soft chalk in a climate that is never frosty.

QSA4_ A building 4 metres long and 3 metres wide built on granite in a climate that is never frosty.

QSA5_ A building 4 metres long and 3 metres wide built on granite in a climate that is sometimes frosty.

[11]

17 There is a problem in the design of this spreadsheet. Identify this problem. Enter in cell A20 of **QSA5** what the problem is and how you would resolve this problem. Note you do **not** have to correct the problem in your spreadsheet.

Save the new spreadsheet as **QSA6_** followed by your centre number_candidate number, e.g. QSA6_ZZ999_9999

[3]

The quantity surveyor provides services for each customer, such as calculating the amount and cost of concrete or the number of bricks required for a project. He sends an invoice to customers when he has finished the work to ask for payment.

The quantity surveyor wants to use a database to store details of each invoice and the customer the invoice will be sent to. Each customer can be sent more than one invoice, but each invoice is sent to only one customer.

Each invoice:

- *has a unique invoice number*
- *contains the name and address of the customer*
- *identifies the project*
- *contains details of the service provided for the project*
- *contains the cost of this service.*

18 Draw a conceptual entity relationship diagram for this database.

Save this in **portable document format** as **ERD_** followed by your centre number_candidate number, e.g. ERD_ZZ999_9999 [18]

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