



## Cambridge International AS & A Level

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INFORMATION TECHNOLOGY

9626/02

Paper 2 Practical

May/June 2021

MARK SCHEME

Maximum Mark: 110

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**Published**

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the May/June 2021 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

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This document consists of **21** printed pages.

**PUBLISHED****Generic Marking Principles**

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

**GENERIC MARKING PRINCIPLE 1:**

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

**GENERIC MARKING PRINCIPLE 2:**

Marks awarded are always **whole marks** (not half marks, or other fractions).

**GENERIC MARKING PRINCIPLE 3:**

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

**GENERIC MARKING PRINCIPLE 4:**

Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

**GENERIC MARKING PRINCIPLE 5:**

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

**GENERIC MARKING PRINCIPLE 6:**

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

Tasks 1 and 7

	A	B	C	D	E	F	G	H	I	J	K	L
1	<b>Christine's Construction Company</b>											
2												
3	<b>Building foundation planner for brick/block walls</b>			<b>Soil/Rock data</b>				Dry	Wet	Dry	Wet	kg/m2
5	<b>Data entry</b>	<b>Enter all dimensions in metres</b>		<b>Soil code</b>	<b>Soil/Rock type</b>			<b>Width</b>	<b>Width</b>	<b>Depth</b>	<b>Depth</b>	<b>Load bearing</b>
6	Building weighting factor:	1.35						in mm	in mm	in mm	in mm	pressure
7	Type of construction:	B	Enter W (freestanding Wall) or B (building)									
8	Length of wall:	4	Enter length in metres	L	Limestone	Strip/trench fill		600	600	500	600	30000
9	Height of wall:	1.5	Enter height in metres	G	Granite	Strip/trench fill		600	600	200	200	59000
10	Code for the type of soil:	W	Enter soil code C,G,H,J,L,P,S,T,U,V or W	S	Sandstone	Strip/trench fill		600	600	500	500	30000
11	Thickness of wall:	S	Enter S (single) or D (double)	T	Shale	Strip/trench fill		600	600	500	500	27000
12	Soil moisture level:	D	Enter W (wet) or D (dry)	V	Firm Chalk	Strip/trench fill		450	450	700	700	30000
13				W	Soft chalk	Unsuitable						
14	<b>Foundations</b>	<b>Strip foundations are not suitable for this site</b>		J	Gravel	Strip/trench fill		450	900	700	800	25000
15	Depth:	metres		H	Gravel and sand	Strip/trench fill		450	900	700	700	20000
16	Width:	metres		C	Clay	Strip/trench fill		700	1000	1000	3000	10000
17	Length:	metres		P	Peat	Raft foundation only						
18	The volume of foundations will be:	cubic metres		U	Sand	Strip/trench fill		600	600	800	700	15000
19	The volume of concrete will be:	cubic metres										
20	Weight of the wall will be:	1732.5	kilograms									
21	<b>Exceeds the foundation's load bearing</b>			<b>Costs per cubic metre</b>								
22	<b>The concrete for the foundations will cost:</b>			Concrete:	\$85.30							
				Empty portion:	\$22.00							

- Rows 1 and 3 Orange background with black text 1 mark
- Row 1 Centre aligned, 28 points high 1 mark
- Row 3 Centre aligned, 18 points high 1 mark
- Row 4 ½ height of row 5 1 mark
- Cells A5 and C5 Bold 1 mark
- Cells A1:C1 and A3:C3 Merged 1 mark
- All rows Sans-serif font 1 mark
- Cells B6 to B20 Centre aligned 1 mark
- Cells A5:A20 & A22 Right aligned 1 mark
- Cells C5:C20 Left aligned 1 mark
- Cells L5:L6 Merged and centre aligned 1 mark
- Wrapped text 1 mark
- A22 Bold 1 mark
- B22, F21:F22 Formatted as currency in \$ with 2dp [Task 7 mark] 1 mark
- Footer Created at [time] on [date] on left 1 mark
- Filename and path on right 1 mark

Task 2

	C	D	E	F
1				
2				
3			<b>Soil/Rock data</b>	
4				
5	<b>Enter all dimensions in metres</b>		Soil code	Soil/Rock type
6				
7	Enter W (freestanding Wall) or B (building)			
8	Enter length in metres		L	Limestone
9	Enter height in metres		G	Granite
10	Enter soil code, C,G,H,J,L,P,S,T,U,V or W		S	Sandstone
11	Enter S (single) or D (double)		T	Shale
12	Enter W (wet) or D (dry)		V	Firm Chalk
13			W	Soft chalk
14	<b>=IF(OR(B10=E13,B10=E17),"Strip foundations are not suitable for this site", "")</b>		J	Gravel
15	metres		H	Gravel and sand
16	metres		C	Clay
17	metres		P	Peat
18	cubic metres		U	Sand
19	cubic metres			
20	kilograms		<b>Costs per cubic metre</b>	
21			Concrete:	85.3
22			Empty portion:	22

C14	=IF( ... ) with correct syntax	1 mark
	OR( ... , ... )	1 mark
	B10=E13                      B10="W"	1 mark
	B10=E17                      B10="P"	1 mark
	,"Strip foundations are not suitable for this site"	1 mark
	,""                              Blank cell	1 mark
	Conditional formatting applied	1 mark
	... when not blank	1 mark
	... white, centre aligned, bold text on a red background	1 mark

Tasks 3 and 4

	B
1	Christine's Construction Company
2	
3	building foundation
4	
5	
6	1.36
7	
8	4
9	1.5
10	
11	
12	
13	
14	
15	=IF(C\$14<>"", "", VLOOKUP(B\$10, \$E\$8:\$K18, 6+IF(\$B\$12="W", 1, 0), 0)/1000)
16	=IF(C\$14<>"", "", VLOOKUP(B\$10, \$E\$8:\$K18, 4+IF(\$B\$12="W", 1, 0), 0)/1000)
17	=IF(C\$14<>"", "", B8)
18	=IF(C\$14<>"", "", B15*B16*B17)
19	=IF(C\$14<>"", "", ROUNDUP(B18*1.07, 2))
20	=IF(B7="B", 1.5, 1)*IF(UPPER(B11)="S", B8*9*55*3.5*2)
21	
22	=IF(C\$14<>"", "", B19*F21+(6-(B19-6*INT(B19/6))))

B15	=IF(C14<>"", ... , ... )	1 mark
	, ""	1 mark
	VLOOKUP(B10,	1 mark
	E8:K18,	1 mark
	6+	1 mark
	IF(B12="W", 1, 0)      =IF(B12="D", 0, 1)	1 mark
	, FALSE)      , 0)	1 mark
	Whole VLOOKUP /1000	1 mark
	Alternative for lookup:	
	VLOOKUP(B10,	1 mark
	E8:K18,	1 mark
	IF(B12="W", 7, 6)      IF(B12="D", 6, 7)	2 marks
	, FALSE)	1 mark

B16	=IF(C\$14<>"", "", ... )	1 mark
	VLOOKUP(B10, E8:K18	1 mark
	, 4+IF(B12="W", 1, 0), 0)	1 mark
	/1000	1 mark
B17	=IF(C\$14<>"", "", ... )	1 mark
	B8	1 mark

		B18	=IF(C\$14<>"", "", ... )		1 mark
1	Christine's Cons	B15	B15		1 mark
			*B16		1 mark
			*B17	4	1 mark
2		B19	=IF(C\$14<>"", "", ... )		1 mark
3	Building foundation pl		ROUNDUP( ... )		1 mark
			B18*1.07		1 mark
5			,2	4	1 mark
6	1.36	B20	=IF(B7="B", ... , ...)	=IF(B7="W", ... , ...)	1 mark
7			... 1.5	... 1	1 mark
8	4		... 1	... 1.5	1 mark
			*		1 mark
9	1.5		=IF(B11="S", ... , ...)	=IF(B11="D", ... , ...)	1 mark
10			... ,B8*B9*55*3.5	... ,B8*B9*55*3.5*2	1 mark
11			... ,B8*B9*55*3.5*2	... ,B8*B9*55*3.5	1 mark
12					
13					
14					
15			=IF(C\$14<>"", "", VLOOKUP(B\$10, \$E\$8:\$K\$8, VLOOKUP(B\$12, \$I\$12:\$M\$12, 1, 0), 0)/1000)		
16			=IF(C\$14<>"", "", VLOOKUP(B\$10, \$E\$8:\$K\$8, VLOOKUP(B\$12, \$I\$12:\$M\$12, 1, 0), 0)/1000)		
17			=IF(C\$14<>"", "", B8)		
18			=IF(C\$14<>"", "", B15*B16*B17)		
19			=IF(C\$14<>"", "", ROUNDUP(B18*1.07, 2))		
20			=IF(B7="B", 1.5, 1)*IF(UPPER(B11)="S", B8*B9*55*3.5, B8*B9*55*3.5*2)		
21					
22			=IF(C\$14<>"", "", B19*F21+(6-(B19-6*INT(B19/6)))*F22)		

Task 5

	A
1	Chri
2	
3	Buil
4	
5	<b>Data entry</b>
6	Building weighting factor
7	Type of construction:
8	Length of wall:
9	Height of wall:
10	Code for the type of soil:
11	Thickness of wall:
12	Soil moisture level:
13	
14	<b>Foundations</b>
15	Depth:
16	Width:
17	Length:
18	The volume of foundations will be:
19	The volume of concrete will be:
20	Weight of the wall will be:
21	<b>=IF(B20/B8&gt;=VLOOKUP(B10,E8:L18,8,0),"Exceeds the foundation's load bearing", "")</b>
22	<b>The concrete for the foundations will cost:</b>

A21	=IF( ... ) with correct syntax	1 mark
	B20/B8	1 mark
	>=	1 mark
	VLOOKUP(B10,E8:L18,8,0)	1 mark
	,"Exceeds the foundation's load bearing"	1 mark
	,""	1 mark
	Conditional formatting replicated from C14	1 mark

Task 6

		B
1	Christine's Construction Company	
2		
3	Building foundation planner for brick/block walls	
4		
5		
6	1.36	
7		B
8	4	
9	1.5	
10		W
11		S
12		D
13		
14		
15	=IF(C\$14<>"", "", VLOOKUP(B\$10, \$E\$8:\$K18, 6+IF(\$B\$12="W", 1, 0), 0)/1000)	
16	=IF(C\$14<>"", "", VLOOKUP(B\$10, \$E\$8:\$K18, 4+IF(\$B\$12="W", 1, 0), 0)/1000)	
17	=IF(C\$14<>"", "", B8)	
18	=IF(C\$14<>"", "", B15*B16*B17)	
19	=IF(C\$14<>"", "", ROUNDUP(B18*1.07, 2))	
20	=IF(B7="B", 1.5, 1)*IF(UPPER(B11)="S", B8*B9*55*3.5, B8*B9*55*3.5*2)	
21		
22	=IF(C\$14<>"", "", B19*F21+(6-(B19-6*INT(B19/6)))*F22)	

B22	=IF(C\$14<>"", "", ... )	1 mark
	B19	1 mark
	*F21	1 mark
	(...concrete cost...) + (...empty cost with B19 included ...)	1 mark
	(6-( ... ))	inside brackets not needed if MOD 1 mark
	B19	MOD( ... ) 1 mark
	-	B19 1 mark
	6*	,
	INT( ... )	6 1 mark
	B19/6	✓ if 5 above 1 mark
	(...empty cost with B19 included...)*F22	1 mark











Christine's Construction Compar	
Building foundation planner for brick/block wal	
1.36	
	B
4	
1.5	
	W
	S
	D
=IF(C\$14<>"", "", VLOOKUP(B\$10,\$E\$8:\$K18,6+IF(\$B\$12="W",1,0),0)/1000)	
=IF(C\$14<>"", "", VLOOKUP(B\$10,\$E\$8:\$K18,4+IF(\$B\$12="W",1,0),0)/1000)	
=IF(C\$14<>"", "", B8)	
=IF(C\$14<>"", "", B15*B16*B17)	
=IF(C\$14<>"", "", ROUNDUP(B18*1.07,2))	
=IF(B7="B",1.5,1)*IF(UPPER(B11)="S",B8*B9*55*3.5,B8*B9*55*3.5*2)	
=IF(C\$14<>"", "", B19*F21+(6-(B19-6*INT(B19/6)))*F22)	

**Data Validation** [?] [X]

Settings | Input Message | Error Alert

Validation criteria

Allow: List [v]  Ignore blank

Data: between [v]  In-cell dropdown

Source: W,D [↑]

Apply these changes to all other cells with the same settings

[Clear All] [OK] [Cancel]

Task 9

**Protection**

Columns A and C protected	1 mark
Row 6 protected	1 mark
Range B15 to B22	1 mark
Rest of worksheet unlocked	1 mark
Sheet is password protected with CCC	1 mark

Task 10

## Christine's Construction Company

### Building foundation planner for brick/block walls

Data entry	Enter all dimensions in metres
Building weighting factor: 1.36	
Type of construction: W	Enter W (freestanding Wall) or B (building)
Length of wall: 4	Enter length in metres
Height of wall: 1.5	Enter height in metres
Code for the type of soil: W	Enter soil code, C,G,H,J,L,P,S,T,U,V or W
Thickness of wall: S	Enter S (single) or D (double)
Soil moisture level: D	Enter W (wet) or D (dry)

Foundations	Strip foundations are not suitable for this site
Depth:	metres
Width:	metres
Length:	metres
The volume of foundations will be:	cubic metres
The volume of concrete will be:	cubic metres
Weight of the wall will be: 1155	kilograms

**Exceeds the foundation's load bearing**

The concrete for the foundations will cost:

Modelling 10a	W,4,1.5,W,S,D Error displayed in C14 Error displayed in A21 Blank cells in column B in B14:B19 All 4 documents as .pdf & professional output	1 mark 1 mark 1 mark 1 mark 1 mark
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# Christine's Construction Company

## Building foundation planner for brick/block walls

Data entry	Enter all dimensions in metres	
Building weighting factor	1.36	
Type of construction:	W	Enter W (freestanding Wall) or B (building)
Length of wall:	4	Enter length in metres
Height of wall:	5	Enter height in metres
Code for the type of soil:	J	Enter soil code, C, G, H, J, L, P, S, T, U, V or W
Thickness of wall:	D	Enter S (single) or D (double)
Soil moisture level:	D	Enter W (wet) or D (dry)

Foundations		
Depth:	0.7	metres
Width:	0.45	metres
Length:	4	metres
The volume of foundations will be:	1.26	cubic metres
The volume of concrete will be:	1.35	cubic metres
Weight of the wall will be:	7700	kilograms

The concrete for the foundations will cost: \$217.46

Modelling 10b	W,4,5,J,D,D Depth = 0.7 and Width = 0.45 Length =4 and Volume =1.26 Volume 1.35 Weight 7700 Cost \$217.46	1 mark 1 mark 1 mark 1 mark 1 mark 1 mark
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# Christine's Construction Company

## Building foundation planner for brick/block walls

### Data entry

Building weighting factor	1.36
Type of construction:	B
Length of wall:	28
Height of wall:	5.2
Code for the type of soil:	J
Thickness of wall:	D
Soil moisture level:	W

### Enter all dimensions in metres

Enter W (freestanding Wall) or B (building)
Enter length in metres
Enter height in metres
Enter soil code, C,G,H,J,L,P,S,T,U,V or W
Enter S (single) or D (double)
Enter W (wet) or D (dry)

### Foundations

Depth:	0.8	metres
Width:	0.9	metres
Length:	28	metres
The volume of foundations will be:	20.16	cubic metres
The volume of concrete will be:	21.58	cubic metres
Weight of the wall will be:	84084	kilograms

**The concrete for the foundations will cost: \$1,894.01**

Modelling  
10c

B,28,5.2,J,D,W  
Cost \$1894.01

1 mark  
1 mark

# Christine's Construction Company

## Building foundation planner for brick/block walls

<b>Data entry</b>		<b>Enter all dimensions in metres</b>
Building weighting factor	1.36	
Type of construction:	B	Enter W (freestanding Wall) or B (building)
Length of wall:	30	Enter length in metres
Height of wall:	50	Enter height in metres
Code for the type of soil:	U	Enter soil code, C,G,H,J,L,P,S,T,U,V or W
Thickness of wall:	D	Enter S (single) or D (double)
Soil moisture level:	W	Enter W (wet) or D (dry)

<b>Foundations</b>		
Depth:	0.7	metres
Width:	0.6	metres
Length:	30	metres
The volume of foundations will be:	12.6	cubic metres
The volume of concrete will be:	13.49	cubic metres
Weight of the wall will be:	866250	kilograms

**Exceeds the foundation's load bearing**

**The concrete for the foundations will cost:** \$1,249.92

Modelling 10d	B,30,50,U,D,W Cell A21 Error message ref: weight	1 mark 1 mark
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## Task 11

Audio		
j21music.mp3	Clip speed x2	1 mark
	Second track plays alongside	1 mark
	Starts after 2 seconds	1 mark
	Merged to monophonic	1 mark
	Audio file length – first 29.5 seconds	1 mark
	Exported as CCCsound_ZZ999_9999.mp3	1 mark
	Exported as CCCsound_ZZ999_9999.ogg	1 mark