

Level 3 Lead Examiner Report 1906

Summer 2019

**Level 3 National in
Construction and the Built
Environment**

Tendering and Estimating (Unit 3)

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Grade Boundaries

What is a grade boundary?

A grade boundary is where we set the level of achievement required to obtain a certain grade for the externally assessed unit. We set grade boundaries for each grade, at Distinction, Merit and Pass.

Setting grade boundaries

When we set grade boundaries, we look at the performance of every learner who took the external assessment. When we can see the full picture of performance, our experts are then able to decide where best to place the grade boundaries – this means that they decide what the lowest possible mark is for a particular grade.

When our experts set the grade boundaries, they make sure that learners receive grades which reflect their ability. Awarding grade boundaries is conducted to ensure learners achieve the grade they deserve to achieve, irrespective of variation in the external assessment.

Variations in external assessments

Each external assessment we set asks different questions and may assess different parts of the unit content outlined in the specification. It would be unfair to learners if we set the same grade boundaries for each assessment, because then it would not take accessibility into account.

Grade boundaries for this, and all other papers, are on the website via this link:

<http://qualifications.pearson.com/en/support/support-topics/results-certification/grade-boundaries.html>

Anatomy and Physiology for Health and Social Care

Grade	Unclassified	Level 3			
		N	P	M	D
Boundary Mark	0	13	25	37	50

Introduction

This was the first examination series for the Unit 3 Tendering and Estimating paper. Unit 3 is the main 'commercial' element of the Level 3 BTEC in Construction and has a focus on commercial risk and commercial decisions.

Each series the tasks remain the same but the scenario, bills of quantities and data provided change to allow different commercial considerations and different areas of estimating to be tested.

The levels based marking grid is used for assessing the learner work and can be found at the back of the sample assessment materials (SAMs) on the Pearson website.

Introduction to the Overall Performance of the Unit

Candidates generally performed well on this paper with a good spread of marks and a range of outcomes following a normal distribution pattern.

Overall 85% of learners entered achieved a pass grade or higher with a spread of grades as detailed below:

Distinction 13%

Merit 43%

Pass 29%

There was evidence to suggest that in some centres teaching is being undertaken by non-specialist staff or staff without tendering and estimating experience. This was evident in the learner's approach to the build-up of unit rates using inappropriate vocational methods and lack of understanding of the implications, in terms of risk, of some key elements of the tender documents that are covered in the unit specification. This was observed because of the consistency of approach within individual centres.

Individual Questions

Task One

The first task is to produce a commercial risk report that details the potential risks that the company (tendering for the work) would be exposed to. This task was a key discriminator across the grades.

At Distinction level learners were able to focus on some of the key commercial risks, which included:

- Risks associated with the client's financial situation, rapid expansion, bank borrowings and potential failure/non-payment.
- Increase in exposure to this client given that the company has recently secured work with them.
- Fixed price contract at a time of unpredictable rising materials and labour costs.
- Commencement date in relation to the nature of the work and risks associated with winter working also taking into account liquidated and ascertained damages of £10,000 but also prolongation of site and head office overheads and cost of downtime.

Distinction level learners generally could also consider factors that lessen, mitigate or reduce elements of the commercial risk, which included:

- Use of a recognised standard form of building contract that is fair to both client and contractor.
- That the contract is 'with quantities' which transfers the risk of measurement errors in the bills of quantities from the contractor to the client.
- That the contracted works are within the companies 'sphere of expertise' and of a size and scale undertaken by the company on a regular basis.
- That the company has capacity being currently at 90% capacity and with 4 months to the commencement date will have other contracts in need of replacement as they draw to a close.

At pass level learners missed many, but not all, of the key commercial risks and are likely to have considered other risks, some of which may not necessarily be considered as commercial risks, which include:

- Location of site in relation to head office.
- Possible contaminated land (farmland) – may be a profit opportunity rather than a risk.

- Local school nearby – candidates at this level concentrate on delivery issues at school pick-up times rather than security and Health & Safety and there is already £70,000 in the preliminaries to cover this.
- Presence of 10 mature trees on site.
- Company working at 90% capacity (not taking into account the need to replace current contracts and the four months delay to completion).

Pass candidates are likely not to have covered factors that lessen, mitigate or reduce commercial risk and may even have mistaken some these potential factors as risks.

Learners often discussed commercial intelligence (most have) but this is not necessary in this activity

Common mistakes include:

- Lack of focus on the tendering contractor and considering risks that impact on the client rather than the contractor.
- Some learners focused on the client's choice of tendering strategies rather than the contractor's choice of a regular or fully committed tender.
- Suggesting serial tendering when the client has already determined the contractual approach before going out to tender.
- When discussing contingencies for risk some candidates did not realise that the contingency included as a provisional sum is the client's contingency and not the contractor's.
- Not realising that, although the contractor is working at 90% capacity, the project commencement date was 4½ months in the future and the contractor would continually need to win new projects to maintain turnover.

Task Two

The second task was to build up unit rates on the provided unit rates and to complete the measured work sections of the bills of quantities.

At distinction level learners completed the build-up of all unit rates and inserted them into the Bills of Quantities fully completing all rate extensions, page totals and collections. Distinction level learners:

- Selected and used the correct data for the build-up of each unit rate.
- Consistently and accurately applied coverage rate where required.

- Used correct and appropriate estimating methodologies in the build-up of unit rates (some candidates may have adopted an operational estimating approach but may still access top box marks if all other elements are correct).
- Have minimal errors in their overall unit rates
- Correctly completed the Bills of Quantities measured work section
- Had a measured work section totaling close to £4,495,612.82 (the correct sum achieved by application of all provided data)

At this pass level learners will have completed some/most of the build-up of all unit rates and inserted them into the Bills of Quantities partially completing all rate extensions, page totals and collections. Pass level learners:

- Selected and used some of the correct data for the build-up of each unit rate.
- Attempted to use and apply coverage rates in some instances where required.
- Used mainly appropriate estimating methodologies in the build-up of unit rates (some candidates may have adopted an operational estimating approach but errors are likely to lead to some inaccuracies).
- Have some errors in their overall unit rates
- Partially completed the Bills of Quantities measured work section
- Had measured work section generally totaling between £4,000,000.00 and £5,000,000.00

Common mistakes include:

- Many candidates vastly overcomplicated the calculation of unit rates with extensive calculations arriving at a total item cost within the unit rate sheet. Learners then had to divide by the item quantity to arrive at a unit rate. This added many stages to each calculation increasing the chance of errors occurring.
- Not applying waste percentages to mortar as well as to the bricks and the blocks. Note in line with common estimating practice the waste percentage applies to brickwork and blockwork, which includes the mortar joint.
- Note using or incorrectly using the collections in the bills of quantities.
- Not entering unit rates and sums in the 'currency format' eg 2.00 in the bills of quantities.
- Not setting out unit rate calculations within vocationally accepted standard methods

Task Three

The third task was to produce an estimated total cost by pricing the preliminaries and completing the remaining sections of the bills of quantities.

At distinction level learners generally completed both preliminary items making appropriate assumptions in the process and completed all remaining sections of the Bills of Quantities including correct completion of collections & summaries and application of an appropriate percentage addition onto the prime cost sums. There are likely to be few inaccuracies and the estimated total cost will be close to £7,376,600.97.

At pass level learners may have completed/partially completed one or both preliminary items making limited assumptions in the process and completed some remaining sections of the Bills of Quantities including completion of collections & summaries. They may have left the profit on prime cost sums blank or may have inserted (incorrectly) the full profit sum at that point. There are likely to be a number of inaccuracies and the estimated total cost is likely to be between £7,000,000.00 and £8,000,000.00.

Common mistakes include:

- Not including the profit addition on the Prime Cost (PC) Sum.
- Including the overall contract profit where the learner should have only priced the profit on the PC sum.
- Not including a sum to cover fluctuations, whilst stating that fluctuations are not allowed, when the fact that it is a fixed price contract means that they have to price and cover fluctuations because they will not be covered on a rise and fall or a formula fluctuations basis during monthly valuations.
- Not realizing that the start date is 4½ months away when calculating fluctuations.
- Not understanding the difference between a provisional sum and a prime cost sum.
- Not correctly completing collections and summaries.

Task Four

The fourth and final task was to produce a report to the tender adjudication committee to justify a potential tender sum.

At distinction level the learner will have arrived at a justified tender sum, including profit, in the region of £7,520,000.00 and £9,590,000.00 depending on the justifications provided. In doing so the learner will have considered some of the following:

- Relevant key risk factors (from the earlier risk analysis)
- Commercial intelligence on competitors and an analysis of their likely approach to the tender.
- Current workload and the need or lack of need for the contract taking into account currently working at 90% capacity and 4½ months before contract commencement.
- Attitude to risk taking into account the company history and its desire to expand and retain their trained workforce.
- Organisation aspirations.
- The identified need for a regular or fully committed tender approach.
- A recognition that the company overheads are currently 8.5%

At pass level the learner will have arrived at a tender sum with limited or inappropriate justification, including profit, in the region of £7,000,000.00 and £12,000,000.00. In doing so the learner may have considered some of the following:

- Risk factors from the earlier risk analysis, which may not cover the key risk factors.
- Commercial intelligence on competitors but mainly repetition of the information provided and lacking an analysis of their likely approach to the tender.
- Current workload at 90% capacity but no recognition of the need for continual contract replacement.
- Limited consideration of organisation aspirations.
- No consideration a regular or fully committed tender approach.
- No recognition that the company overheads are currently 8.5% and therefore a minimum addition of 8.5% is required to break even.

Common mistakes include:

- Lack of analysis and consideration of commercial intelligence.
- Lack of consideration of the 8.5% overheads.
- Limited consideration of the provisional sums and the subsequent potential variations for generation of profits.
- Thinking that fixed price meant that variations to the contract cannot be valued and added to the final account sum.

Lack of understanding of the scenario factors that reduce or mitigate risk eg contract with quantities, use of a standard form of contract negotiated by both client and contractor representative bodies.

Brickwork and blockwork together with associated substructure work for 250 new dwellings

Estimating - Unit Rate Calculation Sheet

Item No 2/1(e)	Description	Unit of measurement m ³
	Mass concrete C30P in trench filling poured against earth	
	C30P Concrete	85.00 ✓
	+ 5% waste.	4.25 ✓
		89.25 ✓
	Poker vibrator £25.00/day	
	say 4 dwellings/pour/day	
	4613m ³ /250 x 4 = 73.81 m ³ /pour.	
	£25.00 / 73.81 ✓	0.34 ✓
	Labour 0.33 hours @ £9.35	3.08 ✓
	(see previous note about the addition of 0.14 x P)	
	(Note - some candidates may opt not to price the poker vibrator in this item).	
	Total	£ 92.67 ✓

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Brickwork and blockwork together with associated substructure work for 250 new dwellings

Estimating – Unit Rate Calculation Sheet

Item No	Description	Unit of measurement
2/2(g)	Brick on edge coping in type B facings, horizontal laid in coloured, cement, lime, sand mortar (1:1:6) pointed with a neat tooled joint as the work proceeds	m
Type B Facing	13 No. @ £0.415	5.40 ✓
Mortar	0.006 m ³ @ £115.00	0.69 ✓
		6.09 ✓
Waste	+ 7.5%	0.46 ✓
		6.55 ✓
Bricklayer	0.5 hours @ £16.75	7.38 ✓
Labourer	0.25 hours @ £9.35	2.34 ✓
Total		£ 16.27 ✓

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Brickwork and blockwork together with associated substructure work for 250 new dwellings		
Estimating - Unit Rate Calculation Sheet		
Item No 2/2(h)	Description	Unit of measurement m ²
	Forming cavities in hollow walls 75mm wide with 5No stainless steel double triangular wall ties per m ²	
	Wall ties 5No @ £0.27	1.35 ✓
	Waste + 2.5%	0.03 ✓
		1.38 ✓
	<u>Labour</u>	
	Bricklayer 0.05 Hr @ £14.75	0.74 ✓
	Labourer 0.025 Hr @ £9.35	0.23 ✓
	Total	£ 2.35 ✓



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Turn over ►

Brickwork and blockwork together with associated substructure work for 250 new dwellings		
Estimating - Unit Rate Calculation Sheet		
Item No	Description	Unit of measurement
2/2(i)	Cavity wall insulation type D1 75mm built in as the work proceeds	m ²
Cavity wall insulation type D1 (m ²)		10.75 ✓
Waste + 5%		0.54 ✓
		<u>11.29 ✓</u>
<u>Labour</u>		
Bricklayer	0.1 Hr @ £14.75	1.48 ✓
Labourer	0.05 Hr @ £9.35	0.46 ✓
Total		£ 13.23 ✓

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Brickwork and blockwork together with associated substructure work for 250 new dwellings		
Estimating - Unit Rate Calculation Sheet		
Item No	Description	Unit of measurement
2/2(j)	Pitch polymer damp proof course width not exceeding 300mm, horizontal Single layer	m
	Pitch polymer dpc £6.23/m ² x 0.3*	1.87 ✓
	Waste + 5%	0.09 ✓
		1.96 ✓
	<u>Labour</u>	
	Bricklayer 0.15 Hr @ £14.75	2.21 ✓
	Labourer 0.075 Hr @ £9.35	0.70 ✓
* Note this is a rate where candidates may miss the need to convert a m ² material price to a m.lm. price for a 300mm strip.		
	Total	£ 4.87 ✓



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Brickwork and blockwork together with associated substructure work for 250 new dwellings

Estimating - Preliminaries Calculation Sheet

Item No 1/1(g)	Description Fixed price contract (fluctuations)	
	Preliminaries (incl. material handling)	583,199.40
	Measured work	4,495,612.82
	Nett value of works	<u>5,078,812.22</u>
	5% increase in construction costs in last quarter - Assuming rate of inflation remains the same.	
	Start 30th Sept i.e 5 months from completion of estimate or complete 17 months from date of tender. 5% per Q = 20% P.A. or $20\% \times \frac{17}{12}$ or 28.33% by complete. Therefore assume 4.165% mid point period.	
	$\underline{5,078,812.22} \times 14.165\%$	719,413.75
	Note - candidates may make other (justified) judgements but this is the basic calculation based on the raw data.	
	Total	£ 719,413.75

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Brickwork and blockwork together with associated substructure work for 250 new dwellings	
Estimating - Preliminaries Calculation Sheet	
Item No	Description
1/1(j)	Materials distribution
Contract period 52 weeks.	
Assuming a telehandler and driver are required for the full contract period. (assuming 37 hour weeks)	
Telehandler 52 weeks @ £288.00	14,976.00 ✓
Driver 52 weeks x 37 Hrs x £12.85	24,723.40 ✓
Note - candidates may make other appropriate assumptions but this is the calculation in its most basic form.	
Total £ 39,699.40 ✓	



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Item	Description	Quantity	Unit	Unit Rate	Total £ p
Preliminaries					
(a)	Site management and supervision	Item			70,000.00
(b)	Temporary services	Item			5,000.00
(c)	Site accommodation	Item			55,000.00
(d)	Temporary fencing and gates	Item			18,000.00
(e)	Site security	Item			52,000.00
(f)	Temporary hardstandings and parking	Item			8,000.00
(g)	Fixed price contract (fluctuations)	Item			719,413.75
(h)	Employers accommodation	Item			9,000.00
(i)	Insurances	Item			21,500.00
(j)	Materials distribution	Item			39,699.40
(k)	Contract bond	Item			5,000.00
(l)	Scaffolding	Item			300,000.00
To final summary					1,302,633.15
					£

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Item	Description	Quantity	Unit	Unit Rate	Total £ p
Measured Work					
	5.6				
(a)	Bulk excavation not exceeding 2m deep	5,250	m ³	2.26	11,865.00
(b)	Foundation excavation commencing at reduced level not exceeding 2m deep	6,150	m ³	12.83	78,904.50
	5.7				
(c)	Extra over all types of excavation for breaking up rock (provisional)	250	m ³	114.70	28,675.00
	5.9				
(d)	Disposal of surplus excavated material off site	11,400	m ³	8.50	96,900.00
	11.1				
(e)	Mass concrete C30P in trench filling poured against earth	4,613	m ³	92.67	427,486.71
	14.1				
(f)	½ brick wall, stretcher bond, in skins of hollow walls, type A facings, vertical, laid in coloured cement, lime, sand mortar (1:1:6) pointed with a neat tooled joint as the work proceeds	26,750	m ²	55.84	1,493,720.00
(g)	One brick wall, English bond, in type A facings, vertical, laid in coloured cement, lime, sand mortar (1:1:6) pointed with a neat tooled joint to both sides as the work proceeds	3,542	m ²	108.85	385,546.70
(h)	½ brick wall, stretcher bond, in skins of hollow walls, type B facings, vertical, laid in coloured cement, lime, sand mortar (1:1:6) pointed with a neat tooled joint as the work proceeds	3,166	m ²	61.60	195,025.60
(i)	One brick wall, Flemish bond, in type B facings, vertical, laid in coloured cement, lime, sand mortar (1:1:6) pointed with a neat tooled joint to both sides as the work proceeds	625	m ²	125.25	78,281.25
				To Collection	2,796,444.76
				Page 2/3	£

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Item	Description	Quantity	Unit	Unit Rate	Total £ p
Measured Work (continued)					
14.1 (continued)					
(a)	½ brick wall in commons in cement mortar (1:3)	333	m ²	33.14	11,035.62
(b)	One brick wall in commons in cement mortar (1:3)	625	m ²	63.46	39,662.50
(c)	140mm insulation blocks, in skins of hollow walls, type A, laid in cement, sand, lime mortar (1:1:6), vertical	20,083	m ²	28.72	576,783.76 ✓
(d)	190mm dense concrete blocks, type B, laid in cement, sand, lime mortar (1:1:6), vertical	2,792	m ²	32.10	89,623.20
(e)	100mm concrete blocks, type C, laid in cement, sand, lime mortar (1:1:6), vertical	28,375	m ²	16.90	479,537.50
14.7					
(f)	Extra over type A facings for flush ornamental band (soldier course), 225mm wide in type B facings	1,458	m	6.13	8,937.54
(g)	Brick on edge coping in type B facings, horizontal laid in coloured cement, lime, sand mortar (1:1:6) pointed with a neat tooled joint as the work proceeds	708	m	16.27	11,519.16 ✓
14.14					
(h)	Forming cavities in hollow walls 75mm wide with 5No stainless steel double triangular wall ties per m ²	20,916	m ²	2.35	49,152.60 ✓
14.15					
(i)	Cavity wall insulation type D1 75mm built in as the work proceeds	20,916	m ²	13.23	276,718.68 ✓
(j)	14.16				
	Pitch polymer damp proof course width not exceeding 300mm, horizontal. Single layer	17,750	m	4.87	86,442.50 ✓
					To Collection
					1,629,413.06 ✓
					Page 2/3
					£

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To Collection
1,629,413.06 ✓
Page 2/3
£



Item	Description	Quantity	Unit	Unit Rate	Total £ p
Measured work (continued)					
	14.25				
(a)	Pressed steel lintel 2400mm long	333	No	57.84	19,260.72
(b)	Pressed steel lintel 1350mm long	1,458	No	34.66	50,534.28
	Carried to collection				£ 69,795.00
Collection					
	From page 2/1				2796,404.76
	From page 2/2				1,629,413.06
	From page 2/3				69,795.00
				To final summary	4,495,612.82
					£

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Item	Description	Quantity	Unit	Unit Rate	Total £ p
Prime cost and provisional sums					
(a)	Include the provisional sum of £625,000.00 for design and installation of PCC flooring	Item			£625,000.00
(b)	Include the provisional sum of £50,000.00 for stone plaques	Item			£50,000.00
(c)	Include the provisional sum of £450,000.00 for architectural stonework	Item			£450,000.00
(d)	Include the provisional sum of £15,000.00 for feature brickwork	Item			£15,000.00
(e)	Include the provisional sum of £100,000.00 for contingencies	Item			£100,000.00
(f)	Include the provisional sum of £50,000.00 for builders work in connection with services	Item			£50,000.00
(g)	Include the prime cost (PC) sum of £275,000.00 for ground stabilisation works	Item			£275,000.00
(h)	Add for main contractors profit	%		2.5%	6,475.00
(i)	Add for attendance	Item			£7,500.00
To final summary					£ 1,579,375.00

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Item	Description	Quantity	Unit	Unit Rate	Total £ p
Final Summary					
	Preliminaries from page 1/1				1,302,113.15 ✓
	Measured work from page 2/3				4,495,612.82 ✓
	PC and Provisional Sums from page 3/1				1,579,378.00 ✓
	Sub Total (estimated total cost)				7,376,600.97 ✓
	Add overheads and profit (overhead rate 8.5%).	Item	Say	18.5%	1,364,671.18 ✓
	Sub Total				8,741,272.15
	Director's adjustment (by estimate based on risk analysis, company needs & aspirations). +/-				
	Final Total (carried to Form of Tender)				£
	Say				
①	£7,520,000.00 (absolute minimum acceptable).				
②	£9,589,581.00 (maximum acceptable)				

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- ① only 5% fluctuation + 8.5% oh & p.
- ② include 30% oh & p.



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