UMS
Awarding GCSE Mathematics

INTRODUCTION

UMS stands for Uniform Mark Scale. The Uniform Mark Scale is used to convert candidates' component 'raw' marks into uniform marks. This is done in order to standardise marks from year to year. For example, a candidate who just achieves an A in a unit one year will receive the same uniform mark as a candidate achieving that same level the following year, regardless of their raw marks.

THE CONVERSION PROCESS

Raw marks to Grades

Following the marking of scripts, a committee of senior examiners reviews the quality of the work submitted for each individual paper. Using their professional judgement, and statistical and technical evidence, they decide where to set the raw mark grade boundaries for each paper. Table 1, as an example, shows possible raw mark paper boundaries for Mathematics units .

Table 1

Unit	Max Raw Mark	Raw mark boundaries							
		A*	A	B	C	D	E	F	G
5507	48	43	37	31	26	22	18	14	10
5508	38					27	19	12	5
5509	38			27	21	13	5	1	
5510	38	29	22	15	8	4			
5511	38					26	19	13	7
5512	38			27	21	13	5	1	
5513	38	32	24	16	8	4			
5521	200					168	134	100	66
5523	200			176	150	126	104	93	
5525	200	180	160	140	120	110			
5534	124					104	82	62	42
5536	124			110	94	78	62	54	
5538	124	112	100	86	74	68			

The table shows that the minimum raw mark required to obtain each grade can vary between units, even when they are marked out of the same total. It should be noted that D in the higher tier, and F in the intermediate tier are used only in the conversion of raw marks to uniform marks and will not be published.

Raw Marks to Uniform Marks

The raw mark grade boundaries and all the candidates' raw marks are entered into Edexcel's computer. The computer converts the raw marks into uniform marks.

The whole GCSE is out of 600 uniform marks. These uniform marks are divided between the contributing units in a manner than reflects their weighting. For example unit 5507 contributes 20% of the GCSE and so represents 20% of the 600 uniform marks, namely 120 uniform marks. However, as GCSE Mathematics is tiered, it is only the Higher tiered units, and coursework, which carry the maximum uniform marks. The Intermediate tier, where the highest grade available is a B, carries a maximum uniform mark of 479. Foundation tier, where the highest grade available is a D, carries a maximum uniform mark of 359. This ceiling also applies to individual units.

The uniform grade boundaries for each unit are fixed and are shown in Table 2.

Table 2

Unit and percentage contribution		Tier	Maximum UMS	UMS boundary at each grade							
				*A	A	B	C	D	E	F	G
5507	20%	Untiered	120	108	96	84	72	60	48	36	24
5508	15%	F	53					45	36	27	18
5509	15%	I	71			63	54	45	36		
5510	15%	H	90	81	72	63	54	50			
5511	15%	F	53					45	36	27	18
5512	15%	I	71			63	54	45	36		
5513	15%	H	90	81	72	63	54	50			
5521	80%	F	287					240	192	144	96
5523	80%	I	383			336	288	240	192	168	
5525	80%	H	480	432	384	336	288	264			
5534	50%	F	179					150	120	90	60
5536	50%	I	239			210	180	150	120	105	
5538	50%	H	300	270	240	210	180	165			

It is important to note that the scaling is not a single linear scale of maximum raw mark to maximum uniform mark. This is because the intervals between consecutive raw mark grade boundaries are not necessarily constant. The intervals between the raw mark boundaries may vary but they are fixed for the uniform marks.

The Conversion to Uniform Marks Illustrated

The conversion below uses unit 5507 as an example. Table 3 shows the raw marks and the uniform marks. These marks have been taken from Table 1 and Table 2.

Table 3

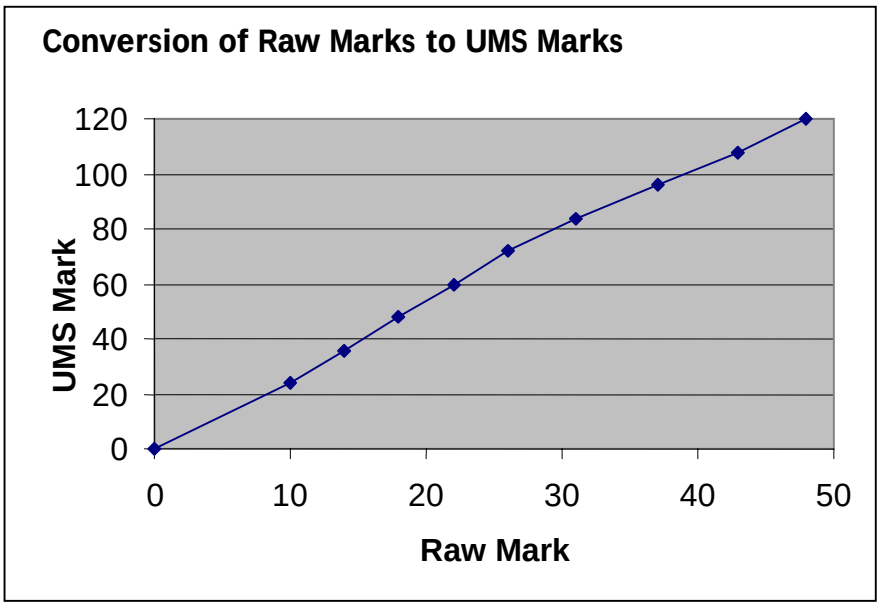
	Maximum Mark	Boundary at each grade							
		A*	A	B	C	D	E	F	G
Raw Mark	48	43	37	31	26	22	18	14	10
UMS Mark	120	108	96	84	72	60	48	36	24

Graph 1 shows the pairs of marks plotted with the raw mark on the horizontal axis against the uniform mark on the vertical axis. Straight lines join adjacent points. The line connecting the points for Grade A* and Grade A is extended to give the raw mark at which the maximum 120 uniform marks is reached.

For any raw mark, the uniform mark can be read off the graph. A candidate who achieves between 43 and 48 raw marks will achieve between 108 and 120 uniform marks, between 37 and 42 raw marks would give between 96 and 107 uniform marks and so on.

If extending the line connecting the top two grades - A and A* (on the higher tier and non-tiered units), C and B (on the intermediate tier) and E and D (on the foundation tier) - results in the maximum raw mark converting to less than the maximum uniform mark then this extension is not used. Instead, a point is plotted of maximum raw mark against maximum uniform mark. A straight line is drawn from Grade A*, Grade B, and Grade D for the higher, intermediate and foundation tiers respectively, to this point. The resulting line is used to read off the uniform marks in this range.

Graph 1



MAKING THE AWARD

Table 4 shows the number of uniform marks required to achieve each grade. Like the unit boundaries, these are also fixed.

Table 4

Grade	Uniform Mark Boundaries		
	Foundation Tier	Intermediate Tier	Higher Tier
A*			540
A			480
B		420	420
C		360	360
D	300	300	
E	240	240	
F	180		
G	120		

For a GCSE Mathematics award the uniform marks from each of the units are simply totalled to give a final subject mark (assuming eligibility rules are satisfied).

Examples

Using the earlier examples of raw grade boundaries, these examples show how candidates' raw marks for each unit convert to their overall qualification grade:

Table 5 – GCSE Mathematics 1388 (Foundation Tier)

Unit	Raw Mark	UMS Mark
5507	27	74
5508	17	51
5511	9	43
5534	61	89
Total UMS		257

5507: A raw mark of 27 falls within the C range. The number of uniform marks available in this range are: 72-83. 27 raw marks convert to 74 uniform marks.
5509: A raw mark of 17 falls within the D range. The number of uniform marks available in this range are:45-53. 17 raw marks convert to 51 uniform marks.
5512: A raw mark of 9 falls within the E range. The number of uniform marks available in this range are: 36-44. 9 raw marks convert to 43 uniform marks.
5534: A raw mark of 61 falls within the G range. The number of uniform marks available in this range are: 60-89. 61 raw marks convert to 89 uniform marks.

Totalling the uniform marks achieved in each unit gives 257 uniform marks. Reading off from Table 4, it can be seen that this candidate will be awarded a Grade E in Mathematics.

Table 6 – GCSE Mathematics 1388 (Intermediate Tier)

Unit	Raw Mark	UMS Mark
5507	33	88
5509	17	51
5512	9	43
5536	70	135
Total UMS		317

5507: A raw mark of 33 falls within the B range. The number of uniform marks available in this range are: 84-95. 33 raw marks convert to 88 uniform marks.
5509: A raw mark of 17 falls within the D range. The number of uniform marks available in this range are: 45-53. 17 raw marks convert to 51 uniform marks.
5512: A raw mark of 9 falls within the E range. The number of uniform marks available in this range are: 36-44. 9 raw marks convert to 43 uniform marks.
5536: A raw mark of 70 falls within the E range. The number of uniform marks available in this range are: 120-149. 70 raw marks convert to 135 uniform marks.

Totalling the uniform marks achieved in each unit gives 317 uniform marks. Reading off from Table 4, it can be seen that this candidate will be awarded a Grade D in Mathematics.

Table 7 – GCSE Mathematics 1388 (Higher Tier)

Unit	Raw Mark	UMS Mark
5507	42	106
5510	29	81
5513	16	63
5538	82	200
Total UMS		450

5507: A raw mark of 42 falls within the A range. The number of uniform marks available in this range are: 96-107. 42 raw marks convert to 106 uniform marks.
5510: A raw mark of 29 falls within the A* range. The number of uniform marks available in this range are: 81-90. 29 raw marks convert to 81 uniform marks.
5513: A raw mark of 16 falls within the B range. The number of uniform marks available in this range are: 63-71. 16 raw marks convert to 63 uniform marks.
5538: A raw mark of 82 falls within the C range. The number of uniform marks available in this range are: 180-209. 82 raw marks convert to 200 uniform marks.

Totalling the uniform marks achieved in each unit gives 450 uniform marks for the subject. Reading off from Table 4, it can be seen that this candidate will be awarded a Grade B in Mathematics.