# Subject VA Grid spreadsheet for Jun '18 using 2018 Transition Matrices – detailed notes

SUMMARY	1
WHAT'S NEW IN THIS VERSION (V11 - JAN '19)	2
WHAT'S NEW IN THIS VERSION (V10 - JAN '18)	3
WHAT'S NEW IN THIS VERSION (V9 - JAN '17)	3
OVERVIEW	5
INTRODUCTION	6
Transition matrices (TMs) School exam data-checking datafiles ("Forvus")	6 6
USING THE SUBJECT TRANSITION MATRICES (TM) GRID SPREADSHEET	6
Preparation Using the Subject TM Grid workbook (combination of spreadsheets) The sheets within the Subject VA Grid workbook	6 7 7
HOW TO INTERPRET THE INFORMATION	12
How is the school subject data compared with national subject data Why do are the cumulative graphs used? Interpreting the graphs Using the supplied blank template Worked example	12 14 14 15 15
HOW TO ANALYSE THE INFORMATION	15
Averages (see Front Panel on spreadsheet and Overview on p.2-3) National entry patterns Significance and other estimates The "cumulative difference" grid itself	15 17 18 18
NATIONAL TRANSITION MATRICES - LOCATION???	19
KS2 PRIOR ATTAINMENT	20
PROGRESS 8 KS2 PRIOR ATTAINMENT	20 20 21
DISCLAIMER	22

Instructions on how to use the spreadsheet are on page 5 "Using the Subject Transition Matrices (TM) Grid spreadsheet". There is a separate spreadsheet available from the ASCL website to analyse the Progress 8 information.

## Summary

A powerful Subject value-added (VA) Grid can be calculated by combining RAISE (DfE/Ofsted) Transition Matrices for subjects with the existing pupil-



level data already produced for each school by DfE for the Forvus exam result data-checking exercise each October. A Subject VA Grid spreadsheet to do this has been developed by the ASCL Data group, and is available from the ASCL website. At a glance (using the familiar RAISE convention of green = "good" / blue = "under", you can see for each of the main GCSE subjects how your school has performed against national by each KS2 sub-level. This Grid format facilitates a detailed discussion,.

### What's New in this version (v11 - Jan '19)

- 9-1 grading in almost all but A\*-G in a few: The spreadsheet automatically adjust itself according to whether a "9-1" GCSE or a "A\*-G" GCSE is selected - see red rings below
- The GCSE pt score figures are also calculated using the appropriate points scale depending on whether 9-1 or A\*-G







- Breakdown by All pupils / Male / Female / Disadvantage / Nondisadvantage for all subjects - DfE has this year published national TMs with a breakdown in each of the above categories which is really helpful in seeing what is happening at a subject level. The spreadsheet compares those in each category at your school with the comparable national figures
- **Combined Science** although the TMs are supplied on 17 point scale this spreadsheet sticks to 9-1 grid and has UPPER grade and LOWER grade (which may be the same). So if the awarded grade is 7-6, then the Upper grade is 7 and Lower is 6; if the awarded grade is 7-7, then the Upper grade is 7 and Lowe r is 7. Note that the Ofqual "anchor points" are set at 7-7, 4-4 and 1-1, so use the Lower grade grid for comparison, as 4 in the Lower grid equates to 4-4 and 5-4 but not 4-3.
- Splitting Combined Science in the datafile: however, it does require splitting the Combined Science column into two separate columns with single grades. make a copy of the column and paste it in at the right-hand end.



L

r

ıI.

• Highlight the column. Data > Text to Columns > Fixed width and put the splitter between the two values. Then adjust the headings. You may wish to use the filter option to put a U in both columns

### What's New in this version (v10 - Jan '18)

- 9-1 grading in GCSE Eng and Maths but A\*-G in others has led to adaptation of the grids (and also looking ahead to 2018 when almost all, but not entirely, others will become A\*-G)
- The spreadsheet automatically adjust itself according to whether a "9-1" GCSE or a "A\*-G" GCSE is selected - see red rings below



- The GCSE pt score figures are also calculated using the appropriate points scale depending on whether 9-1 or A\*-G
- Breakdown by All pupils / Male / Female / Disadvantage / Nondisadvantage for all subjects
- DfE have now taken direct responsibility for the TMs as RAISE has been stopped and website no longer exists. They are now published under Guidance on DfE Performance Tables website The first set of TMs will include a gender breakdown as well as figures for all pupils this spreadsheet enables a school's results by gender to be analysed against national figures disaggregated by gender. For June 2017 both gender and disadvantage were both published together in January 2018



For national figures, choose national GCSE

English

subject and gender from dropdowns below

national Transition Matrix Type: KS2-4 Subject TMs

Disadvantage grids will be published later after the Performance Tables appear in January.

### What's New in this version (v9 - Jan '17)

- A gender analysis option has been added now that DfE have published the Transition Matrices for June 2016 for all / female / male pupils. These are included as a tab "2016 TMs" within the spreadsheet.
- The spreadsheet uses the same DfE Checking file as issued for Progress 8, ensuring consistency of analysis
- However, care is needed to distinguish between Progress 8 KS2 prior attainment and the "old" (sub-Level based) input to TMs. Therefore both the KS2



ational GCSE subject selected:

gender: all / female / mai

English fine sc ore and KS2 Maths fine score are explicitly referenced and used.

- At the technical level, the DfE National subject TMs are now published as a single table (see above) which has meant that the formulae within the spreadsheet have been re-written, but it has reduced the overall number of tabs.
- A blank template has been provided to copy over the results for each subject into a separate tab, enabling a single spreadsheet to have all the subjects for a school. Grouping the tabs makes it easy to print them all as a pdf for distribution **tip** click on the first tab, and hold SHIFT whilst you click on the last they will all go white. If you then print, and select "PDF" you can produce a single document. Right-click and ungroup to separate.

#### **Overview**



### Introduction

### **Transition matrices (TMs)**

A **transition matrix** is simply a grid showing how many pupils in a particular subject began with a certain KS2 sub-level and finished with a certain GCSE grade. Those published in RAISEonline either within individual schools' reports (e.g. for Expected Levels of Progress) or in the Library at a national level, are in the format on the right with the level on the left-hand axis.

It is more familiar in terms of value-added to transpose them so that the "input" (the KS2 sub-level) is on the xaxis and the "output" (the GCSE grade) is on the y-axis (as on the right)

From a school perspective, these are enormously powerful because school improvement within a school is often

managed through a subject / Dept basis, and then down to the individual teacher / class in a subject. To have a method of calculating and displaying Value-Added in this grid format is an extremely useful starting point for the conversations about what can be learnt from the data.

DfE and Ofsted produce Transition Matrices (TMs) for top 30 subjects and for English and Maths. These are available from the RAISEonline Library.

In the of the Subject Transition Matrices Grid Spreadsheet, these National TMs have already been downloaded and saved into the spreadsheet, so that you do not have to do this. It does mean though that you must use the correct version of the spreadsheet to be comparing the data with whichever year you want to do the comparison.

### School exam data-checking datafiles ("Forvus")

A pupil-level datafile is produced for each school by DfE for the Forvus checking exercise in September / October (and then updated for the publishing of the Performance Tables in January). The official DfE data checking website is https://tableschecking.education.gov.uk There is a secure login protection.

### Using the Subject Transition Matrices (TM) Grid spreadsheet

### Preparation

### 1. Download school data from DfE Checking website

Schools should download their data (as a .csv file). This .csv file should then be saved as an Excel file for convenience.

Within the spreadsheet there is a tab "sch\_data" for your data, and where initially 200 pupils (anonymised) are supplied for practice, but this should be replaced by your own school data for actual use.



The names of the first columns (from column A

G	CSE_s	ubje	ct_VA_0	GRID_1	or20	۱2_۱	/8c-	26ja	n13.	xls:1																																					-			Ð
A	BCD	E	GH	IJK	LM	N O	PQ	B	ST	U	1	1.90	X Y	ZA	AAB	AC	AD	AE I	AF A	GAH	AI A	JAK	ALAM	ANAC	APA	OAR	AS A1	AU A	V AV	/ A3	AY A	ZBAB	BB B	с во	BE B	FBGI	H BI	BJBK	BLB	BNE	OBPI	BQBI	RBS	STBU	BVBV	BX B	BZC	CBC	сср с	ðЕ
Candidate Number	1. doloto thir tar 2. roloct datafilo laft groj	all the t data all data (by clic //guara	in your ou king on top to the left 2 U U	DRE T	SEN Ir the pupil eliqible far F	lr the pupil lanked after Ir the pupil diradvantee	EAL Graup KS2 Print Band	Student's ethnicity	Doprivation indicator - Did the pupilioin uithin	Porfarmance Category	Could Book	English & mathe GOSE	Expected Pragrazz Eng Expected Pragrazz Ma	5+ A*-OindEM - GOSE	GOSE Entrier	Total Paint Scare	Capped Paint Scare	Tatal GCSE paintroare	Capped GUSE paintree Febru Faelick FReed	Entry Mathr EBace	Entry Science EBace Entry Humanition EBac	Entry Lanquage EBace	Entry ALL EBace Achieved English EBac	Achieved Mathr EBace Achieved Science EBa	Achieved Humanitian E	Helnevea Language EB KS2 English PS	KS2 Mathr PS KS2 Science PS	KS2APS (winq fine qr core long to polo lyour		KS2 English PS deviati	KS2Mathr PS doviatio Capped paintrane (VA	English Banur	Mathe Banur Cappodircaro + banuro	English EBace PS (VA)	Mathr EBace PS (VA) Seisnes EBace PS (VA)	Humanitiar EBacePS(	Lanquage Ebace PS (7 KS2-4 prodicted PS fm	Bort 8 VArcare KS2-4 prodicted PS fa	"EBaceEnglish" Warcar KS2-daradistad PS fm	EBaceMathr <sup>1</sup> VAzarra	EBaceScience' "Area"	KS2-4 prodicted PS fm *EBace Humanitian 'VA	KS2-4prodictodPS fia	"EBaceLanguage" VAr- BASIO1Literacy	BASIC1Numeracy BASIC2Literacy	BASIC2 Numeracy BT01051 Applied Science	BTC1054 Porfarming A EL& Humanition: Single	ELQ Warking W Others GOSE ArthDox Fine Ar	GOSED&T Graphic Pra GOSED&T Praduct Day	GCSEURI Freduction
		F \$\$	<b>\$\$</b> 15		N 0	0 0	1 1	WBR	0 0	Level 2	+EM	Y	1 1	1	10	437 3	377									0	0 0	0 1		0	0	46	46 46	9														-	A	
		M \$\$	\$\$ 15		N 0	0 0	2 4	WBR	0 0	Level 2				1	10	355	314									0	0 0	0		0	0	40	34 38	18														1	۱	
		M \$\$	\$\$ 15		N 0	0 0	2 2	WBR	0 0	Level 2				1	1	411	332									0	0 0	0		0	0	40 3	34 40	16																
		F \$\$	<b>\$\$</b> 15		N 0	0 0	1 3	WBR	0 0	Level 2	+E1 1	( 7	1 1	1	10	442 :	362									0	0 0	0 1		0	0	46	46 45	4																
		F \$\$	** 15		N 0	0 0	1 2	WBR	0 0	Level 2	+ E1 1	1 1	1 1	1	0	491	428									0	0 0	0 1		0	0	52 5	58 53	18																
		F ##	±± 15		<b>A</b> 1	0 0	1 2	WRR	0 1	1+1 om	41				4	75	75									0	0 0	0 .		0	0	34 3	28 13	7										P						

					U	G	F		E	D	С	В		A	<u>A*</u>
∆tta	nin	mer	nt at	Endo	f KS4										
			n un	2/10/0	U	G	F		E	D	С	В		A	A*
			В		49	129	185	12	6	86	45	34	1	9	7
N			N		49	129	185	12	6	86	45	34	1	9	7
ŝ			2		49	129	185	12	6	86	45	34	1	9	7
5			30	0	26	93	183	17	5	120	55	22		8	4
2			3t	)	27	163	331	41	9	340	178	44	2	8	8
uj +			3a	3	43	273	623	96	3	949	555	121	5	0	14
ş			40	0	67	329	975	1,86	3 2,	686	1,895	419	12	1	40
è.			41	)	76	354	1,090	2,85	8 5,	269	5,162	1,717	42	9	132
2			4a	3	45	257	905	2,75	4 7,	215	10,052	4,859	1,75	2	470
ta ta			50	0	38	124	374	1,47	3 5,	401	11,119	9,358	5,27	9	1,684
Æ			5t	)	9	36	101	38	8 1,	860	5,748	8,172	8,26	0	4,874
			- 5a	а –	0	0	3	1	1	54	267	668	1,40	2	1,817
						note tra	ansposin	g to get	INPUT	on x-	axis, OUT	PUT on )	/-axis		Total
*	Π	7	7	7	4	8	14	40	132	470	1,684	4,874	1,817	*	9,064
Α	T	19	19	19	8	28	50	121	429	1,75	2 5,279	8,260	1,402	Α	17,386
В	T	34	34	34	22	44	121	419	1,717	4,85	9 9,358	8,172	668	В	25,482
С	T	45	45	45	55	178	555	1,895	5,162	10,05	52 11,119	5,748	267	С	35,166
D	T	86	86	86	120	340	949	2,686	5,269	7,21	5 5,401	1,860	54	D	24,152
Е	T	126	126	126	175	419	963	1,863	2,858	2,75	4 1,473	388	11	Ε	11,282
F	tt	185	185	185	183	331	623	975	1,090	905	374	101	3	F	5,140
G	tt	129	129	129	93	163	273	329	354	257	124	36	0	G	2,016
U	tt	49	49	49	26	27	43	67	76	45	38	9	0	U	478
	1	в	Ν	2	3c	3b	3a	4c	4b	4a	5c	5b	5a		130,16
Tot		680	680	680	686	1538	3 5 9 1	8 3 95	17.087	28.30	34.850	29.448	4 222		130 166
		:000				1,000	1 01001	,		1 20,00	10 : 04,050		-,		

onwards ) are the same for all schools, but the exam results data column headings after that initial section vary from school to school.

### 2. One-off operation to copy your own school data into the main TM spreadsheet

- delete all the contents of this test data in "sch\_data" (by clicking on top-left grey square to the left of A and above 1 to select the whole sheet – it all goes blue)
- 2. select all data in **your own school datafile** (by clicking on top-left grey square)
- 3. Copy.
- 4. Then Paste Special Values into this sheet "sch\_data" using top-left grey square

	<b>B</b> ) (	GCS	E_su	ıbje	ct_V	A_G	RID_for20	12_	/8c-	26ja	n13.	xls:1						
		Α	В	С	D	Е	F	G	Н	Ι	J	К	L	М	Ν	0	Ρ	Q
		R												Ϋ́				
		$\setminus$	1. d	elete	e all t	the c	ontents of t	his <b>f</b>	est	da	ıta							
П			2. s	elect	t all o	lata	in your ov	/n da	atafile	(by	click	ing o	on to	o-left	arev	squa	areto	
		L	the	left o	f A a	ind a	above 1)											
H		- Pe	3. C	opy														
		Ē	4. T	hen	Pa	ste S	pecial - Va	lues	into	this s	shee	t usi	ng th	e sq	uare	in to	p-left	E
		late	<u>=</u>	ne	E	-			_		⊃			₹	Ħ	¥	ē	ē

5. Save the main spreadsheet, perhaps with a new name. You may also find it helpful to print the sheet with Row Headings displayed so you have a convenient record of which subject is in which column.

### Using the Subject TM Grid workbook (combination of spreadsheets)

The school data and the National TM data are contained within the overall workbook / spreadsheet which brings all the data together

- there are **7** individual tabs
- i) Intro, ii) Front Panel, iii) sch\_data, iv) grid, v) VA, vi) graphs, viii) 2016 KS2-4 TMs

### Check in the Front Panel that:

- cell L3 says "KS2 English point score" (cell K3 will say "ar", to indicate that in sheet "sch\_data", the KS2 English point scores are in column AR
- cell L4 says "KS2 Maths point score" (cell K4 will say "as", to indicate that in sheet "sch\_data", the KS2 Maths point scores are in column AS
- cell  $\overline{K6}$  say "e", to indicate that in sheet "sch\_data", the genders are in column E
- cell H7 says GCSE \_\_\_\_\_ (controlled by cell K5) and matches the subject chosen in the National TMs, displayed in cell AA5
- cell AA5says "All / Female / Male" depending on which gender analysis you wish

1		GCSE_subject_VA_0	GRID_1	or 20	)16 usi	ng 20	16 TN	1s_v90	d- 31d	ec16.x	lsx:2																				
		A	BC	D	Е	F	G	Н	1	J	K	L	М	N	0	Ρ	Q	R S	Т	U	V	W		X	Y	Ζ	AA	AB	AC	AD	A
2	1	Front Pan	el			A	NAL	.YS	IS C	)F G	cs	EG	RA	DES	5 - 3	κxx	Sc	hoo	ol -	JU	NE	20 <sup>-</sup>	16 (	wit	h 20	)16	TMs)				
	2	(3d - as at 31 dec 16					0	nly ch	ange o	ells in	red		refe	eren	ces	for g	rids						For	nat	iona	l figu	ures, d	noose <b>n</b>	ation	al GC	SE
	3	chool data pasted i	nto sl	neet:	'sch_da	ita'l (	col. fo	r x-ax	is (KS	2 En)	ar	KS2 I	English	point	score			R	ows				sub	jec	t and	gend	ler from	dropdov	wns belo	W	
5	4	Columns				c	ol. fo	r x-ax	is (KS	2 Ma)	as	KS2 r	nathen	natics p	oint s	:oredat	a - Fir:	wor #	2		n	ationa	al Trar	nsition	Matrix	туре	KS2-	4 Subj	ject TN	/Is	
-	5		co	l. foi	ry-axi	s (sc	hool	GCS	Esub	ject)	db	GCS	E Englis	shLang	juage	dat	a-La:	st row	401	n	atio	nal	GCS	SE su	bject s	elected	Eng	lish			
	6						_	col	for ge	ender	е	ľ				F	leadin	g row	1			9	gende	er: all	/ femal	e / mal	e <mark>All p</mark>	upils			A

### The sheets within the Subject VA Grid workbook

There are over **8** individual sheets

i) Intro, ii) Front Panel, iii) sch\_data, iv) grid, v) VA, vi) graphs, vii) Level\_Prog
 viii) KS2-4 TMs Lookup and other linked sheets from the National TMs \*\*
 the 4 underpinning ones are displayed in the screen shot below:



- 1. The sheet "intro" contains a text box summarising these instructions
- 2. The sheet **"grid"** has a grid with formulae which are highly flexible and allow all kinds of comparisons, but the top one is against average KS2 score. The numbers in the grid refer to the numbers of pupils at the example school gaining a particular GCSE grade in a specified subject (e.g. GCSE English).



The data is obtained automatically from the "**sch\_data**" sheet. You need to enter the column names etc in the red

cells or Front Panel (green on yellow). For example, GCSE English is in column CJ (and ave KS2 score in col AU, etc), so this is specified, as are the first and last rows of pupil data (2 to 401).

The grid lower down the table enable you to compare a particular subject with: another subject

You will need to make sure the correct columns are entered in cells AF4-6. The cell contents corresponding to the columns entered are displayed in blue as a check.

3. The sheet "VA" contains 16 grids which bring together the national info for the specified subject and that for the subject within the school itself. The top-left corner is displayed as that shows which subject has been selected for the national figures and for the school's figures

	g Trai	sition M	Aatrice:	for Su	bject Va	alue-Ad	ded			wat	ten Money H	"									<u> </u>																										DA	01
		only cl	nange o	ells in	red			refere	ences fo	or grids					l		exar	npie	scn	001	_																											
use "K! Call re	S2-4 1	Ms Lo M Bor	okup" : 	sheet t	o selec	t subje	ct file	name	KS2-4	1 TMs To	aol downk	loaded from I	Risele	.ct sch	iool s	ubject	n "gri	r C	CSE I	Frenc	:h	_	- r				-1.14						-				$ \vdash$			4:66.	oros			ho		_		٦÷
nv cou	nt sta	rt 7	ì	ATSch	e air		ran	name	035411			-stg				5	cho	ol ac	tual					- tal	S tina i	cno		In I	ne i	file	umbe	ions r in ea	ll Ich cei	.							erer	lee	: 50	ino.				
H , I				Fren	ch			n	atio	nal	DIF			- us	e this	to ca numbe	culat rs of	entry grades	profil at su	le byt ib-lv	otallin	9	L	s	ıb-lev	el tot	al fro	m se	hool	<b>.</b> % e	ach gr	ade al	sub-l						uan	. "		me	wit		au	ions 		
	no	te trans	posing	to get I	NPUT		sup	olied T	ransit	tion ma	trices	-	۱L,	- num	bers	read	rom	grid" t	ab whi	ich re	ads fro	m		N	B. th	ese a	re cal	culat	ed nu	mber	s and	so ma	g not	-			L."		a set		-	iaceu	440	Let's	s and		11. 1	-
-	lor	x-ans,		T On g	ans				_		Total	1										Tota												Total		1.21								_				T
A	,	2 7	4	8 23	59	49 1	2 474	1,684	4,874	1,017	9,054 A 17,385		A	0	0 0	0	0	0 3	9	11	0	A 22	A			0	1 0	10	10	2	6	7	1 A	16		++	0	0	0	0	0	0	0	<u>.</u>	3	-2		A
B	H	4 24	22	44	121	419 1.7	17 4,15	9 9,251	0,172	669 E	B 25,402	1	в	0	0 0	0	1	3 1	8	7	0	B 27	B		0 0	0	0	0	1	7	10	7	0 B	26	2	ЩĬ,	0	0	0	0	1	2	1	1	-2	0	0	в
C	6	45	55	178	555 1	,895 5,1 646 5.2	62 10,05	2 11,119	5,748	287 0	C 15,965		C	0	0 0	0	2	8 1	1 11	3	0	C 27	C	H		0	0	$+\frac{1}{2}$	4	11	12	2	0 0	37		-	0	0		-1		+-3	0		-5	-2	0	C
E	125 1	81 526	175	419	162 1	.\$62 2,5	Fa 2,75	4 1,473	288	11 E	E 11,292		E	0	0 0	0	1	1 0	1	0	0	E 3	Ē		0 0	1	11	1	2	4	2	0	0 E	10	j,	TT	0	0	-1	-1	0	-1	1	4	11	0	0	E
F	185 1	8 185 n Ca	113	331	423	915 LO	90 905	374	101	3 F	5,140 G 2.016		F	0	0 1	2	0	0 1	0	0	0	F 6	F			0	+ 0	+ +	++	1	0	0	0 F	4			0	0		2		1	2	<u>.</u>	0	0	0	F
U		1 49	28	27	40	67 7	45	31	,	0 1	J		U	0	0 0	0	0	0 0	0	0	0	U O	U		0 0	0	0	0	0	0	0	0	0 0	0	į į		0	0	0	Ő	0	0	0		0	Ő	0	U
	••	н 2	30	3b	3a -	4c 4	b 4a	50	5b	5a	158,153		1	e 2 :	3c 31	3a	<b>4</b> c	4b 4	a 50	5b	5a			100 2	2 34	: 3b	3a	40	46	4a	5c	5b	5a			597	2	30	3b	3a	40	41	b 4.	at	5c	5b	5a	
Tot				çin	1,511	un e,	12 0.0	a ( 16,85	8,69	4,822		IN BOSE	To:	0	0 2	2	6	12 2	20	24	2	126	To	<u>(</u>		2	2	6	12	39	30	24	2	126	T		• :	•		0	. 0	0	0		0	0	0	
SEp	t soor	e 25.5	26.8	20.0	30.2	12.6 35	4 31.5	42.5	47.4	52.6	-	ave GCSE	pt scor	e 0	0 20	22	37	36.0 39	23 43	41.5	50	41.62	610	3051 0		20.7	7 30.2	1 32.6	35.34	30.52	42.54	47.37	2.54	40.747	we pt s	ore	0.0	0.0	27.2	13.0	199.4	4 442	6 149	1.5 15	591.5	1116.6	63.4	
	HT				-					+ +		diff f	romna	£. 0.0 1	0.0 -0.	-9.2	4.4	5.4 0.	7 0.5	1.1	<b>5.4</b>	0.0 0.9										-	weight	ed ave			-											
FOF	REA	CH IN	PUT s	sb-leu	el. % g	etting	each	GCSE	grade	,	1		FO	REA	CHIN	PUT :	ub-le	rel. X	getting	g each	GCSE	grade	F	OR E/	ксні	NPUT	sub	level	× 90	tting	each	GCSE	grade			OR	ACI	IINF	'UT s	ub-le	evel, :	% gel	tting	eact	h GC	SE g	rade	
•	H	1%	1%	1%	0%	0% 1	( 2%	5%	17%	43%	Total 7%	4			# 02	0%	0%	0% 3	4 5%	8%	100%	Tota 6%		0	× 0	1%	0%	0%	1%	2%	5%	17%	3%	Total 6%			0%	0%	1/	0%	0%	-12	x p	× 0	0%	-8%	57%	- T
A		3%	t×.	2%	1%	1% 3	6%	15%	28%	33%	A 13%	1	A	Ш÷Ц	. 05	0%	0%	0% 5	4 245	46%	0%	A 17%	A	0	4 0	2/	1%	1%	3%	6%	15%	28%	3% A	13%		di	0%	0%	2%	12	Ŀ/	-35	× 1	%	9%	18%	33%	A
C B	+-+-	7%	3% 8%	12/	15/	5% IU 3% 30	× 1/2 × 365	32/	28%	6% 0	2 20% C 27%	-	C	÷	# 05	0%	33%	8% 36	/ 21/	23/	0%	C 21%	C	0	2 0	125	15	23	30%	36%	32%	28%	6% B	20%	- 5	+++	0%	0%	12%	3/ 15/	11/	-23	/ 0	/	67	1/	167 67	C B
D		13%	17%	22%	26%	2% 3	255	15%	6%	1% 0	D 19%	-	D		# 50	6 0%	33%	44 28	% 295	4%	0%	D 27%	D	0	4 0	225	4 265	325	31%	25%	15%	6%	1% D	19%	- 2		0%	0%	28%	-26%	1%	315	× 35	/ 1	13%	-2%	1%	D
F	++-	27%	26%	22%	17%	2% 6	× 102 × 3/		0%	0% F	Ê 4%	-	F		# 50	< 100%	0%	8% U 0% 8	( 0%	0%	0%	E 2% F 5%	F	0	× 00	22	175	125	6%	3/	4/ 1/	0%	0% E	3%	- i	-	0%	0%	28%	83%	12%	6	× 10	/	1/	0%	0%	F
G		19%	14%	11%	8%	4% 2	4 1%	0%	0%	0% 6	8 2%	-	G		# 05	0%	0%	0% 0	4 0%	0%	0%	G 0%	G	0	4 0	112	8%	4%	2%	1%	0%	0%	0% G	1%	- 2		0%	0%	-11%	-8%	-4%	-25	× -1	% (	0%	0%	0%	G
	tt	2	30	3b	3a -	4c 4	b 4a	50	56	5a	1 02	-	0	2	3c 31	3a	40	4b 4	a 5c	56	5a	0 0.5	0	1	3	31	3a	40	46	4a	5c	56	5a	0.7			2	3c	3b	3a	40	41	b 4.	at	5c	5b	5a	
Tot		100%	909×	191×	191× 1	91× 99	× 900.	1165	999×	100%	100%	1	Tot	•×	ex: 900	× 191×	191×	100% 90	ox 9000	K 900X	500×	***	To	et o	× 0	999	× 900	500	500.0	500/	100×	100%	89%	100%	T	×	<b>₽</b> ×	9×	Ø%	<b>#</b> 22	0%	62	< 0	×	0×	ŧ×	0×	
		-			-	-	-	-						-	÷	070	mpl			-					Ļ.	obe		6 i.a	line		h n a	tion					lati		from		*• ••		- "		d	140		do
															4	CA0	mpi							ND	there			a later	oumt	wit	n na	mon			_		N	R I	101	210.0	alcul	lated	- y	herc	u ,	-75		lue
																								N.D.	erac	tiy ap	pear	to ad	d to t	otal i	n r-h c	ol.	~					agb	e 1.5)	and	so m	ay no	ot ap	ppea	ar to	add		
											ST GC	CSE grade	50		CHIN	PIIT 4	mb la			TIVE			ing A1 F	OR EA	(CH I	NPUT	sub	level	CUN	IULA	TIVE r	umba		ina 61	LEAI	OR	ACH	INF	UT s	ub-le	evel, I	сим	IULA1	TIVE	Enun	nbers	s getti	ng A'
FOF	REA	CH IN	PUT s	ıb-lev	el, CU	MULA	TIVE (	nos ge	tting #	AT LEA	Total	- grade	FU.	REA			up-le	rei, Ci	MULA	TITE	numbe	rs getti										unive	rs gett	Torri				_										
FOF	7 EA	CH IN	PUT s	ıb-lev	el, CU	MULA	TI¥E r z er	ios ge	tting /	AT LEA	Total			R EA	0 0		0	• •		2	numbe	Tota 7	-							1	2	4	i gen	Total 7			0	0	0	0	0	0	0		0	-2	1	- T
FOF	R EA		PUT s	ıb-lev ı	el, CU H	MULA 41 1	TIVE ( 2 - 01 3 - 2,01	ios ge cai	stting <i>i</i> 1,121 1,021	AT LEA	Total - 59,95 A 59,95		A	R EA	0 0 0 0			*	MUL 2 11	2	2 2	Total Total A 29	A			:	•	•	0	1	2	4	1 • 2 A	Total 7 24			0	0	0	0	0	0	0		0	-2	1	A
FOF A B C	9 EA	CH INI	PUTs 4 9 19	nb-leu I N N	el, CU 11 115 741	MULA 41 1 511 2,1	TIVE 1 2 01 3 2,22 21 7,04 4 9,0	105 ge Gat 1 Gat 1 5,81 1 5,81	4tting / 5,821 0,031 21,834	AT LEA 1,012 - 1,210 - A 1,012 - E 1,012 - E	Total • 59,66 A 59,62 B 59,75 C 74,05		A B C	R EA)	0 0 0 0 0 0	0 0 0	0 0 1 3	0 2 0 2 3 1 4 2	MUL #	2 2 20 20 20	2 2 2 2	Total Total A 29 B 56 C 60	A B C			:	• • •	0 0 0 2	0 0 2 6	1 3 10 24	2 9 18 30	4 11 17 22	1 - 2 A 2 B 2 C	Total 7 24 49 05			0 0 0	0 0 0 0	0 0 0	0 0 0	0	0		) ) 1	0 3 1	-2 2 3 1	1 0 0	· A B C
FOI A B C D	R EA	CH IN 7 18 98 99	PUT s	1b-lev 1 11 11 11 11	el, CU 14 15 24 1	MULA 41 1 51 2,1 (81 2,1	TIVE / 8 01 8 1,0 9 7,0 9 9,0 9 9,0	105 ge Gai 15,121 15,121 15,141	etting <i>i</i> 5,024 0,036 22,036 22,036 22,034 23,034	AT LEA 1,00 - 1 1,00 - 2 1,00 - 2 1,00 - 2 1,00 - 2 1,00 - 2 1,00 - 2	Total 59,98 A 59,92 B 59,75 C 76,89 D 6,89		A B C D	R EA)	0 0 0 0 0 0 0 0 0 1	0 0 0 0	0 0 1 3 5	0 3 1 4 2 12 2	MULA 11 1 19 2 24 5 27	2 50 20 23 24	2 2 2 2 2 2	Tota Tota A 29 B 54 C 05 D 117	ABC			* * *	0 0 0 0	0 0 2 4	0 9 2 6 50	1 2 10 24 24	2 9 18 20 26	4 11 17 22 24	1	Total 7 24 49 95 199			0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	0 0 0 0	0 0 0 -1	0 1 1 1 1	0 0 1 -2 2		) ) 1	0 3 1 -4	-2 2 3 1 0	1 0 0 0	A B C D
FOI A B C D E	7 EA	27 11 13 19 19 19 19	PUT s	10-lev 1 11 11 11 11 11 11 11 11 11 11 11 11	el, CU 11 115 201 2,01 1,01	MULA 41 1 511 2 511 2,1 511 2,1 513 1,5 513 4,5 513 4,5	TIVE 1 2 41 3 5,00 4 9,0 4 9,0 10 9,0 10 9,0 10 10,0	105 ge	etting / 6,824 0,884 22,385 22,385 23,385 23,385 23,385 23,385 23,385	AT LEA	Total es,ss A es,ss D es,ss D es,ss E a,ss E a,ss E a,ss		A B C D E	R EA)	0 0 0 0 0 0 0 0 0 1 0 1 0 2	0 0 0 0 0 0 0	0 1 3 5 6	0 3 1 4 2 12 3 13 3 12 3	MULA 11 1 19 5 24 5 37 5 38 5 30	2 50 20 23 24 24 24	2 2 2 2 2 2 2 2 2 2 2 2 2 2	Total 7 A 29 B 56 C 03 D 117 E 128 F 126	A B C D E			* * * 1 1 2	0 0 0 1 1 2	0 0 2 4 5 6	9 9 2 6 50 52 50	1 2 50 24 24 37 39	2 9 18 20 26 37 20	4 11 17 22 24 24 24	1 • 2 A 2 B 2 C 2 D 2 E 2 F	Total 7 24 49 05 199 120			0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 -1 -1 0	0 1 1 1 1 0	0 1 -2 2 1 0			0 3 1 -4 1 1 0	-2 2 3 1 0 0	1 0 0 0 0	A B C D E F
FOI A B C D E F G	1 EA	CH IN 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	PUT s 4 9 10 11 11 11 11 11 11 11 11 11 11 11 11	10-lev 1 11 11 11 11 11 11 11 11 11 11 11 11	el, CU 4 15 20 2,00 2,00 2,00 2,00 2,00 2,00 2,00	MULA 61 5 50 2, 50 2, 50 2, 50 2, 50 2, 50 2, 50 2, 50 6, 50 6, 50 6, 50 5, 50 50 50 50 50 50 50 50 50 50 50 50 50 5	TIVE ( 2 (2) 3 (2,0) 3 (2,0) 4	Care Care Care Care Care Star Star Care Star Care Star Care Star Care Care Care Care Care Care Care Ca	5,824 5,824 5,524 5,525 5,524 5,525 5,524 5,525 5,524 5,525 5,524 5,525 5,524 5,525 5,524 5,524 5,524 5,524 5,524 5,524 5,524 5,524 5,524 5,524 5,524 5,524 5,524 5,524 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,525 5,5255 5,525 5,525 5,525 5,525	AT LEA 1,20 A 1,20 A 1,	Total 99,48 A 99,48 B 99,78 C 74,84 D 90,89 E 93,54 E 93,54 E 93,54 Z 2,84		A B C D E F G	R EA	0 0 0 0 0 0 0 0 0 1 0 1 0 2 0 2	0 0 0 0 0 2 2 2	0 0 1 3 5 6 6	0 5 0 5 3 1 4 2 12 2 13 3 13 3 13 3 13 3 13 3	MUL / 2 11 1 19 5 26 6 27 6 28 9 20 9 28	2 52 20 23 24 24 24 24 24	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Tota Tota A 29 B 54 C 65 D 117 E 128 F 126 G 126	A B C D E F G			0 0 0 1 1 2 2 2	0 0 0 1 1 2 2	0 0 2 4 5 6	0 0 2 6 90 12 10 13	1 2 10 24 37 39	2 9 18 20 26 37 20 28	4 11 17 22 24 24 24 24 24	1 • 2 A 2 B 2 C 2 D 2 E 2 F 2 G	Total 7 24 49 05 120 120 124 125			0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0	0 0 -1 -1 0 0	0 0 1 1 1 0 0	0 0 1 -2 1 0 0	0 0 1 2 1 2 1 0 0 0		0 3 1 -4 1 1 0 0	-2 2 3 1 0 0 0 0	1 0 0 0 0 0	A B C D E F G
FOI A B C D E F G U	TEA	CH IN 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9	PUT s 4 9 10 10 10 10 10 10 10 10	1b-lev 1 11 11 11 11 11 11 11 11 11 11 11 11	el, CU H H 18 201 H 2,531 1,231 H 3,531 H	MULA 41 1 51 5 51 2,3 51 2,5 51 2	TIVE 1 2 01 3 2,00 0 9,0 0 9,0 10 9,0 10,0 10 9,0 10 9,0 10 9,0 10 9,0 10,0 10 9,0 10,0 10,0 10,0 10,0 10,0 10,0 10,0 1	105 ge 1,84 1 6,85 1 8,85 1 8,85 1 8,85 1 8,85 1 8,85 1 8,85 1 8,85 1 9,65 1 9,65 1 9,65 1 9,65 1 9,65 1 9,65 1 9,65	etting / 6,0% 9,3% 1 2,3% 8,3% 8,3% 8,3% 8,3% 8,3% 8,3% 8,3% 8	AT LEA	Total • 55,65 A 55,65 B 55,75 C 76,75 C 76,		A B C D F G U	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 1 0 1 0 1 0 2 0 2 0 2 0 2 30 31	0 0 0 0 0 2 2 2 2 2 3 3	0 0 1 5 6 6 6 6 6	0 3 1 4 2 12 2 13 3 12 3 13 3 13 3 13 3 14 4 15 3 15 3 15 3 15 4 15 4	MULA 11 1 99 5 26 6 37 6 38 9 30 9 38 9 38 9 38	2 50 20 23 24 24 24 24 24 24 24 24 24 24 25 56	numb- 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Tota 7 A 29 B 56 C 03 D 117 E 120 F 126 G 126 U 126	A B C D E F G U			• • • 1 1 2 2 2 2 3	0 0 1 1 2 2 2 3	0 0 2 4 5 6 6 6 6	0 0 2 4 50 52 53 53 45	1 2 10 24 24 24 24 24 24 24 29 29 29 29 29 4 3	2 9 18 30 36 37 20 38 38 38 56	4 11 17 22 24 24 24 24 24 24 24 55	1 * 2 A 2 B 2 C 2 D 2 E 2 F 2 G 2 U 5a	Total 7 24 49 95 120 124 125 125			0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 -1 -1 0 0 0 0 3a	0 0 1 1 0 0 0 0	0 0 1 2 2 1 0 0 0 0			0 3 1 -4 1 1 0 0 0	-2 2 3 1 0 0 0 0 0 0 0 0 5 b	1 0 0 0 0 0 0 0 0 0 0 0	• A B C D E F G U
FOI A B C D E F G U	P EA	CH IN 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	PUT s 4 9 9 9 94 94 94 94 94 94 94 94 94 94 9	nb-lev n n n un un un un un un un un un un un	el, CU 14 15 74 1 2,651 2,651 3,271 1 3,511 1 3,311	MULA 41 1 511 2 511 2 511 2 511 2 513 2 514 5 514 514 5 514 514 514 514 514 514 514 514 514 514	TIVE 1 2 49 4 2,02 9 7,04 4 9,0 9 7,04 10 8,0 10 9,0 10 9,0 10,0 10 9,0 10 9,0 10,0 10,0 10 9,0 10,0 10,0 10,0 10,0 10,0 10,0 10,0 1	105 ge (44 (51) (51) (51) (51) (51) (51) (51) (51)	etting / 4,04 1 2,36 1	AT LEA 1,00 / 1,20 / 1,	Total Total Support Support Support Total Support Support Total Support Support Total Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Suppor		A B C D E F G U	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 1 0 1 0 2 0 2 0 2 3c 3t	0 0 0 0 2 2 2 2 2 3 3	0 0 1 3 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	0 3 1 3 1 4 2 12 2 13 3 13 3 13 3 13 3 13 3 14 2 13 3 14 2 15 3 15 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	MUL / 11 19 5 26 5 37 5 38 5 38 5 38 5 38 5 38 5 38 5 38 5 38	2 50 20 23 24 24 24 24 24 24 24 24 24 24 24 5b	numb- 2 2 2 2 2 2 2 2 2 2 2 2 2 5 3	rs getti Total 7 8 9 8 55 0 17 8 55 0 17 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	A B C D E F G U		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	* * * 1 1 2 2 2 2 2 3b	0 0 1 1 2 2 2 3 3	0 0 2 4 5 6 6 40	0 2 6 50 52 50 53 53 4b	1 24 24 37 39 39 39 4a	2 9 18 30 26 37 30 38 38 38 50	4 11 17 22 24 24 24 24 24 24 24 24 5b	1 2 A 2 B 2 C 2 D 2 E 2 F 2 G 2 U 5a	Total 7 24 49 95 120 124 125 126			0 0 0 0 0 0 0 0 0 0 2 0	0 0 0 0 0 0 0 0 <b>3</b> 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 -1 -1 0 0 0 3a -3	0 0 1 1 1 0 0 0 0 <b>4</b> 0 4	0 0 1 2 2 2 1 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 1 2 1 2 1 0 1 0 0 0 0 0 0 0 0 0 0 0	2 1 2 1 2 3 3 3 5	0 3 1 -4 1 0 0 0 0 5 0 3	-2 2 3 1 0 0 0 0 0 5 5 5	1 0 0 0 0 0 0 0 0 5a 2	A B C D F G U
FOI A B C D E F G U	REA	CH IN 7 11 11 11 11 11 12 12 13 12 13 12 13 12 13 12 13 12 13 12 13 12 13 12 13 12 13 12 13 12 13 12 13 12 13 13 13 13 13 13 13 13 13 13 13 13 13	PUT 5	10-lev 1 11 11 11 11 11 11 11 11 11 11 11 11	el, CU 14 15 24 2,55 2,55 2,55 2,55 2,55 2,55 2,55	MULA 41 1 511 2, 511 2, 511 2, 511 2, 511 4, 513 4, 513 4, 513 4, 513 4, 514 5, 513 4, 514 5, 515 4, 514 5, 515 4, 514 5, 515 4, 516 4, 517 5, 518 5, 51	TIVE 1 8 01 8 1,00 9 7,00 9 7,00 9 7,00 10 7,000 10 7,	105 ge (384 (383 (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (383) (	etting / 6,04 6,04 7,06 7,06 7,06 7,06 7,06 7,06 7,06 7,06	AT LEA 1,00 1,20 1,20 1,20 1,20 2,00 2,00 2,00	Total 94,46 A 94,46 B 90,26 C 70,26 C		A B C D E F G	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 1 0 1 0 2 0 2 0 2 30 3t	0 0 0 0 2 2 2 2 3 a	0 0 1 3 5 6 6 6 6 6 40	0 3 1 0 3 1 4 2 12 2 13 3 10 3 10 3 10 3 10 3 10 3 10 4 10 4 10 10 4 10 4 10 10 4 10 4 10 10 4 10 10 10 4 10 10 10 10 10 10 10	MUL / 11 19 5 26 6 37 6 38 6 38 6 38 6 38 6 38 6 38 6 38 6 38	2 52 20 23 24 24 24 24 24 24 24 24 24 5b	numb- 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Tota Tota A 29 B 55 C 05 D 117 E 128 G 126 U 126	A B C D E F G			* * * 1 1 2 2 2 3 b	0 0 1 1 2 2 2 3 3	0 0 2 4 5 6 5 6 6 6 6 6 6 6 6 6	0 2 4 50 52 53 53 4b	1 2 10 24 37 39 39 39 39 4a	2 9 18 26 26 37 20 28 28 50	4 11 17 22 24 24 24 24 5b	1 2 A 2 B 2 C 2 D 2 E 2 F 2 G 2 U 5a	Total 7 24 41 65 120 120 124 125 125			0 0 0 0 0 0 0 0 2 0 2 0 0	0 0 0 0 0 0 0 30 0 30 0	0 0 0 0 0 0 0 3b 0 3b	0 0 -1 -1 0 0 3a -3 grad	0 1 1 1 0 0 4 0 4 0 4 0	0 0 1 2 2 2 1 0 0 0 0 0 4 1 3 3 00Ve	0 0 1 2 1 2 1 2 1 0 0 0 0 0 0 0 0 0 0 0	2 1 1 2 1 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2	0 3 1 4 1 0 0 0 5 0 3 * if i	-2 2 3 1 0 0 0 0 0 0 5 5 5 5	1 0 0 0 0 0 0 0 5 a 2 e with	• A B C D E F G U U tota 18
FOI A B C D E F G U	BEA	CH IN 7 8 9 9 9 19 19 19 19 19 19 19 1	PUT 5	nb-leu n n cm cm cm cm cm cm	el, CU	MULA 41 1 511 2 511	TIVE 1 2 01 3 1,00 4 2,00 4 2,00 10 2,00 10 2,00 10 3,00 10 4,00 10 4,	105 ge 104 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,12 16,1	etting / c,tN c,tN c,tN c,tA c,tA c,tA c,tA c,tA c,tA c,tA c,tA	AT LEA 1,07 1,27 1,27 1,27 1,27 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2,77	Total Total autor Total autor Total autor Total autor Total autor Total autor Total autor Total autor Total autor Total autor Total autor Total autor Total autor Total autor Total autor Total autor Total autor Total autor Total autor Total autor Total autor Total autor Total autor Total autor Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total		A B C D E F G U	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 1 0 1 0 2 0 2 0 2 0 2 30 3t	0 0 0 0 2 2 2 3 3 3	0 0 1 3 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 7 6 7 6	0 3 1 0 3 1 4 2 12 3 13 3 10 3 13 3 13 3 14 4 13 3 14 4 14 4 15 3 15 3 16 4 17 3 18 4 19 4	MUL #	2 0 20 20 20 20 20 20 20 20 20 20 20 20	numb-	rs getti Tota A 29 B 55 C 65 D 117 E 126 F 125 G 125 U 125 C 1				• • • • • • • • • • • •	0 0 0 1 1 2 2 2 3 3	0 0 2 4 5 6 6 40	0 2 6 50 50 50 50 50 50 50 50 50 50 50 50 50	1 3 10 24 37 39 39 4a	2 9 18 20 26 37 20 28 38 38 50	4 11 17 22 24 24 24 24 24 24 24 24 24 5b	1 2 A 2 B 2 C 2 D 2 E 2 F 2 G 2 U 5a	Total 7 24 49 05 100 120 124 125 125			0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 30 0 30 0 0 0 0 0 0 0 0	0 0 0 0 0 0 3b 0 0 3b	0 0 -1 -1 0 0 3a -3 grad	0 0 1 1 1 0 0 0 4 0 4 0 4 0 4 0	0 0 1 2 2 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 1 2 1 2 2 1 2 2 1 0 0 0 0 0 0 0 0 0 0	0 1 1 2 1 2 1 2 1 2 2 1 2 2 3 2 3 4 1 2 2 3 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5	0 3 1 -4 1 1 0 0 0 5 0 5 0 3 e <sup>-</sup> if 1 per p	-2 2 3 1 0 0 0 0 0 5 5 5 5 5 5 5 5 5 5 5 5 5 5	1 0 0 0 0 0 0 5 a 2 c with	A B C D E F G U
FOI A B C D E F G U	REA	CH IN , 1 1 1 1 1 1 1 1 1 1 1 1 1	PUT s	I I I I I I I I I I I I I I I I I I I	el, CU 41 741 741 741 741 741 741 741 741 741	MULA 4 t 50 2, 50 2, 50 2, 50 2, 50 4, 50 4, 50 4, 50 4, 50 4, 50 4, 50 4, 50 4, 50 5, 50 5,	TIVE 1 2 49 3 7,00 3 7,00 10 8,00 10 8,00	105 ge 1,54 1,53 1,45,54 2,544 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,44 2,35,45,45,45,45,45,45,45,45,45,45,45,45,45	etting / q,ni 2,ni 2,ni 2,ni 2,ni 1, 2,ni 1, 2	AT LEA 128 / 128 / 1	Total	i grade	FO A B C D E F G U	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 1 0 1 0 2 0 2 0 2 30 31	0 0 0 0 2 2 2 3 a	0 0 1 3 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 7 8 9 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	0 1 0 1 1 2 12 2 13 3 14 2 15 3 15 3 15 3 15 4 16 4 17 4 18 4 19 4 19 5 19	MUL / 19 24 37 38 38 38 38 38 38 38 38 38 38 38 38 38	2 9 20 23 24 24 24 24 24 24 24 24 24	numb- 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	rrs getti Total Total A 29 B 55 C 00 D 117 E 126 F 125 G 125 U 125 U 125 Ling AT I Total	A B C D E F G U	DR E/	ACH I	• • • 1 1 2 2 2 5 3b	0 0 1 1 2 2 2 2 3 3 3	0 0 2 4 5 6 4 6 6 4 0	0 2 6 50 52 53 53 45	1 24 24 24 37 39 39 4a	2 9 18 30 36 37 38 38 50	4 51 17 22 24 24 24 24 24 5b	1 2 A 2 B 2 C 2 C 2 C 2 C 2 C 2 C 2 C 2 C 2 C 2 C	Total 7 24 49 95 120 124 125 124	r 6 I	or i	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 3 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 3b 0 9 upil	0 0 -1 -1 0 0 3a -3 grad	0 0 1 1 0 0 4 0 4 0 4 0 4 0 4 0 0 0 4 0 0 4 0 2 8 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 1 2 2 1 0 0 0 0 4 1 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 1 2 1 2 1 2 1 2 1 0 0 0 0 0 0 0 0 0	0 1 1 2 1 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3	0 3 1 -4 1 0 0 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 1 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 1 1 1 1 1 1 1 1 1 1 1 1	-2 2 3 1 0 0 0 0 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	1 0 0 0 0 0 5 a 2 c with 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	A B C D E F G U tetm 18
FOI A B C D E F G U V	REA	CH IN 7 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	PUT s	n n n n n n n n n n n n n n n n n n n	el, CU 11 13 13 13 13 15 14 15 15 15 15 15 15 15 15 15 15	MULA 4 1 50 2 50 2 5	TIVE : 2 49 3 7,00 0 7,00	Can Can Can Can Can Can Can Can Can Can	etting / e,m e,m e,m e,m e,m e,m e,m e,m e,m e,m	AT LEA 1,28 / 1,28 /	Total Total Total Total Total Total Total Total Total Total Total	E grade	A B C D E F G U	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 2 2 2 3 a PUT :	0 0 1 3 5 6 6 6 6 6 40	0         3         1           3         1         3         1           4         2         2         3         1           12         2         3         3         1           13         3         1         3         1           13         3         1         3         3           14         2         2         13         3           15         3         3         4         4           4b         4         4         4         4           vel, CL         8xx         3         5         5	MUL / 1 19 2 24 1 19 3 24 3 26 3 26	2 50 20 23 24 24 24 24 24 24 24 24 24 24 24 24 24	numb- 2 2 2 2 2 2 2 2 5 3 5 4 7 5 4 7 5 4 7 7 8 7 8 7 8 7 8 7 8 7 7 7 7 7 7 7 7	rrs getti Total 7 7 A 29 B 56 C 60 D 117 E 126 F 126 G 126 G 126 U 126 ing AT 1 Total 9 empty	A B C D E F G U	DR E	2 34	• • • • • • • • • • • • • • •	0 0 1 1 2 2 3 3 3	0 0 2 4 5 6 6 6 6 6 6 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 2 6 90 12 15 15 15 15 15 15 15 15 15 15 15 15 15	1 2 10 24 34 37 39 4a	2 9 18 30 36 37 38 38 38 50	4 11 17 17 22 24 24 24 24 24 5b 5b	1 • 2 A 2 B 2 C 2 D 2 E 2 F 2 G 2 U 5a ng AT	Total T total 7 24 49 120 124 125 125 125 126 126 126 126 126 126 126 126	r		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 -1 -1 0 0 3a 3a -3 grad ub-le	0 0 1 1 1 0 0 4 0 4 0 4 0 4 0 0 0 0 0 0	0 0 1 2 2 2 2 1 0 0 0 0 0 0 4 8 2 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 1 2 1 2 1 0 0 0 0 0 0 0 0 0 0 0 0 0	0 1 1 2 1 0 0 0 0 0 0 0 0 0 0 0 0 0	0 3 1 -4 1 1 0 0 0 5 0 0 5 0 2 4 1 1 0 0 0 0 5 0 2 4 0 0 0 0 0 0 0 0 0 0 0 0 0	-2 2 3 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1 0 0 0 0 0 5 a 2 e with 0 0 5 a 5 a 5 a 5 a 5 a 5 a 5 a	A B C D E F G U U Tetric 18 C S C D E F G U U
FOI A B C D E F G U V F OF A B	REA	CH INI 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	PUT s ( 0 11 11 11 11 11 12 12 12 12 12	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	el, CU H H H H H H H H H H H H H	MULA 41 1 51 5 51 51 5 51 51 5 51 5 51 5 51 5 51 5 51 5 51 5 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 515	TIVE : 2 01,4 3 1,4 3 2,4 4 0,4 4 0,4 4 0,4 4 0,4 4 0,4 4 1,4 4 1,4 1	Care Care Care Care Care Care Care Care	etting / s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th s.th	AT LEA 1.00 1 1.00 1 1.00 1 0.00 E 0.00 E	Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total Total	E grade	FO FO FO A B	R EAU	0 0 0 0 0 0 0 0 0 0 1 0 1 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2	0 0 0 0 0 0 2 2 2 2 3 a PUT : 0× 0× 0× 0× 0×	0 0 1 3 5 6 6 40 40 0x 0x 0x 17x	0         3         1           0         3         1           4         2         2           13         3         1           10         3         1           11         3         1           12         2         3           13         3         3           10         3         3           12         3         4           4         4         4           14         4         4           15         3         4           4         4         4           4         4         4           4         4         4           4         4         4           4         4         4           4         4         4           4         4         4           4         4         4           4         4         4           4         4         4           4         4         4           4         4         4           4         4         4      4         4         4	MUL/ 2 11 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	2 50 20 23 24 24 24 24 24 24 24 24 24 24 24 24 5b	numb- 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	rrs getti Total 7 A 29 B 55 C 65 B 55 C 65 C 75 C 75	A B C D F F G U U LEAS F	DR E/	ACH I		9 9 9 1 1 2 2 2 2 2 3 3 3 3 1 5 5 5 5 5	0 0 2 4 5 6 6 6 6 6 6 6 6 7 7 7 7	0 0 2 6 90 12 13 13 13 4b	1 2 10 24 317 39 39 4a ULA	2 9 18 30 26 37 28 38 50 50 11VE 2 50 280× 477×	4 11 17 22 24 24 24 24 5b 5b 172× 45× 72× 72×	1 • 2 A 2 B 2 C 2 C 2 C 2 C 2 C 2 C 2 C 2 C 2 C 2 C	Total 7 24 49 95 120 120 124 125 125 125 125 125 125 125 125 125 125	r 6 1		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 -1 -1 0 0 3a -3 grad sc -3 -3 -3 -3 -2× -4×	0 0 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0	0 0 1 2 2 2 2 1 1 0 0 0 0 4 b 0 0 0 0 0 0 0 0 0 0 0 0 0 0		3 1 1 2 1 3 1 2 1 3 2 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4	0 3 1 4 1 1 0 0 0 0 5 0 5 0 1 Pfr Pr 4 9 2 3 1 2 3 2 3 2 3 2 3 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5	-2 2 3 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	A B C D E F G U U tetas 18 C S C D E F G U U tetas A B
FOI E F G U F OF F OF	REA	CH INI 7 10 10 10 10 10 10 10 10 10 10 10 10 10	PUT s 4 9 10 11 11 11 11 11 11 11 12 12 12	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	el, CU ++ ++ ++ ++ ++ ++ ++ ++ ++ +	MULA a 1 51 2, 52 7, 53 4, 54 4, 54 54	TIVE 1 2 01 3 2,20 4 2,20 4 9,10 4 9,10 5 2,40 6 9,10 7,40 6 2,20 5 25 5	005 ge (un (un (un (un (un (un (un (un (un (un	etting / s,824 s,824 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234 s,234	AT LEA 1.00 1 1.00 1 1.00 1 1.00 1 0.00 1	Total	E grade	FO FO FO A B C	R EAI	0 0 0 0 0 0 0 0 0 0 1 0 1 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2	0 0 0 0 0 0 2 2 2 2 3a 9 PUT : 0 2 0 2 0 2 0 2 0 2 0 0 0 0 0 0 0 0 0	0 0 0 1 3 5 6 6 6 6 6 6 6 6 6 6 6 6 6	0         3         1           0         3         1           4         2         2           13         3         1           4         2         2           13         3         1           14         2         2           15         3         3           15         3         3           15         3         3           15         3         3           15         3         3           15         3         3           15         3         3           15         3         3           15         3         3           15         3         3           15         3         3           15         3         3           15         3         3           15         3         3           15         3         3           15         3         3           15         3         3           15         3         3           15         3         3           15         3 <td>IMUL/ 2 11 1 99 5 26 5 38 5 38 5 38 5 38 5 38 5 38 5 38 5 38</td> <td>22 10 20 20 23 24 24 24 24 24 24 24 24 24 24 24 24 24</td> <td>numb- 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2</td> <td>rrs getti Total Total T</td> <td>A B C D F F G U U LEAS F</td> <td>DR E/</td> <td></td> <td>• • • • • • • • • • • • • • • • • • •</td> <td></td> <td>0 0 2 4 5 6 6 6 6 6 6 6 6 7 7 2 7 2 90</td> <td>0 0 2 6 90 12 15 15 4b CUN 52 15 4b 15 15 4b 15 15 15 15 15 15 15 15 15 15</td> <td>1 24 24 37 29 39 4a 100 24 37 29 39 4a 100 24 37 29 39 4a 100 24 37 29 4a 100 24 37 29 4a 100 24 24 24 37 29 29 4a 100 29 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 40 29 40 29 40 29 40 29 40 29 40 29 40 29 40 29 40 29 40 29 40 29 40 29 40 29 29 29 29 29 29 29 29 29 29</td> <td>2 9 18 30 24 37 38 38 38 56 56 57 57 57 57 57 57 57 57 57 57 57 57</td> <td>4 11 17 12 24 24 24 24 24 24 25 55 55 55 55 55 55 55 55 55</td> <td>1 2 A 2 B 2 C 2 D 2 E 2 F 2 G 2 U 5a mg AT 0x A 80x A 80x A 80x C</td> <td>Total 7 24 49 66 199 120 124 125 125 125 125 126 126 127 128 126 128 126 128 126 128 128 128 128 128 128 128 128 128 128</td> <td>T G I</td> <td></td> <td>0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>0 0 0 -1 -1 0 0 0 3a -3 grad #x -2× -2× -3× -3×</td> <td>0 0 1 1 1 1 1 1 0 0 0 0 4 0 4 0 4 0 0 0 0</td> <td>0 0 1 2 2 2 2 1 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>0 0 1 2 1 2 1 1 0 1 0 0 0 0 0 0 0 0 0 0</td> <td>3 1 1 2 2 1 1 2 2 1 1 2 2 3 4 4 4 5 4 4 5 4 4 5 4 4 5 4 4 5 4 5 4 5 4 5 4 5 4 5 4 5 5 5 5 5 5 5 5 5 5 5 5 5</td> <td>0 1 1 1 1 1 0 0 0 5 0 5 0 5 6 5 6 5 6 5 6 5 6 5 6 5</td> <td>-2 2 3 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>A B C D E F G U U U U U U U U U U U U U U U U U U</td>	IMUL/ 2 11 1 99 5 26 5 38 5 38 5 38 5 38 5 38 5 38 5 38 5 38	22 10 20 20 23 24 24 24 24 24 24 24 24 24 24 24 24 24	numb- 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	rrs getti Total Total T	A B C D F F G U U LEAS F	DR E/		• • • • • • • • • • • • • • • • • • •		0 0 2 4 5 6 6 6 6 6 6 6 6 7 7 2 7 2 90	0 0 2 6 90 12 15 15 4b CUN 52 15 4b 15 15 4b 15 15 15 15 15 15 15 15 15 15	1 24 24 37 29 39 4a 100 24 37 29 39 4a 100 24 37 29 39 4a 100 24 37 29 4a 100 24 37 29 4a 100 24 24 24 37 29 29 4a 100 29 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 4a 29 40 29 40 29 40 29 40 29 40 29 40 29 40 29 40 29 40 29 40 29 40 29 40 29 40 29 29 29 29 29 29 29 29 29 29	2 9 18 30 24 37 38 38 38 56 56 57 57 57 57 57 57 57 57 57 57 57 57	4 11 17 12 24 24 24 24 24 24 25 55 55 55 55 55 55 55 55 55	1 2 A 2 B 2 C 2 D 2 E 2 F 2 G 2 U 5a mg AT 0x A 80x A 80x A 80x C	Total 7 24 49 66 199 120 124 125 125 125 125 126 126 127 128 126 128 126 128 126 128 128 128 128 128 128 128 128 128 128	T G I		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 -1 -1 0 0 0 3a -3 grad #x -2× -2× -3× -3×	0 0 1 1 1 1 1 1 0 0 0 0 4 0 4 0 4 0 0 0 0	0 0 1 2 2 2 2 1 0 0 0 0 0 0 0 0 0 0 0 0	0 0 1 2 1 2 1 1 0 1 0 0 0 0 0 0 0 0 0 0	3 1 1 2 2 1 1 2 2 1 1 2 2 3 4 4 4 5 4 4 5 4 4 5 4 4 5 4 4 5 4 5 4 5 4 5 4 5 4 5 4 5 5 5 5 5 5 5 5 5 5 5 5 5	0 1 1 1 1 1 0 0 0 5 0 5 0 5 6 5 6 5 6 5 6 5 6 5 6 5	-2 2 3 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	A B C D E F G U U U U U U U U U U U U U U U U U U
FOI A B C D E F G U V F OF • • • •	REA	CH INI 9 9 19 19 19 19 19 19 19 19 19 19 19 19	PUT s 4 8 8 8 8 8 8 9 9 9 7 5 7 5 7 9 7 9 7 9 7 9 7 9 7 9 7	1 1 1 1 1 1 1 1 1 1 1 1 1 1	el, CU 11 13 15 15 15 15 15 15 15 15 15 15	MULA 41 1 51 51 5, 51 5, 5	TIVE 1 2 09 4 1,28 4 2,48 4 9,49 4 9,49 1 10,0 1 10,0	Current Curren	etting / c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv c,tiv	AT LEA 1,077 1 1,077 1 1,07	Total	E grade	FO A B C C E F G U U FO A B C C C E E E E	R EA	0 0 0 0 0 0 0 0 0 0 1 0 1 0 2 0 2 0 2 30 31 0 2 0 2 30 31 0 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0	0 0 0 0 0 0 2 2 2 2 2 2 2 2 2 2 2 2 2 2	0 0 1 2 5 6 6 6 6 6 6 6 40 002 002 002 002 002 002 002	0 3 1 0 3 1 12 3 1 13 3 1 14 2 13 3 1 13 3 1 13 3 1 13 3 1 14 2 13 3 3 15 3 3 15 3 3 15 3 3 15 3 3 15 3 3 16 4 4 17 3 3 18 4 4 19 3 3 19 4 4 19	IMUL/ 2 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2 5 20 23 24 24 24 24 24 24 24 24 24 24	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	rrs getti Total Total A 29 B 56 C 02 D 117 E 128 F 128 U 128 U 128 U 128 U 128 U 128 D 117 Total A 94% B 77% C 56% D 37%	LEAS F	DR E/	ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI ACHI	8 9 9 1 1 1 2 2 2 2 3 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5	0 0 0 1 1 2 2 2 2 3 3 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	0 0 2 4 4 5 6 6 6 6 7 7 7 7 2 9 6 10 7 7 2 9 4 10 7 7 2 9 4 10 7 7 7 7 2 9 7 7 7 7 7 7 7 7 7 7 7 7 7 7	0 2 4 9 12 15 15 15 15 15 15 15 15 15 15	1 1 2 10 24 37 39 39 4a 10 24 37 39 39 4a 10 24 25 25 25 25 25 25 25 25 25 25	2 9 18 30 37 37 38 38 38 56 56 56 56 56 57 20% 47% 79%	4 11 17 12 24 24 24 24 24 25 26 24 26 24 26 27 26 27 26 27 26 26 27 26 27 26 26 26 26 26 26 26 26 26 26	1 2 A 2 B 2 C 2 C 2 C 2 F 2 G 2 U 5a mg AT 7x A 8x B 8x C 0 000 F	Total 7 24 49 58 120 120 124 125 125 125 125 125 125 125 125 125 125	T GI		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 -1 -1 0 0 3a -3 -3 -3 -3 -3 -3 -3 -4 -2 -2 -2 -2 -2 -2 -2 -2 -2 -2 -2 -2 -2	0 0 1 1 1 1 0 0 0 4 6 4 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	0 0 1 2 2 2 1 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 1 1 2 1 2 1 1 2 2 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4	0 3 1 1 1 1 0 0 0 5 5 5 5 5 5 5 5 5 5 5 5 5	-2 2 3 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	A B C D E F G U U U U U U U U U U U U U U U U U U
FOI E F G U F O F O F O F O F O F O F O F O F O F	REA	CH INI 7 11 11 11 11 11 11 11 11 11	PUT s 4 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	1 1 1 1 1 1 1 1 1 1 1 1 1 1	el, CU 11 13 14 15 15 15 15 15 15 15 15 15 15	MULA 9 1 1 9 2 9 39 2, 9 4 2, 9 4 2, 9 4 2, 9 4 4 9 4 4 4 9 4 4 4 9 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	TIVE 1 2 49 3 5,00 4 9,00 4 9,00 10 10,00 10 10,00	1005 get (un (un (un (un (un (un (un (un	etting J 6 644 1 644 1 644 1 6456 1 6456 1 6456 1 6456 1 6456 1 6456 1 6456 1 6456 1 722 1 72 1 7	AT LEA 1,07 1 1,07 1	Total	BE         grade           I	FO FO FO FO FO E FO FO E F	R EA/ 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 0 1 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2	0 0 0 0 0 2 2 2 2 3a 3a 9 9 0 2 2 3a 0 2 3a 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 3a 0 2 0 2 3 3 0 2 3 3 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0 0 1 3 5 6 6 6 6 6 6 40 000 000 000 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2 2 11 9 5 2 5 3 7 5 3 8 3 3 6 3 3 6 3 3 6 3 3 6 3 3 6 3 3 6 3 3 6 3 3 6 3 3 6 3 3 6 3 3 6 3 3 6 3 3 6 3 3 6 3 3 6 5 5 5 5	2 10 20 20 23 24 24 24 24 24 24 24 24 24 24	numb- 2 2 2 2 2 2 2 2 2 2 2 2 2	rrs getti Tota Tota A 29 B 5 C 65 C 75 C 75	LEAS F	DR E/	ACHI 2 00 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0	0 0 0 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2	0 0 0 1 1 2 2 2 2 3 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5	0 0 2 4 5 6 6 6 6 6 6 6 6 6 7 7 7 7 7 2 8 10 2 9 5 9 9 9 9 9 9 9 9 9	0 0 2 6 90 12 13 13 13 15 15 15 15 15 15 15 15 15 15	1 1 2 10 24 24 24 27 29 29 29 4a 10 29 29 29 4a 10 29 29 29 29 4a 29 4a 29 44 20 29 44 20 29 29 29 29 29 29 29 29 29 29	2 9 18 20 26 37 20 38 37 20 38 37 20 38 50 50 50 50 50 50 50 50 50 50	4 11 17 12 24 24 24 24 24 24 24 24 5b 5b 5b 5b 5b 5b 5b 5b 5b 5b	1 2 A 2 B 2 C 2 C 2 C 2 C 2 C 2 C 2 C 2 C 2 C 2 C	Total 7 24 49 199 120 123 125 125 125 125 125 125 125 125 125 125	T 6 I		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 -1 -1 0 0 3a 3a grad 4 sx -2x -2x -2x -2x -2x -2x -2x -2x -2x -2	0 0 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 1 1 -2 2 2 2 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1	2 1 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	0 3 1 -4 1 1 0 0 0 5 3 -if i Per p 5 3 -if i 2× 9 2× 0 2× 0 -if i -if i -i -if i -i -if i -if i -if i -if i -i -	-2 2 3 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1 0 0 0 0 0 0 0 0 0 0 5 3 2 2 8 with 5 5 3 2 2 8 2 8 2 2 2 2 2 2 2 2 2 2 2 2 2 2	A B C D E F G U U tetm 18 C A B C C D E F C D E F C D E F C D E F C D E F C D E F C D E F C D E F C D E F F C D E F F C D E F F C D E F F C D E F F C D E F F C D E F F F C D E F F F C D E F F F F F F F F F F F F F F F F F F
FOI E F G U F F G C C C C C C C C C C C C C C C C C	REA	CH INI 7 13 14 15 16 16 17 17 17 17 17 17 17 17 17 17	PUT s ( ( H H H H H H H H H H H H H	1 1 1 1 1 1 1 1 1 1 1 1 1 1	el, CU H H H CIII LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI LISI	MULA 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	TIVE 1 2 09 3 1,00 4 0,00 4 0,00 4 0,00 10	005 ge (un (un (un (un (un (un (un (un	etting J control of the second secon	AT LEA 1.00 / 1.00 /	Total	E grade	FO FO FO FO FO FO FO	R EA/ 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 2 0 2	0 0 0 0 0 0 0 2 2 2 2 3 3 PUT : 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 1 1 2 5 6 6 6 6 6 6 6 6 6 6 6 6 6	0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	IMUL / 2 1 1 1 1 9 5 2 6 1 1 9 5 2 6 1 1 9 5 2 6 1 1 9 5 2 6 1 1 9 5 2 6 3 7 6 3 8 3 3 6 3 3 6 3 3 6 3 3 6 5 2 6 3 3 6 5 2 6 3 3 6 5 5 6 5 3 6 5 5 6 5 5 6 5 5 6 5 5 6 5 5 6 5 5 6 5 5 6 5 5 6 5 5 6 5 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 7 7 7 7 7 7 7 7 7 7 7 7 7	2 10 20 20 20 20 20 20 20 20 20 2	numb-	Ing AT 1 Total Total Total Total A 29 B 58 B 58 C 69 D 117 E 128 C 69 D 117 E 128 C 69 D 117 E 128 C 69 D 117 E 128 C 93 C 93	LEAS FI	DR E/	ACH I x 00 x 00	* * * * * * * * * * * * * * * * * * *	9 9 9 1 1 1 2 2 2 2 2 3 3 3 3 5 5 5 5 5 5 5 5 5 5 5	0 0 0 2 4 4 5 6 6 5 6 6 6 7 2 7 2 2 8 5 7 2 2 8 5 7 2 2 8 5 7 2 2 9 5 9 7 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	0 9 2 6 99 12 13 15 4b 15 4b 15 15 4b 15 25 15 25 15 25 15 25 15 25 15 25 15 25 15 15 15 15 15 15 15 15 15 15 15 15 15	1 24 24 37 39 39 4a 00 24 39 29 4a	2 9 18 30 34 37 30 38 38 38 56 56 56 56 57 57 57 57 57 57 57 57 57 57	4 11 17 22 24 24 24 24 24 24 24 24 24	1 2 A 2 B 2 C 2 C 2 C 2 C 2 C 2 C 2 C 2 C 2 C 2 C	Total 7 24 4 95 100 100 100 100 100 100 100 100 100 10	T C I		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 -1 -1 0 0 3a -3 grad -3 grad -3 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3	0 0 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 1 1 2 2 2 1 1 0 0 0 0 0 0 0 0 0 0 0			0 3 1 -4 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0	-2 2 3 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	A B C C C C C C C C C C C C C C C C C C

The National numbers are read directly from the **"TMs"** spreadsheet by specifying and the subject of interest in the **Front Panel**. The formulae also transpose the data so that it is in its more familiar orientation of "input" i.e KS2 along the x-axis, and "output" i.e. GCSE along the y-axis. So in this example looking at GCSE French, row 200 is specified.

From the matrix, you can see that1,816 pupils gained a grade A\* from a KS2 sub-level of 5a etc

Also note that the matrix has the **actual numbers** of pupils which is also very helpful for a variety of analyses. An average score can also be calculated for each sublevel using the usual points scores (A\*=58 etc). In the case of sub-level 5c = 42.5. For each sub-level, we can then calculate the percentage getting each grade e.g. in sub-level 5c, 6% gained A\* and 15 gained A nationally.

									-							-					
2		as	at Su	ın 24	4 ap	r 11	1	only	y change	e cells in	red	]		re	efere	nce	s for	gri	ds		
3		C	ell re	fere	enc	es						file	ename:	100% \$	Schools	TMs	Output	-18m	ar11		
4								Rows				full	name:	'[100% Se	hools TN	ls Outp	ut-18mar	l1.xls]K	S24_	GCSESub	jects TN
5	ata	- Firs	t row	ı (V	BAr	nam	ne)	200	VBACO	DE_KS4_	APFREO	0_AII			n	ati	ona	al			
6	A			Ē			Ē	201	Frei	nch			- nu	mbers	read	aut	omat	ical	ly fi	rom D	fE
7														supplie	ed Tra	ansit	ion n	natri	ice	s file	
8		row a	dd-on	203	204	**	**	207	208	note tra	insposir	ng to get	INPUT	on x-ax	dis, OU	TPUT	on y-a	axis			_
9	00	) . 	*					7	4		1/	40	122	460	1 684	1	27/ 1	816	*	0 05	0
11		52	A		0	0	0	20	8	28	50	121	428	1 752	5 278	4,0 8 (	260 1	402	A	17.35	6
12		46	B	6	0	0	0	34	22	44	121	420	1,718	4,858	9,357	8,	167	668	В	25,41	5
13	G	40	С	4	0	0	0	45	55	178	556	1,900	5,162	10,047	11,11	5,	748	267	С	35,07	5
14	F	34	D	э	0	0	0	86	120	340	948	2,685	5,269	7,215	5,401	1,(	360	54	D	23,98	37
15	Ε	28	Ε	4	0	0	0	125	175	418	963	1,863	2,856	2,754	1,473	3	88	11	Ε	11,03	0
16	D	22	F	5	0	0	0	185	183	331	623	974	1,088	905	373	1	00	3	F	4,77	0
17	c	16	G	0	0	0	0	129	93	163	273	329	354	257	124	3	6	0	G	1,75	8
18	в	0	U	0	0	0	0	49	26	27	43	67	76	45	38		9	0	U	380	
-		-			<b>-</b> -						0005								-		1
FC	JK E	ACI		PU	IS	up	-le	vei, %	getting	j each d	GUSE	grade		_	_	_			-	Total	T.
*	-	-		+	10	4	-	10/	104	004	004	104	204	50/	17	704	4204	*	+	70/	SI
Δ	-	-			20	0 6		170	206	10%	10%	206	6%	150	6 99	70	220%	Δ	·	1306	
			••		59	6	·····	3%	3%	3%	5%	10%	17%	279	6 29	%	16%	R	+	20%	
		-			79	ĕ		8%	12%	15%	23%	30%	35%	329	6 20	)%	6%	c	·	27%	-
D			••••••	-	139	%		17%	22%	26%	32%	31%	25%	169	6 6	%	1%	D	+	19%	
E		-			189	%		26%	27%	27%	22%	17%	10%	4%	1	%	0%	E	·	9%	
F		1	Î		279	%	1	27%	22%	17%	12%	6%	3%	1%	0	%	0%	F	1	4%	
G	;				199	%		14%	11%	8%	4%	2%	1%	0%	0	%	0%	G	1	1%	
U	,	Î	Î		79	6	1	4%	2%	1%	1%	0%	0%	0%	0	%	0%	U	1	0%	
					2			3c	3b	3a	4c	4b	4a	5c	5	b	5a				
Тс	ot	+	H	Ť	100	%		100%	100%	100%	100%	100%	100%	1009	6 10	0%	100%	t	1	100%	
	-														-						
1				÷										· ·			1				
5					С	u	m	ula	tive	fron	1 <b>A</b> *	; +v	e =	"goo	od",	-V	e =	un	de	ər	
5C	=							N.I	B. thes	e are c	alcula	ted nu	mber	s (i.e. "	'2" ma	vbe	1.5)				
								a	nd so r	nay no	t app	ear to	add e	xactly	to tota	al in	r-h				
~~~~	4	~			+	FC	)R I	EACH I	NPUT su	ib-level.	CUMUL	ATIVE	number	s gettin	a AT LI	AST	GCS	E gra	de		
gra	iae	2		_											g E			_ <u>g</u> .u		Total	
d 1	5	%		_		*		0	0	0	0	0	0	0	0	-2	1		*	0	
-	-	-				A	_	0	0	0	0	0	0	0	3	2	0		A	5	
						B	-	0	0	0	0	1	1	1	1	3	0		B	7	
								0	0	0	-1	1	-2	2	-4 1	0	0		с D	-3	-
					$\vdash$	E	-	1 0	0	0 0	-1	1	1	-1	1	0	0		E	0	

0

3b 3a

0 -3

3c

2

0 0

0 0 G

TOTAL 18

18 126

0 0

5b 5a

5c

= average grades per pupil above or be

4b 4a

= no. of pupil-grades above or below "if in line with national"

4c

G 0 U 0

.0.14 - 0.9

The **most important grid** is that of the difference between the school actual figures for the subject, and those from the national numbers, adjusted for the ability profile for that particular subject in that school. (These are cumulative figures – see below for explanation).

Although it is possible to combine the cells to get row- and column-totals, and then an overall total figure, the real emphasis and value of this method is the GRID, which immediately gives you a detailed picture, and leads to a useful, informed discussion, which is not possible from a single figure

However, the figure is calculated for reference. The bottom-right corner of the grid is shown enlarged.

0 0 0 0 0 0 G 0 0 0 0 0 0 0 U 0 18 4c 4b 4a 5c 5b 5a TOTAL 3 3 4 5 5 2 18 126 bove or below "if in line with national" 0.14 = 0.9 @6pts/grade = average grades per pupil above or below

In this example, 18 is the number of pupilgrades above or below (e.g. could be 18

pupils 1 grade up or 6 pupils 3 grades up or any other combination). There are 126 pupils, so that is an average of 18/126 = 0.14 grades per pupil above average. Usually in RAISEonline, 1 grade = 6 points, so multiplying by 6 gives 0.9 points per pupil above average. A negative figure would mean below average.

### N.B. this is all relative, so that across the country as many will be above as below

*N.B.* these are calculated numbers (i.e. "2" maybe 1.5) and so may not appear to add exactly to total in *r*-h e.g. in the top row, you might be puzzled that -2 and 1 combine to give a total of 0, but actually the figures are as per on the right here

			Total	
-1.97	1.14	*	-0.46	

4. The sheet **"graphs"** contains different graphs to assist in the interpretation of the data – see section "Interpreting the graphs" below for details – parts of graph magnified below



#### Stacked column graphs



#### school "if in line with national"

- taking into account entry profile; ber in each cell = sub-level total from school x % each grade a

*	0	0	0	0	0	0	0	2	5	1	*
Α	0	0	0	0	0	1	4	12	12	1	Α
В	0	0	0	0	1	4	16	22	10	0	В
С	0	0	0	2	3	13	24	15	3	0	С
D	0	1	1	3	3	7	8	3	0	0	D
E	0	1	1	2	1	2	1	0	0	0	Е
F	0	1	0	1	0	0	0	0	0	0	F
G	0	0	0	0	0	0	0	0	0	0	G
U	0	0	0	0	0	0	0	0	0	0	U
	2	3c	3b	3a	4c	4b	4a	5c	5b	5a	
Tot	1	3	3	9	9	28	54	55	30	2	194

				_						
act	tual	figu	ires		GC	SE E	Engl	ish		
	2	3c	3b	3a	4c	4b	4a	5c	5b	5a
undary	0.01	15	20	22	24	26	28	30	S2	54
*	0	0	0	0	0	0	2	4	11	2
Α	0	0	0	0	0	1	1	6	9	0
В	0	0	0	1	3	10	16	12	9	0
С	0	0	0	1	3	14	34	33	1	0
D	0	1	3	1	2	3	1	0	0	0
E	1	2	0	5	1	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
G	0	0	0	1	0	0	0	0	0	0
U	0	0	0	0	0	0	0	0	0	0
	2	3c	3b	3a	4c	4b	4a	5c	5b	5a
.v mid-pt	B	19	21	25	25	27	29	<i>S1</i>	ss	<i>35</i>
Tot.	1	3	3	9	9	28	54	55	30	2

The stacked column graph is a powerful way of comparing the school actual figures with what they would have been "if in line with" national. The stacking starts from A\* for the same reasons as in the explanations for the cumulative approach above. This means then that "higher" is "better". So for example looking at the KS2 sub-level 4a numbers:

A\*: 0 if in line; 2 actual, so in cumul diff on right A\* = 2 (and green as "good")

A: 4 if in line; 1 actual, so A\*-A: 4 if in line; 2+1=3actual, so in cumul diff on right  $A^*-A = -2$  (and blue as "below") – NB rounding challenge!!, and

in the graph the solid "actual" A is below the "if in line", but then for A\*-C grade is 8 above.

And similarly for all the other grades and KS2 starting levels. Because they are stacked graphs, they automatically, become cumulative. And the heights represent the actual numbers of pupils.

sc	hool	CU actu	MUL al - s	ATIV	E dif "if in	ifere line \	nce: with r	nation	al"	gree bl
FOF	REACH	i input	sub-le	vel, CUI	NULATI	VE num	bers ge	etting A	TLEAS	Г GCS
*	0	0	0	0	0	0	2	2	6	1
Α	0	0	0	0	0	0	-2	-4	3	0
в	0	0	0	1	2	6	-2	-14	2	0
С	0	0	0	-1	2	7	8	3	0	0
D	0	0	2	-3	1	3	2	1	0	0
Ε	0	1	1	0	0	1	1	0	0	0
F	0	0	0	-1	0	0	0	0	0	0
G	0	0	0	0	0	0	0	0	0	0
U	0	0	0	0	0	0	0	0	0	0
	2	3c	3b	3a	4c	4b	4a	5c	5b	5a

### How to interpret the information

#### How is the school subject data compared with national subject data

To use the information for **valid comparisons**, we must take into account the ability profile in each subject in each school.

The grid of numbers is then copied into the VA sheet within the workbook and labelled "school actual". We now need to calculate what it would have been if it was in line with National figures. The crucial step in this is to calculate on a sub-level by sub-level, the number of pupils at the school at that sub-level, and then use the national figures to calculate the "expected" GCSE grade distribution for that number of pupils.

And then a difference table can be created.



On the right / below are the numbers of pupils (from an **example school**) in the same subject (totalling 205 pupils). So for example, of the 38 pupils in that school with a KS2 sub-level of 5c, 2 gained A\*, 9 A, 8 B, 7 C, 11 D, 1E.

We then need to calculate what the school distribution would look like if it were in line with the national distribution FOR EACH SUB-LEVEL, so we use the percentage national distribution for each sub-level and the actual number in each school with each KS2 sub-level. For example, at sub-level 5c, 6% of 38 (= 2) would gain A\*, 15% of 47 (= 6) would gain A, etc

			_		nun	nbers (	of grad	les at s	sub-lv			_	-	
													1	Total
	*		0	0	0	0	0	0	1	2	2	2	*	7
	Α		0	0	0	0	0	0	2	9	11	0	Α	22
	В		0	0	0	0	1	3	8	8	7	0	B	27
	С		0	0	0	0	2	1	14	7	3	0	C	27
	D		0	0	1	0	2	8	11	11	1	0	D	34
	E		0	0	0	0	1	1	0	1	0	0	E	3
	F		0	0	1	2	0	0	3	0	0	0	F	6
	G		0	0	1 0	0	0	0	0	0	O	0	l G	0
tak	ing	S	ch acc	ool	if il entry	n lir profil	i <b>e v</b> e; nu	vith <sub>mber</sub>	na in ea	tio ch c	na ell =	l sut	o-le	vel
tak	ing	S	ch aco tota	ool count al fron	if il entry n sch	n lir profil ool x	I <b>C V</b> e; nu % ead	vith mber ch gra	na in ea ide a	tio Ich c t sub	na ell = -lv	l sut	o-le	vel
tak	ing	S	ch acc tota	ool count al fron	if il entry n sch	n lir profil ool x	ne v e; nu % eac	vith mber ch gra	na in ea ide a	tio ch c t sub	na ell = -lv	I ⊧ sut	o-le	vel
tak	ing 0	S	o acc tota	ool count al fron 0	if il entry n sch	n lir profil ool x	1 <b>C V</b> e; nu % ead	vith mber ch gra	na in ea ide a	tio ach c t sub	na ell = -lv	sut	o-le	vel Total 7
tak	<b>ing</b> 0	S	o aco tota 0	ool count al fron 0	if in entry n sch 0 0	n lir profil ool x	n <b>e v</b> e; nu % eac 0 0	vith mber ch gra 1 2	in ea ide a 2 6	tio ach c t sub 4 7	na ell = -lv	∎ sut	o-le * A	vel Total 7 16
tak	ing 0 0	S	o aco tota 0 0	ool count al fron 0 0	if in entry n scho 0 0 0	n lir profil ool x 0 0	n <b>e v</b> e; nu % ead 0 0	vith mber ch gra 1 2 7	na in ea inde a 2 6 10	tio t sub	na ell = -lv	sut	o-le * A B	vel Total 7 16 26
tak	ing 0 0 0	S	o aco tota 0 0 0	ool count al fron 0 0 0 0	if in entry n sch 0 0 0 0	n lir profil ool x 0 0 0	e; nu % ead 0 0 1 4	vith mber ch gra 1 2 7 14	na in ea ide a 2 6 10 12	tio t sub 4 7 5	na ell = -lv	sut	o-le * A B C	vel
tak	ing 0 0 0 0	S	Ch acc tota	ool count al fron 0 0 0 0	if in entry n sch 0 0 0 0 1	n lir profil ool x 0 0 0 1 2	0 0 1 4 4	vith mber ch gra 1 2 7 14 10	na in ea ide a 2 6 10 12 6	tio ch c t sub 4 7 7 5 2	na ell = -lv	sut 1 1 0 0	>-le * A B C D	vel

0

13 39 38 24 2

459.8 1502.1 1616.5 1136.9

0 0

30.211 32.632 35.366 38.517 42.54 47.371 52.559

0

0 0 0 0 0 0

3a 4c 4b 4a 5c 5b

2

3b

57.5 60.4 195.8

0

0 U

5a

105.1 126

0

126

40.7476

weighted ave

0 0

0 0 G

#### How do we make the comparisons?

For this explanation, I'll use some examples from a different subject with 205 pupils

F

G

U

Tot

ave GCSE

т/Н

0 0 0 0

0 0 0 0

0

2 3c

0.0 0.0

0

0 0

0

0 28.769

					e	xar	nple	e sc	hoo	bl					+
		e	ente	r nu tt	mbe nen to	ers i otalle	n gr d for	i <b>d / f</b> each	eed	fror evel	n da	ta;			
														Total	
	*		0	0	0	0	0	0	1	5	8	8	*	22	L
	A		0	0	0	0	0	1	3	6	13	4	Α	27	
	B	I	0	0	0	0	1	4	8	13	13	2	В	41	
	C		0	0	0	1	4	10	15	15	3	1	С	49	Γ
	D	1	0	2	1	4	5	4	9	4	1	0	D	30	ľ
	E	1	0	1	1	2	10	4	8	4	0	0	Ε	30	ľ
	F	Î	1	0	1	1	1	1	1	0	0	0	F	6	ľ
	G	1	0	0	0	0	0	0	0	0	0	0	G	0	ľ
	U	1	0	0	0	0	0	0	0	0	0	0	U	0	ľ
	10		2	3c	3b	3a	4c	4b	4a	5c	5b	5a			
	Tot		1	3	3	8	21	24	45	47	38	15		205	l
												285			
ive pt	SCO	e	22.0	32.0	28.0	31.8	32.3	37.8	38.5	43.6	49.8	53.6		41.55	V
diff fro	m na	t.	-3.6	4.5	-1.3	0.1	-1.5	1.2	-1.1	0.3	2.0	1.1		0.3	

1 1111												
	_		sch	ool	if i	n lir	ie v	/ith	nat	ion	al	
	-	takin	g into	acce	ounte	entry	profi	le; nu	mbei	r in ea	ach	cell =
		sub	-level	total	from	scho	ool x loo	% eac	h gra	de at	su	b-lv
												Total
*	0	0	0	0	0	0	1	3	7	7	*	18
Α	0	0	0	0	0	1	3	8	11	5	Α	28
В	0	0	0	0	1	3	9	13	11	2	В	40
C	0	0	0	1	5	8	17	15	7	1	C	55
D	0	1	1	2	7	7	10	6	2	0	D	37
E	0	1	1	2	4	3	3	2	0	0	E	18
F	0	1	1	1	2	1	1	0	0	0	F	7
G	0	0	0	0	1	0	0	0	0	0	G	2
U	0	0	0	0	0	0	0	0	0	0	U	0
650	2	3c	3b	3a	4c	4b	4a	5c	5b	5a		×
Tot	1	3	3	8	21	24	45	47	38	15		205
										285		
t score	25.6	27.5	29.3	31.6	33.7	36.5	39.7	43.3	47.8	52.5		41.26
												And an or

We can then make comparisons:

You can then see that this school had:

- a similar average score,
- had more A\*, but fewer A than national (but A+A\* same),
- the median was almost the same

- had fewer D , but more E than national (but D+E same)

On the right is the difference between the school's actual figures and the school's figures if in line with the national profile of reach sub-level

In this example the school had more  $A^*$ , but fewer A than national (but A+A\* same), which would be regarded as "good" (ie some A grade pupils had gained A\*), but just looking at the numbers for the difference, there is a +2 for A\* and -2 for A

Similarly, the school had fewer D, but more E than national (but D+E same), which would be regarded as "not good" (ie some D grade pupils had slipped to grade E), but just looking at the numbers for the difference, there is a -2 for D and +2 for E

The situation is more easily interpreted by considering the cumulative number starting from the top (i.e. A\* grades). In this example

diff. nat-school; +ve = "good"													
FO	RE	ACH	INPUT	sub-le	evel, C	UMUL	ATIVE	numb	ers ge	tting /	T LE/	ST.	GCSE
													Total
*		0	0	0	0	0	0	0	2	1	1	*	0
Α		0	0	0	0	0	0	0	0	3	1	Α	4
В	ľ	0	0	0	0	-1	1	-1	0	6	0	В	3
С	ľ	0	0	-1	-1	-2	3	-3	0	2	0	C	4
D	ľ	0	1	0	1	-4	0	-4	-2	1	0	D	-1
Е		0	1	0	1	2	0	0	0	0	0	E	-8
F		0	0	0	0	1	0	0	0	0	0	F	4
G		0	0	0	0	0	0	0	0	0	0	G	3
U		0	0	0	0	0	0	0	0	0	0	U	0
		2	3c	3b	3a	4c	4b	4a	5c	5b	5a		9
		-1	2	-1	0	-5	5	-9	2	12	3	9	205
	HH											_	



So **cumulatively**, school 5 for A\*, national 3, so cumul diff = +2, so green (good) colour. But then **cumulatively**, school 11 for A\* & A, national 11, so cumul diff = 0, ie school back in line with national. The school stays in line with national until **cumulatively** school 43 for A\*-D, national 45, so cumul diff = -2 so blue (= bad) colour. But then **cumulatively** school 47 for A\*-E, national 47, so cumul diff = 0, ie school back in line with national.

We can sum these to get a quantitative measure of the difference between the school's distribution and the national

How do the figures / diagrams vary if a pupil slips from a) D to E (as above) or b) D to G (i.e. a bigger drop)







2 pupils have a grade G and 2 with grade D in comparison with the national expectation of 4 getting grade D and none below

You can see how the impact is shown, with the gap extending across grades D to F. The quantitative measure has also been affected, dropping from 9 to 5 (because 2 pupils have dropped 2 more grades)

Extending this idea to get a graphical representation needs rescaling so that we are dealing with absolute numbers, and then having a

			diff	. n	at-s	cho	ol;	+ve	= "	goo	d"		
FOF	RI	EACH	INPUT	sub-le	evel, C	UMUL	ATIVE	numb	ers ge	tting /	T LE/	ST.	GCS
													Total
*		0	0	0	0	0	0	0	2	1	1	*	0
Α		0	0	0	0	0	0	0	0	3	1	Α	4
в		0	0	0	0	-1	1	-1	0	6	0	В	3
C	ì	0	0	-1	-1	-2	3	-3	0	2	0	C	4
D	1	0	1	0	1	-4	0	-4	-2	1	0	D	-1
E	1	0	1	0	1	2	0	0	-2	0	0	E	-8
F		0	0	0	0	1	0	0	-2	₹.Q	0	F	2
G	1	0	0	0	0	0	0	0	0	0	• 0	G	1
U		0	0	0	0	0	0	0	0	0	0	U	0
		2	3c	3b	3a	4c	4b	4a	5c	5b	5a		5
		-1	2	-1	0	-5	5	-9	-2	12	3	5	205
_	HH											_	

series of "snakes of different heights" to show the extent of the over / under- achievement. There are a variety of ways in which the information can be displayed graphically. Even in the example grid above, one simple variation would be to have say dark blue and dark green representing greater variation from zero and light blue and light green representing less variation.....

### Why do are the cumulative graphs used?

The key reason is that the cumulative graph enables you to see easily how many grades a pupil has dropped i.e. to distinguish clearly between the two situations above a) D to E and b) D to G. The cumulative graph has blue in column "level 5c" for grades D and E and F in the latter, whereas just comparing the number of grades would give -2 for D, 0 for E and F, and +2 for G.

Consult the "worked example" section to go through by yourself to gain a clear understanding.

### **Interpreting the graphs**

The sections above describe how to interpret the "snake graphs". On the right here, the graphs for each of the sub-levels is brought together in a single diagram which as the advantage of showing the relative size of the numbers in each sub-level against a common axis. So, in this example, you can see that sub-levels 4a and 5c have the greatest number involved

The graphs below all show the overall

information in several different ways. The grid in



the left gives a high level of detail, showing for example, strengths for more able and less able grade outcomes, with a dip at grade C. The strength at grade B is clearly seen in the overall "snake diagram". And the bar chart on the right, with its colour shading highlighting the difference between +ve and –ve by sub-level, you can see the drop at sub-level 3a, albeit for 3 pupils.





### Using the supplied blank template

In order to assist in compiling an overview for all the main subjects in a school, a blank template is included to make it easy to cop-and-paste the grids for each subject from the master spreadsheet to a recording sheet.

The most informative grids are the "cumulative difference" and the "school actual". In the main spreadsheet, select



the relevant grid starting at the top-left with the \* cell – Copy, and then Paste Special – Values into the blank template. Because there is Conditional Formatting already embedded within the cells in the template, the colours will appear if the cell values are +ve or –ve.

### Worked example

Make a safety copy of the supplied test data file!!

Make sure that French is selected in the National Transition Matrices

On the overall cumulative graph "French" and "GCSE French" should be displayed in blue and pink.

Position the windows so that you can see the overall cumulative Grid and the combined cumulative snake graph, and the test pupil data.

In the test pupil data, look at column BD – French.

Change row 4 from C to D; nothing changes! Why? well scrolling left to col V, X etc you see that these pupils do not have a KS2 score, and so are not included in the VA calculation (as was with CVA)

Look at row 12; change from D to C and look both on the Grid and the snake plots at Level 3b. The cell for grade C goes green with a 1, and the pink snake rises above the blue snake. Now increase the grade progressively to B, A. This makes it clear why the cumulative figures are used because you get an immediate picture of the increasing difference. Then go to row 14 and increase the progressively (it is also Level 3b).

During this, with each increase of grade, the overall figure in the bottom right of the grid (originally 18) is increasing in steps of 1, as there is a 1 grade increase.

Close the data file and the other files WITHOUT saving your changes

### How to analyse the information

It is vital to stress that the great strength of the grids is that they show an overall picture to show the detail which can get lost in the "average". However, averages are useful indicators, but the crucial skill is learning how to use, compare and contrast the different averages. In practice, you should find that there is an underlying consistency, and indeed, if there isn't, then that in itself is important. When comparing with RAISE, there are usually small differences, as there are many different ways of deciding who exactly to include / exclude in the calculation.

### Averages (see Front Panel on spreadsheet and Overview on p.2-3)

On the r-h side of the **"school actual"** are the "without KS2" figures (for which VA is not possible), and the cumulative grade percentages, and also



the average point score (incl and excl no KS2), to enable comparison with RAISE (see right).

At the foot of the **"school actual"** grid are the average point scores for each KS2 sub-level, which can be compared with the national average for each KS2 sub-level.

U	U	U	U	U	U	U	U	U	U	U	U	U	U	
	2	3c	3b	3a	4c	4b	4a	5c	5b	5a	194		200	1
hid-pt	ß	19	21	25	25	27	29	<i>S1</i>	ss	s	+	6	no KS2	?
Tot.	1	3	3	9	9	28	54	55	30	2		200		
					KS2	sub-	evel			194		Overa	all schoo	ol
core	28.0	30.0	34.0	30.7	39.3	41.9	42.6	43.9	52.0	58.0	43.37		43.36	

The difference between the two (school actual v school "if in line") is given at the foot of the top r-h graph on the **Front Panel**. Note that the **difference** grid MUST sum to zero for each sub-level, and overall.

				2		3c	3b	3a	4c	4b	4a	5c	5b	5a		0.0		
					:			totala akor	ud each b	: 	chackcum		<u> </u>	0	0		actual sch	ave
			Tot	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	nat ave	if in line	43.37	
		nat	ave.	25.6	;	28.0	30.2	32.S	35.6	38.5	41.5	45.2	4.9.5	529	40.46	42.33	average	
ave	diff	in pt s	core	2.4		2.0	3.8	-2.2	3.8	3.6	1.0	-1.3	2.5	4.1	2.91	1.04	diff with act	ual

The national average is given for the subject (which should relate to the figure in RAISE), but as most schools differ significantly from the national average, a more useful figure is the average" if in line", as that takes account of the ability profile.

Another way of	1									Г				<u> </u>		
considering the		KS2 p	orofile fo	or pupil	s taking	subjec	t				std error	of mean	(s.e.) =	schoo sch	d s.d.	diff as
subject profile for		2	3c	3b	3a	4c	4b	4a	5c	5b	5a	ave	s.d.	n	s.e	IO. S.E.
each school is to look	sch	1%	2%	2%	5%	5%	14%	28%	28%	15%	1%	29.14	3.24	194	0.23	5.4
at the KS2 scores of	nat	2%	2%	4%	7%	12%	18%	21%	20%	13%	2%	27.88	4.09	194	0.29	4.3
these dains the	diff	-1%	-1%	-3%	-3%	-7%	-3%	7%	8%	3%	-1%	1.27		_	▶ =	diff / std. error
those doing the																
subject.																

Another useful average comes from looking at the Cumulative Difference Grid, although again, it must be stressed that the real value of this is tho look at the grid itself.

In the example supplied within the spreadsheet, it is clear from the grade average, the this subject in this school has done well for  $A^*$  and C, but there is a dip in between for A and B grade students.

This would immediately pose the question as to whether the school was concentrating on getting C grades at the expense of B and A grades.

There is also an overall figure (here 33) which represents the overall number of pupil-grades above or below "if in line", and this can be divided by the number of pupils to get the overall average. Given that 6 points = 1 GCSE grade, multiplying by 6 gives the overall average in terms of points. An interesting exercise for a school is to plot these figures against those in the Relative Performance Indicator (Table 4.1.15) in RAISE Summary Rpt. Informal indications are that there can be a good correlation. However, it is important to



remember that the RPI is RELATIVE within the school and therefore must average to 0, whereas

the Subject TM figures are relative to national, and so overall can be positive, negative etc depending on the performance of the school.



#### National entry patterns

One of the other important factors to bear in mind is whether the entry pattern in a subject at a school is comparable with the national pattern. Care needs to be taken in ensuring that "like is compared with like", for example, is the subject an option subject at many schools whereas it may be compulsory for pupils at the school in question. This then leads to what can be described



as "mid-term filtering", ie on eis using KS2 as the input to the VA, and yet a decision is made on performance (usually at end of KS3) as to the likely final grade. For example, those likely to get below a C grade (irrespective of their initial KS2 score) may be directed to / may choose another route / qualification.

The graphs above illustrate this for the main subjects. The l-h one gives the number of pupils nationally for each subject in the June 12 National TMs for each of the starting KS2 sub-levels. As you can see clearly, there are varying numbers for each KS2 sub-level

To help with interpreting the figures, the r-h graph, then gives the % for each subject relative to Maths (as a proxy for the number for each KS2 sub-level sitting exams at the end of KS4). They show clearly that for those pupils with KS2 Level 5, nearly all of them also do English

Literature, and either Core Science or Triple Science, but then the numbers fall away at Level 4 as pupisl are entered for BTEC Science etc. The most dramatic drop is in French.

### Significance and other estimates

Please read the document "Understanding significance and confidence intervals in RAISEonline.doc" downloadable from the same page on the ASCL website as the other Subject TM and RAISE files. This gives an explanation of how significance operates for attainment scores (as in RAISE) rather than modelled VA.

For each subject, the national average (with and without those with no KS2 score) and national (population) standard deviation are calculated. The figures on the right are for English (GCSE English + English Language). So for those with KS2 score (who are the ones featuring in the Subject TMs), ave = 40.46 (40.5) and std dev = 8.82.

The school actual average is 43.37, so difference with national = 43.37 - 40.46 = 2.91

0		actual sch ave
nat ave	if in line	43.37
40.46	42.33	average
2.91	1.04	diff with actual

The school average if in line with national

(taking into account the subject KS2 profile for the school's is 42.33, so difference with school actual = 43.37 - 42.33 = 1.041.96 \* 0.53

So std error (std dev of mean) =  $7.36 / \sqrt{194} = 0.53$ . This would be used in RAISE ( $\pm 1.96$  s.e. =  $\pm 1.96 \times 0.53 = \pm 1.04$ ) to determine if school English was significantly different from national. In other words, does the school mean lie between 40.46-1.04 and 40.46 + 1.04, i.e. between 39.42 and 41.5 – this is called the "confidence interval". In this case, the school average is 43.37, ie outside the confidence interval and so the school would be "sig+" in RAISE with a green box!

However, this method inherently favours schools with a higher KS2 profile taking subjects, and so a "better" method which gives a value-added approach, is to look at the difference between the school

actual and the school "if in line", as this takes into account the KS2 profile. In other words, does the school mean (43.37) lie between 42.33-1.04 and 42.33 + 1.04, i.e. between 41.29 and 43.37 - 100 in this case it does (just), so it would not be significant

*N.B.* there is a question as to whether the school or national std. dev. should be used for this calculation, but currently it is the school one.

### The "cumulative difference" grid itself

What about the "cumulative difference" grid itself? There is an Expected value for each cell (school "if in line" with national), and an Observed value for each cell (school actual). We can then treat this as a "non-parametric" distribution i.e. we are not doing modelled VA etc where there is an equation based on a parameter (KS2 score). It is then possible to apply **Pearson's chi-squared test** ( $\chi^2$ ) and assess significance. Although some arbitrary assumptions have been made in the spreadsheet (e.g. cells with Expected <2 not included, and Yates' correction not

	n	ation	al
		no 1'92	
	score	010	AZZ
ave	40.5	36.5	40.3
nat s.d.	8.82	11.12	8.97
	Total	no KS2 or D	Overall
*	17,981	724	18,705
Α	64,452	2,134	66,586
В	115,403	3,674	119,077
С	162,102	6,015	168,117
D	93,580	4,692	98,272
E	41,114	3,162	44,276
F	16,101	2,133	18,234
G	4,576	879	5,455
U	2,464	471	2,935
	517,773	23,884	541,657
		schoo	
	194	n	200
	7.36	school s.d.	7.3
$\mathbf{x}$	0.53	std error	0.52
$\Pi$		std error =	:
$  \rangle$	sch	ool s.d. /	√n
11	2.91	diff with	3.08
	5.52	no. s.e.	5.95
, 🗎	diff a	sno.ofs nif/1.96	td errors
t	<u> </u>	nn (1.00 ·	
	1.04	diff with if in line.	
	1.97	no. s.e.	
	100	no of e	td errors
	αιπ as	s no. or s	

applied – see http://en.wikipedia.org/wiki/Pearson's\_chi-squared\_test for more information), in practice, the test and values have been helpful and usually not inconsistent with the other test and statistics.

go	goodness of fit test = ∑ (0 - E) <sup>2</sup> / E and then tested against chi-squared with 9-1 degrees of freedom, excl if E<"min value" (as test loses accuracy with small E). This looks at school actual v "if in line" - slightly diff from cumulative																		
n	nin valu	ie			2	3c	3b	3a	4c	4b	4a	5c	5b	5a		Totals	Every	/ cel	
	2 Σ (O - E) <sup>2</sup> / E 0 0 0								0.5	10.1	13	31.7	11.1	0		44.8	73		
		no.	cells in ca	lc	0	0	0	3	2	3	4	4	4	0		7	20		
test st	atistic (	signif	if < 0.05	)				0.039	0.478	0.007	0.005	0.000	0.011	-		0.000	0.000		
colour (	orange	e if sig	nif differ	enti	from (	expect	ed pat	iern (in	any di	rection						$\bigcirc$			
As	an e> for	kam KS2	ple, lo 2 sub-	ok a leve	at th el 3a	e two a and	o colu 4c.	umns				B	y tota GCS	als fo SE ar	r eac ade	h			
Jus tha r	Just looking at the numbers, we can see that there is a closer fit for 4c (which is not signif), than 3a (which is - just)												l in						
		actu	al	_	lf	in lin	e												
*		0	0		0	0													
Α		0	0		0	0													
В		1	3		0	1													
С		1	3		2	3													
D		1	2		3	3													
E		5	1		2	1													
F		0	0		1	0													

As well as applying the calculation to each cell in the whole grid, it is possible to apply it to each KS2 sub-level. Do note that the test is simply establishing whether the Observed values are consistent with the Expected. It does not judge the direction, and so the significance colour is orange so as not to confuse with the green / blue from RAISE which have an associated direction ("good" / "under")

### **National Transition Matrices - location???**

## If you wish to obtain the original National TMs or previous years

Then select "Transition Matrices" and download the "Transition Matrices for Key Stage 2 to 4" – you do not need to be logged in for this

This is regularly updated with the TMs as they become available, including for example, by disadvantaged.

The 2016 by gender ones are in a long series with the top set of grids for each subject giving the numbers

1

0

3a

25

9

G

U

0

0

4c

25

9

0

0

3a

9

0

0

4c

9



and the second set of grids the percentages gaining each GCSE grade from a given starting KS2 point

In previous years (2015 and before, there are drop-down boxes) - see below right

The two yellow boxes are drop-down boxes clicking in them displays the range of options. Check that the first is set as above, and then click in the Subject box and select the subject of interest. It is this sheet which is used by the Subject VA spreadsheet as a source for the national subject data, so the correct subject must be selected here. NB for English and Maths Level of Progress information, you need to select English



or Maths TMs in the first drop-down box instead of "KS2-4 Subject TMs"

### KS2 prior attainment

### Progress 8 KS2 prior attainment

In the sample data supplied with the spreadsheet, two columns have been added at the right-hand end to show the difference between the Progress 8 KS2 calculation and the fine score used for TMs. It is not that one is right / wrong, but there might be a few apparent discrepancies, and it si as well to be aware.

See below for a longer discussion and graphs on the differences and how it links to sub-levels

### 2015 boycott issues

Remember that for Year 11 in June 2015, they took KS2 test as Year 6 in June 2010 (En & Ma) + boycott; (Y11 Jun'14 = KS2 Jun '09) (En, Ma & Sc)

The KS2 prior attainment for a pupil is calculated using fine scores from Eng & Ma tests (detailed rules apply if test not taken for any reason) and then converted to a Level, and a Band of Prior Attainment (as used in the Performance Tables and RAISE)

- "Low" = below Level 4 (ie Level 3 and below)
  - approx 15% nationally (so matches "lowest 20%")
- "Mid" = Level 4 (approx 50% nationally)
- "High" = above Level 4 (ie Level 5+) (approx 35% nationally)

100							
	AR	AS	AT	EZ	F/	FB	FC
-	KS2 English point score	KS2 mathematics point score	r attainment score in English ar الم	Q2 Personal Finance	-	KS2 En & KS2 Ma	6 x P8 KS2 prior
	28.68	25.38	4.5			27.03	27.00
	0	0	1.5			0	9.00
	29.46	34.5	5.3			31.98	31.80
	0	0	1.5			0	9.00
	27.9	34.02	5.2			30.96	31.20
	25.8	28.26	4.5			27.03	27.00
	33.54	34.98	5.7			34.26	34.20
	30.9	34.98	5.5			32.94	33.00
	31.92	33.78	5.5			32.85	33.00
	25.32	21.84	3.9			23.58	23.40
	21.12	28.08	4.1			24.6	24.60
	0	0	1.5			0	9.00
- T	^	^	4.5	4		^	0.00

The link between the 1 decimal place average, the fine score, sub-levels and fine scores are illustrated in the two slides on the right

The top graph gives the numbers of pupils (say in region of 20K - 30K) in each of the 1 d.p. bands from prior attainment e.g. around 34,000 pupils had an average KS2 En & Ma fine level of 5.0 in 2014

Fine score conversions given

mid = 21;

below:

Level 3 = 18-24:

18-20 = 3c:

20-22 = 3b:

22-24 = 3a

Level 4 = 24-30:

24-26 = 4c;

26-28 = 4b:

28-30 = 4a

Level 5 = 30-36;

30-32 = 5c;

32-34 = 5b:

34-36 = 5a

mid = 33:

mid = 27;





The graph to the right gives the number in each of the sub-levels. There are 3 or 4 1 decimal point bands in each sub-level and so there are around 60K - 100K pupils in each sub-level.

#### **Impact of boycott**

Over the years, the DfE have developed rules to use Teacher Assessments (TAs) for normally just the few % of pupils where TA used because they have not done the test for some reason.

For example, Level 5 TA = 5.5 etc so a pupil getting Level 4 in En (=4.5) & Level



You can see clearly in the graph on the right the large increase at 4.5, 5.0 etc in 2015 from pupils where TA used because of boycott (25% overall)

And the contrast with the figures from 2014 (in green in graph on right). Because the overall number of pupils is virtually the same in 2014 and 2015, note decrease in values other the 4.5 etc in 2015 relative to 2014 resulting from increase at 3.5, 4.0, 4.5, 5.0 etc

In the graph on the previous page, the green line represents 2014 with the characteristic shape. You can see the distortion in the numbers in the sub-levels, with 4b (which includes 4.5), and 5c (which includes 5.0) being higher than usual, and the others being lower.



The particular problem at Level 5 is that if you look at the distribution curve, you can see that it is very skewed, and so the national average of pupils getting Level 5 is actually 5.3, not 5.5. So by arbitrarily assigning pupils who have not done the test to 5.5 instead of 5.3 you are giving them an artificially high prior attainment, or to put it another way, their average "output" is likely to be lower than a "genuine" 5.5 pupil. This is what leads to the blips on the progress 8 charts and has a distorting effect on the national transition matrices.

## Disclaimer

This spreadsheet has been prepared by David Blow (Headteacher of The Ashcombe School) on behalf of the ASCL Data Group as an open, unprotected spreadsheet to assist schools in calculating and analysing subject VA data. This spreadsheet is offered in good faith but will need to be adapted for each school. No responsibility can be accepted for any errors or omissions. Copyright is retained by David Blow, but the spreadsheet may be copied and shared provided no charge is made and acknowledgement made of its source.