Points to note re. use of Ballard/Westwood Timed Arithmetic Test.

General:

- Like all tests, it has its ads and disads. It gives a useful snap-shot of a childs reflexive knowledge of basic tables facts.

- It is timed, some cdn do not work well under pressure of time. A low score does not always indicate a high % of incorrect answers, but could be sums incompleted.

- Child may actually know the answers but is slow at recording.

- Does not measure potential but can help identify weaknesses and assess progress. Can also indicate readiness for various algorithms, eg long division.

- **If it is <u>not</u> rendered useless by being used as the basis for a regular Friday tables test, it is quite reliable and efficient.**

- Children usually want to know their score and how it compares to the end-yr target. (often this is more important to them than comparing their score with other pupils)

- History of the test: a bit hazy !! Ballard (?) devised and normed the Add/Sub. Vernon revised the norms in 1949 . Later Westwood devised the Mult/Div and both the add/sub & mult/div were normed by him *et al* (1974) in England and by Broughton (1975) in Australia.

- The <u>end-yr</u> targets <u>have not been standardised</u> but seem to be quite realistic and achievable.(schools could decide their own targets) These targets were set by teachers in a mixed infants to 6^{th} , 580 pupil school, school setting neither disadvantaged or privileged. Westwood did supply mean and critically low scores for various ages, these are perhaps useful but only as a rough guide as they were standardised quite some time ago .

- By testing at Easter, the final term could be used by children to put in a final push (and also perhaps to alert parents).

- A certificate to signify reaching the End-yr Tables Target could be designed & given out.

- It might be worthwhile to administer the copying test to see if motor/hand-eye co-ordination is a factor re low scores??

Administration:

- Do some warm-up before each test and stress the operation involved, otherwise some children will add when supposed to subtract !!

- The same test is used for all classes, perhaps in 6th Class administering just the Multiplication & Division would suffice ?

- The cdn could be tested twice a year not three times.

- Addition test given out first. Children write their names on the back of the test page . Teacher says *turn your page over and start.* Everyone starts and stops at the same time (i.e. exactly one minute, preferable to have a timer rather than a watch).Children turn over their pages immediately at the end otherwise some cdn will keep writing !!

- Children just write the answers on the test paper and should be encouraged not to use their fingers but to quickly "think" of the answer and move on to the next sum.

- It may be advisable to tell the children to complete the columns rather than one from each row before moving down each column respectively.

- On time-up, completed pages are turned over and collected immediately. Tests usually corrected by teacher.

- Some cdn skip the hard ones and pick them up later if they have time, this is a clever strategy and perhaps should be pointed out to the class. ?? (the problem with pointing out this strategy is that the 'brighter pupils' will use it without being told and the 'weaker' pupils may waste time scanning for those sums which they find easier to do and may in fact end up scoring less than if they completed the test in a linear manner.

- From 3rd Class upwards, perhaps the add/sub tests could be completed before short break and the mult/div completed after break. **Ref:B.M.**

Individual Record of Ballard/Westwood Timed Arithmetic Test Results:

Name:									
Date:	Class:	Addition		Subtraction		Multiplication		Division	
		+	Target	-	Target		Target		Target
1st	Dec								
	Easter								
	June		14		11				
nd	Dec								
	Easter								
	June		18		16				
d	Dec								
	Easter								
	June		21		19		14		10
	Dec								
	Easter								
	June		24		22		20		14
	Dec								
	Easter								
	June		27		24		24		18
	Dec								
	Easter								
	June		28		25		26		22

Norms for Timed Arithmetic Tests:

Normed by Westwood et al (1974) in England and by Broughton (1975) in Australia.
No significant difference was found.
Re-test reliability is between .92 and .89
Schools might decide to "set" their own end of year targets, partly based on these norms, which are from a different country and somewhat dated.

Addition

Age (yrs)	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11
MeanScore	2.5	4.5	7	10	13.5	15.5	17.5	19	20	21	22	23
Critically LowScore	0	2	3	6	7	9	12	13	14	15	15	16

Subtraction

Age (yrs)	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11
MeanScore	1	3.5	6.5	8.5	10.5	12	13	15	16.5	17.5	19	21
Critically LowScore	0	0	3	6	8	9	10	11	12	13	13	14

Multiplication

Age (yrs)	8.5	9	9.5	10	10.5	11	11.5	12	12.5
MeanScore	12.5	12.5	15	17	20	22	23.5	25	26.5
Critically LowScore	7	7	9	11	13	15	17	18	21

Division

Age (yrs)	8.5	9	9.5	10	10.5	11	11.5	12	12.5
MeanScore	7.5	8	10	13	13.5	15.5	18	20	21.5
Critically LowScore	3	3	4	6	7	8	11	13	14

B.M.

2 + 1 =	6 + 2 =	2 – 1 =	10 – 4 =
1 + 4 =	2 + 7 =	5 – 1 =	9 – 4 =
2 + 2 =	4 + 6 =	3 – 2 =	10 – 3 =
4 + 2 =	5 + 7 =	5 – 3 =	11 – 2 =
3 + 4 =	8 + 3 =	6 – 2 =	10 – 6 =
2 + 3 =	4 + 9 =	2 – 2 =	12 – 3 =
5 + 2 =	7 + 6 =	6 – 4 =	12 – 6 =
4 + 5 =	8 + 6 =	7 – 2 =	11 – 5 =
3 + 5 =	9 + 8 =	6 – 1 =	13 – 3 =
2 + 8 =	6 + 9 =	7 – 3 =	12 – 9 =
4 + 4 =	8 + 7 =	8 – 2 =	14 – 6 =
2 + 5 =	9 + 5 =	7 – 5 =	17 – 8 =
1 + 8 =	9 + 7=	8 – 3 =	16 – 9 =
6 + 4 =	9 + 3 =	7 – 4 =	18 – 9 =
3 + 7 =	8 + 4 =	9 – 3 =	17 – 6 =
6 + 3 =	8 + 8 =	8 – 5 =	16 – 8 =
5 + 5 =		9 – 5 =	

1 x 2 =	3 x 9 =	2 ÷ 1 =	24 ÷ 8 =
2 x 3 =	8 x 3 =	4 ÷ 2 =	27 ÷ 3 =
2 x 5 =	7 x 0 =	3 ÷ 1 =	50 ÷ 5 =
1 x 4 =	8 x 4 =	6 ÷ 3 =	28 ÷ 4 =
3 x 2 =	5 x 6 =	8 ÷ 2 =	32 ÷ 8 =
4 x 3 =	4 x 7 =	9 ÷ 3 =	35 ÷ 5 =
9 x 1 =	8 x 6 =	10 ÷ 2 =	42 ÷ 6 =
6 x 2 =	7 x 5 =	12 ÷ 3 =	45 ÷ 5 =
3 x 4 =	9 x 4 =	15 ÷ 5 =	48 ÷ 8 =
5 x 3 =	8 x 9 =	16 ÷ 4 =	54 ÷ 6 =
7 x 2 =	7 x 7 =	18 ÷ 3 =	36 ÷ 9=
3 x 6 =	6 x 9 =	20 ÷ 4 =	56 ÷ 7 =
2 x 8 =	8 x 8 =	21 ÷ 3 =	64 ÷ 8 =
4 x 5 =	6 x 8 =	24 ÷ 4 =	63 ÷ 9 =
9 x 2 =	9 x 9 =	30 ÷ 3=	72 ÷ 8 =
3 x 7 =	9 x 7 =	30 ÷ 5 =	81 ÷ 9 =
6 x 4 =			88 ÷ 8 =

Ballard & Westwood Timed Arithmetic Test
[Multiplication & Division]

Ref: B.M.