Mfacts121

YEAR 5/6: Pre-Assessment Teacher Talk

Version 2.0 2017

The purpose of this pre-assessment is to find out what students know about the concept of multiplication and what strategies they may have. In particular:

-*concept* of multiplication

-understanding of *arrays*: when drawing arrays, do they *draw correctly- 6 x 4 is '6 rows of 4' or '6 rows with 4 in each'*

-when answering 7 x 6 can they *explain their thinking*? We want more than 'I just know it!', e.g. 'I know that 6 x 6 is 36, so I added another group of six, that's 42' etc.

-Even for students who are automatic with their multiplication facts, it is important that they can go back a step and re-think how they could solve it quickly.. Thinking about strategies with single digit questions, will be transferred to working with larger numbers.

-26 x 5 - challenge your students- who can anyone answer it *without using the formal algorithm*? The use of *distributive property* here- separate the question into 20 x 5 plus 6 x 5 and add back together, shows *good number sense*. Or perhaps do 26 x 10, then halve the product, which gives us 26 x 5.

-32 x 40- could be solved by doing 32 x 4, then putting the zero back onto the answer to make it 10 times bigger. Use distributive property- 30 x 4 and 2 x 4.

-29 x 33- could be done as 30 x 33, then take away a group of 33 (compensation). Make it 3 x 33= 99, put the zero back on, 990, then take away the extra 33, that's 957. Or you can check to see who can use the written algorithm for 2 digit x 2 digit questions here.

-48 x 4.2- Distributive property for decimals too! It makes sense.... Think 48 x 4 and 48 x 0.2, then add the two parts back together. This can be set out using the 'grid method'. Or you can check to see who can use the written algorithm for multiplying with decimals in this question..

To gain the best insight from this task, rove around as students complete it. Ask them questions. Students will often not be able to record/explain in writing what they are thinking. By roving around, observing and questioning, you will quickly see the various levels of understanding.

Year 5/6: Pre/Post-Assessment Task: Marking Guide

*Use as a marking *guide only*- this is a 'rich' task, where teacher discretion and interpretation is required. The main aim is for teachers to gain an insight on their students' thinking.

Question	Marking Guide- (points per question)
1	*We **do not** require the answer or product for Question 1. We are first aiming to assess if the student understands the meaning of the x sign and the concept of multiplication.* **0-** No evidence of understanding that this is a *multiplication equation* or the *multiplication concept* is. E.g. no response, or confuses multiplication with addition etc. **1-** Shows some understanding that this is a *multiplication equation* and some understanding of the *multiplication concept- e.g. student writes 'this means '9 times 6' or*

	draws a 'groups of' diagram but may draw 6 groups of 9 instead of 9 groups of 6. Draws an array, but draws 6 rows of 9, instead of 9 rows of 6. Or writes some explanation of the equation but does not draw a diagram. **2-**Understands the equation is multiplication, explains this using terms such as *'times, groups of, multiplied by, rows of'* and draws a suitable diagram *(either 'groups of' or an array, correctly)* e.g. *student draws 9 groups of 6 or 9 rows of 6 correctly (must draw 9 groups of 6 OR 9 rows of 6 NOT 6 groups of 9 or 6 rows of 9).*
2	**0-** No evidence of understanding that this diagram relates to the multiplication concept. E.g. the student counts the dots by 1s or 2s (inefficient method). Correct answer may still be given, but efficient strategy is not used. **1-**Incomplete response, showing some but not complete understanding. Such as, counts the dots by using groups- either counts by groups of 4s or 9s to arrive at 36 but does not record an equation. Or, arrives at correct answer, but records equation wrong way around, as 9 x 4 = 36 (this means *9 rows of 4. It should be 4 x 9 = 36*) **2-**Full response. Understands that the array represents a multiplication equation and records the equation correctly, i.e. 4 x 9 = 36 and records the equation written the correct way around (**not** 9 x 4, which means *9 rows of 4*) and an explanation such as this means 4 times 9 or 4 groups of 9.
3	**0-** Incorrect answer. **1-** Correct answer (42) with limited or no explanation. **2-** Correct answer (42) explained in words and/or diagram, showing relevant multiplication concepts- *7 groups of 6* or *7 rows of 6* or *counting by 6s* or *7s* to get 42. **3-** Correct answer (42) explained in words and/or diagram, showing the the use of an efficient strategy, such as: *I know that 6 x 6 is 36, so I added another group of six, that's 42' etc.*
4	**0-** Incorrect answer. **1-** Correct answer (130) with limited or no explanation. **2-** Correct answer (130) explained in words and/or diagram, showing the multiplication concepts- *26 groups of 5* or *26 rows of 5* or *counting by 5s, 26 times*, (less efficient type of strategy). **3-** Correct answer (130) explained by use of an *efficient strategy* - such as first *multiply by 10 to get 260, then halved the product = 130, OR used written algorithm etc.*
5	**0-**No evidence or incorrect answer. **1-**Correct answer (1280) but *less efficient* strategy, *e.g. used the full written algorithm* 2-Correct answer (1280) explained by use of an *efficient strategy- it could be solved by doing 32 x 4, then putting the zero back onto the answer to make it 10 times bigger* (student noticed that they did not need to follow the full written algorithm)
6	**0-**No evidence or incorrect answer. **1-** Correct answer (957) could be done as 30 x 33, then take away a group of 33 (compensation), i.e. *make it 3 x 33= 99, put the zero back on, 990, then take away the extra 33, that's 957.* OR used the written algorithm for 2 digit x 2 digit equation correctly.
7	**0-**No evidence or incorrect answer. **1-** Correct answer (201.6) could be done as 48 x 42, then put the decimal back into the answer OR used distributive property with decimals. It makes sense…. Think 48 x 4 AND 48 x 0.2, then add the two parts back together.
Self-Reflection	For ***student reflection*** and ***teacher insight***. Get a gauge on how your students feel about learning their multiplication facts.