

Name

dob

date

Does the learner ?

1: never 2: rarely 3: sometimes 4: often 5: always

A

- 1) Have difficulty counting objects accurately.
- 2) Lack the ability to make 'one to one correspondence' when counting (match the number to the objects)
- 3) Find it impossible to 'see' that four or five objects are 4 (or 5) without counting (or 3, if a young child)
- 4) Write 51 for fifteen or 61 for sixteen (and all teen numbers)

These are foundational, the very start of understanding numbers.

B

- 5) Have difficulty remembering basic addition and subtraction facts
- 6) Count on for addition facts, for example, for $7 + 3$, counting on 8,9, 10 to get your answer
- 7) Count all the numbers when adding, as for $7 + 3$ again, you count 1,2,3,4,5,6,7,8,9,10
- 8) Not 'see' immediately that $7 + 5$ is the same as $5 + 7$ or that 7×3 is the same as 3×7 .
- 9) Use tally marks (often not grouped) for addition or subtraction problems
- 10) Find it difficult to progress from using materials (fingers, blocks, tallies) to using only digits and numbers
- 11) Find it difficult to write numbers which have zeros within them, such as 'four thousand and twenty one'
- 12) Forget the question asked in mental arithmetic
- 13) Have poor skills with money, for example, a difficulty in calculating change from a purchase.

These are the first steps towards more formal maths. Many educators consider memorising these facts an essential part of setting the foundations for developing maths knowledge and skills. Often getting these facts into long term memory, purely by rote learning, is an insurmountable challenge for some learners and this creates early experiences of anxiety and inadequacy, 'maths is not for me' There are very valuable and viable alternatives to a sole reliance on long term memory. See mathsexplained.co.uk. These alternatives help learners to access the facts and provide early conceptual experiences which set the foundations for future maths learning. Without secure foundations progress will be difficult and insecure.

C

- 14) Finds it much harder to count backwards compared to forwards and reversing any sequence
- 15) Find it difficult to count fluently less familiar sequences, such as: 1,3,5,7,9,11.....or 14,24,34,44,54,64.....
- 16) Only know the 2x, 5x and 10 multiplication facts.
- 17) Count on to access the 2x and 5x facts
- 18) Able to learn the other basic multiplication facts, but then forget them overnight
- 19) Make 'big' errors for multiplication facts, such as $6 \times 7 = 67$ or $6 \times 7 = 13$
- 20) Struggle with mental arithmetic.
- 21) 'See' numbers literally and not inter-related, for example, do you count from 1 to get 9, rather than subtracting 1 away from 10.

More foundational skills. Being able to reverse a sequence is a key skill in learning maths. In fact, skills with sequences in general is key to development as is interlinking facts.

Mental arithmetic is very dependent on working memory. (This capacity is easy to check by asking the student to listen to a sequence of digits and then repeat them back in reverse order.)

D

- 22) Find it difficult to judge whether an answer is right, or nearly right
- 23) Find estimating impossible.
- 24) 'Think an item priced at £4.99 is '£4 and a bit' rather than almost £5
- 25) Prefer to use formulas (when you remember them!), but use them mechanically without any understanding of how they work
- 26) Forget mathematical procedures, especially as they become more complex, such as decomposing or borrowing for subtraction and almost certainly any method for division.
- 27) Not see and pick up patterns or generalisations, especially ones that are new to you, for example that $1/2, 1/3, 1/4, 1/5$ is a sequence that is getting smaller.
- 28) Think that algebra is impossible to understand

Generalising is another key skill as is seeing patterns and links in numbers. Estimation is a life skill and also can encourage learners to check their answers during and at the end of a calculation. It also indicates a good sense of number and number inter-relationships.

E

- 29) Organise their written work poorly, for example they do not line up columns of numbers properly.
- 30) Get very anxious about doing ANY maths

- 31) Refuse to try any maths, especially unfamiliar topics.
- 32) Become impulsive when doing maths, rather than being analytical. Do you rush to get it over with?

Items 30 to 32 are about the affective domain and thus onto maths anxiety. I have an anxiety 'test' within my diagnosis book, 'More Trouble with Maths.' Item 29 is important. Complex algorithms require good spatial organisation skills and neat writing. Problems in this area could be an indicator of dyspraxia. Sometimes squared paper can help, but the squares have to be the right size for each individual learner.

Overview

There are no scores or grades for this List. Obviously, the more behaviours that are present, the more severe the learning difficulties will be. An analysis of the behaviours exhibited could create the core of an intervention plan, allowing instructors to target key developmental objectives. The gradings for the items (1 – 5) may help you to focus on the more 'needy' items.

Steve Chinn (2023) There is a version of the list in my diagnosis book, 'More Trouble with Maths' 3rd edition