

Mental Mathematics in the Senior Years

MTS PD Day
October 20, 2017

Mental Math Samples

General Questions	Answers
1. List the first 15 perfect squares.	1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225
2. Write as repeated multiplication: -2^5	$-(2)(2)(2)(2)(2)$
3. Write as repeated multiplication: $(-2)^5$	$(-2)(-2)(-2)(-2)(-2)$
4. Evaluate: 5^{-2}	$\frac{1}{25}$
5. Multiply: $(2 + x)(4 + x)$	$x^2 + 6x + 8$
6. Factor: $14x^2y^3 + 63xy^2 - 21x^4y$	$7xy(2xy^2 + 9y - 3x^3)$

Mental Math Samples

What is Mental Math?

Think, Pair, Share

What is Mental Math?

Student Answers

- Most popular responses: math done in your head.
- Some interesting perspectives:
 - Math that you are confident enough to apply in your mind without writing the methods that used down on paper.
 - knowing your basics
 - If you can answer a simple multiplication question such as 17×7 in your brain without doing the math, you have accomplished mental math.
 - math that is done in the mind, quickly and efficiently
 - Warming up your head to do math
 - To do math instantly, without the effort put into operations and processes
 - Mental math to me means doing simple calculations in your head. It is not something I think is terribly important in math because I believe math is a lot more about understanding topics and knowing how to approach problems than how fast you can do calculations in your head.

What is Mental Math?

- Some interesting perspectives (cont.):
 - To be able to do this I believe you have to be very familiar with the topics and it comes from extra practices.
 - Math that you understand so well that you don't need to write anything down to do calculations/find the answer
 - For me, it isn't just doing arithmetic. I guess whatever math you're able to do in your head, even if it's the logical reasoning and explanation, is mental math.
 - Since mental math means to do arithmetic in my head without pens and paper, it implies memorization of equations, lots of practice, and flexibility of thinking to me.

Was Mental Math Useful? Why?

54 students completed the survey. 54 students responded yes to Mental Math being useful. Some thoughts (both good and bad)

- It made me a lot faster at doing calculations in my head, and sometimes helped me figure out how to work through more difficult problems.
- we got to quickly review what we had learned the previous class. Sometimes our classes had a few days in between them so it was helpful to remember what we did so we would understand what we were going to learn in the class later
- They helped prep your brain before we got into the new material, it put you into math mode. It also was a good way to go over and review key concepts and ensure you understood how to do the simple concepts we were learning.

Was Mental Math Useful? Why?

Student Thoughts (continued)

- It helped sharpen up commonly used skills like differentiation and integration. Also, considering that the university does not allow calculators, this was useful practice.
- It kept the ideas fresh and insured that people didn't forget things over time. It kept us sharp and helped us in learning the concepts.
- Forced repetition
- Made me realize what I knew and what I should review
- Reminded us of what we did previously and warmed up our heads for the new class.
- I liked a little mathematical warm up at the start of every class.

Was Mental Math Useful? Why?

Student Thoughts (continued)

- I think it was good that we did them everyday for a couple of reasons. Firstly, they were quick little questions that got our minds fired up for math class that didn't involve too much thinking but still helped us get in the zone for class. They also helped us stay up to date with the lessons that we either just did the night before or even some concepts from a few weeks ago. I also liked that fact we were put into a situation that made us think on the spot and use quick little tricks to solve problems.
- Some were repetitive
- Sometimes they were too repetitive. Better balance would have made it better
- The stress of trying to do it in time.
- The fact that we do it every class. (it's a good thing but I am just a bit lazy)
- When I was behind in notes or missed a class, I wouldn't be able to answer most of them but this made me realise I had to study more
- I thought that sometimes the time was given too short that I skipped so many questions that I just gave up.
- Sometimes I didn't have enough time to finish but timing is a big part of mental math and it helped me do math faster with less mistakes

Was Mental Math Useful? Why?

Student Thoughts (continued)

- Honestly, there was nothing I disliked about it. At the beginning of the year I was entirely against the idea but as the year progressed it grew on me and I actually looked forward to start math class with some mental math. It's a more engaging way to learn, rather than jumping into the lesson right away.
- At the beginning of the year, I found them difficult because of how fast the questions would move, but over the course of the year, it got easier and easier and I got much better and doing the questions quickly and efficiently. It wasn't great at the start, but it helped me near the end.
- correcting it at a incredibly slow pace
- It was a bit too fast and i would often lose marks because of time, not because i was incorrect