

Introducing Multiplication to a Student with Different Learning Needs

By Alexandra Berube

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The basis of my math instruction is always to move from one concept that the student firmly understands and then apply that concept to the next level of mathematic reasoning. In working with my favorite third grade student, I found the opportunity to introduce multiplication to him. This student was born with Agenesis of the Corpus Callosum (a complete or partial absence of the corpus callosum, the band connecting the two hemispheres in the brain), and I wrote about him in a previous blog post. He learns concepts in a completely different order than most people would expect. He is still solidifying his addition and subtraction facts, and adds and subtracts any amount, including one plus one, on his fingers. And yet I know that he is often ready for more advanced concepts, and that these advanced concepts will actually help solidify previous concepts that he is still working on mastering.

In his third grade class, the student is working on geometry, including perimeter of squares. This was the perfect opportunity to introduce multiplication. In a square, all the sides are the same size. If he has a square with the side length of two, then he will do 2×4 . I worked with him on this geometry concept for a while with different shapes such as pentagons, hexagons, and triangles: any shape that has sides of equal length. He quickly grasped this concept and then we moved on. I like to use a dry erase board in my instruction, because it's another form of media ('media' used loosely, I suppose) than pen and paper, and it allows the student to draw shapes and manipulate the written material in a new way. I had the student make shapes of his own, and we would see how many sides that shape had. We would give each side a length, and then see what the multiplication problem would be as a result.

We then worked on the *worksheet I've included a link to here, which shows pictures of groups of objects (for example, four triangles with three stars in each triangle). It asks the students to write an addition problem (so, in this case, three stars four times, so $3+3+3+3$) and then the multiplication problem (3×4). He picked this up very quickly, and so we moved on to the last game of the session.

*Multiplication Worksheet:

http://www.superteacherworksheets.com/multiplication/picture-math-1_RSPMW.pdf

Using a pair of dice, we played a game to visually show the amounts to be multiplied. First we rolled one die, and then drew the dots shown on the die on a piece of paper. We wrote the number value above the dots. Then we wrote a multiplication symbol, and then we rolled the other die, which would act as the 'multiplier.' The second die dictated how many times the first die would be multiplied by. So if the first die was a four, we drew four dots, put a four over it and then a multiplication symbol next to that. Then if the second die was a three, we wrote the number three next to the multiplication symbol, and then drew four dots two more times for a

total of three sets of four dots. This way he could see why we were multiplying--we were adding the same number a multiple of times.

He then added all of the dots on the dice and found out that $4 \times 3 = 12$. Below all the dots we wrote $4+4+4$ (the addition problem like on the worksheet I just described), to further enforce that multiplication is an extension of addition. He'd already mastered adding groups of numbers, so this was the next logical step. He smoothly transitioned into a student who understands the basis of multiplication. Of course, he's not going to be memorizing his multiplication tables in the near future, but he understands what multiplication is now, and he grasps that it is an extension of addition that applies in real life.

About Alexandra Berube

Alexandra is the Managing Director of Boston Tutoring Services, a tutoring company that offers one-to-one in-home tutoring in Massachusetts. She is also a former Kindergarten teacher who also tutors students in grades K-8, in all subject areas, including test preparation.

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