



Multiplication Fact Strategies

The order in which you should teach basic
multiplication facts

Multiplication Fact Strategies

Multiply by zero

Students need to understand that no matter how many groups of zero a person has, the answer will always be zero. This is a very important concept where students acquire the knowledge that zero sets means you have zero! Using paper play money or candy is always a way to grab their attention. Distribute several different groups of zero to students ("Here you go! Zero money (or candy)! (Don't give anything) How much money (or candy) do you have?

Commutative Property (Turn around facts)

Students may as well learn this right away. They already should know the properties principle from basic addition facts. Use their knowledge of multiplying zero to practice this. For example, if you have 6 groups of zero or zero groups of six, you have the same result. As you progress with new facts, keep practicing this strategy as well (that is $1 \times 3 = 3$, so $3 \times 1 = 3$). You will pave the road for students to understand fact families.

Multiplying by one

One times any number means one group of that number which is the same number. Do not simplify it by just having them memorize this. Use beans, dry pasta, magnets or drawings to build these groups/arrays. Utilize a multitude of demonstrations and students will understand rather than memorize these facts. Remember to always work in the commutative property as well for each fact/strategy you teach.

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Multiply by Two

A strategy for students to understand the connection between addition and multiplication. Double numbers (not doubling).

For example: $2 \times 9 = 9 + 9 = 18$

Using the beans, dry pasta, magnets or drawing approach to make groups and arrays is a tactile method to demonstrate this strategy. Have students look for double numbers around them (ie there are double numbers in the eye holes of shoes for the laces to pass through, a chair has two front and two back legs, five toes on each foot, five fingers on each hand) and then draw pictures. It will take a few lessons for students to fully acquire this understanding. Give them many chances to practice developing these arrays.

Multiply by Ten

Before making the leap of telling students to “add zero” on the end of the number they will need to see the number pattern of increasing by ten. Utilizing your hundreds chart (even on your Smart Board) or using base ten rods will facilitate this strategy. You will be surprised to hear students come to their own realization that “adding zero” works the same way. If they don’t, then you can discuss with them this “trick”.

Multiply by five

Students learn by relating, well this set of multiples is very familiar to them. Use an analog clock to start this strategy. First have them count by fives pointing to the hour. Then return to it labeling each one as groups (so for hour 1, label it one group of five, hour 2, label it two groups of 5 & so on). Also, highlight the five pattern as always ending in 0 or 5; again this will build the road way for future concepts.

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Multiplying by 9

One strategy to teach is the great pattern the multiples of nines make.

1 group of 9 = 9 ($0 + 9 = 9$) (the zero is one less than the group)

2 groups of 9 = 18 ($1 + 8 = 9$) (the one is one less than the tens column)

3 groups of 9 = 27 ($2 + 7 = 9$) (the two is one less than the tens column)

Work on this strategy a few times, students will eventually see the pattern as the answer adds up to nine and the tens digit is one less than the factor the nine is being multiplied by. Also, the last digit, when added to the factor adds up to ten! For example: $5 \times 9 = 45$ – the first digit in the product is one less than 5 (the factor) and the last digit will add up to 9 ($4+5=9$). Also, the factor 5 and the last digit of the product (5) will add up to ten.

Multiplying by eleven

It quickly becomes very obvious that multiplying by 11 follows an easy pattern. Again do not fall into the trap of memorization. Demonstrate some examples and have students think of it in terms of multiplying by 10. Push them to see this pattern as well, not just repeating the number itself. Obviously this is very apparent for numbers 1-9, but that memorization technique does not work for larger numbers. Have students do some examples ($4 \times 11 = 44$, $8 \times 11 = 88$) and break it down so students understand that it is taking the original number and multiplying it by ten and then itself.

Number Neighbors

Strategies that build from previous knowledge work well. Students may not know 4×5 but they may know 3×5 . If this is the case, they can just add one more group of 5 to their answer! This technique still helps me today for calculating larger numbers.