Standards Addressed by these Number Talks:

* 3.NBT.3 Multiply one-digit whole numbers by multiples of 10-90 (eg. 9 x 80, 5 x 60) using strategies based on place value and properties of operations.

Pose these number sentences to students and ask them to solve them mentally. The student’s role is to demonstrate fluent strategies for solving these problems using place value and/or properties of operations. The teacher’s role is to pose the problem, give students a few minutes to solve the problems and then lead a discussion about how they solved the problems. Teachers will need to write down students’ thinking using number sentences that will show how students used place value and/or the properties of operations. You need not pose all at once, but instead do a few each week during the unit (posing one problem in one setting, or a string of problems that build on each other in one setting or over the course of a week). Conversations may range from 10-20 minutes in length. See the article *Number Talks Build Numerical Reasoning (***October 2011 •** teaching children mathematics) for more information.

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| Number Talk Problem Sets | **Possible**\* Strategy Ideas |
| 2 x 10  4 x 10  8 x 10  4 x 20 | Students may use doubling strategies to help them solve this set of problems- the ideas that 4 is twice 2 means that the answer to the second problem will be double the first. This is an example of the associative property and can be notated this way:  2 x (2 x 10) = (2 x 2) x 10 = 4 x 10  Other strategies:  Repeated addition: 4 x 10 = 10 + 10 + 10 + 10  Counting: 10, 20 , 30, 40 |
| 2 x 20  3 x 20  5 x 20  8 x 20 | Students can use the products of the first two problems to help them solve 5 x 20. Because 2 + 3 = 5, students can add the products of 2 x 20 and 3 x 20 to solve 5 x 20. This is an example of the distributive property and can be notated this way:  (2 x 20) + (3 x 20) = 5 x 20  Other strategies:  Repeated addition: 3 x 20 = 20 + 20 + 20  Counting: 20, 40, 60 |
| 3 x 20  3 x 30  3 x 40  3 x 50 | When presenting this set of problems, students may think that because the first number stays the same and the second factor increases by 10 each time that the products will only increase by ten. This is a good time to see who really understands the meaning of multiplication. Students may use the facts they know from previous units to help them solve these problems, ie. I know that 3 groups of 2 is 6, so 3 groups of 20 must be 60.  Make sure to help students notate this and not get stuck in the zero trick:  For example: 3 x 20 = 3 x ( 2 x 10) = (3 x 2) x 10 = 6 x 10 (associative property)  Other strategies:  Repeated addition: 3 x 30= 30 + 30 + 30  Counting: 30, 60, 90 |
| 2 x 20  3 x 30  4 x 40  5 x 50 | Another opportunity for students to work on using their facts, in this case the squares.  Notation: 2 x 20 = 2 x ( 2 x 10) = (2 x 2) x 10 = 4 x 10 (associative property)  Other strategies:  Repeated addition: 4 x 40 = 40 + 40 + 40 + 40  Counting: 40, 80, 120, 160 |
| 3 x 5  3 x 10  3 x 50 | In this problem set, students should look for relationships between the problems to help them solve the entire set:  For example: If students know that 3 x 5 = 15 and 50 = 5 x 10,  Some students may use the associative property to help them solve:  3 x 50 = 3 x ( 5 x 10) = (3 x 5) x 10 = 15 x 10 = 150  Other strategies:  Repeated addition: 3 x 50 = 50 + 50 + 50  Counting: 50, 100, 150 |

\*These are just some possible ideas. Please accept many different ways of solving the problems and connect the ideas to each other. Third grade students may use repeated addition and other strategies that are important steps in the process of understanding.