THE IMPORTANCE OF MATH FLUENCY

MULTIPLICATION

Numbers are Flexible

Numbers can be broken apart in many different ways. In 4 x 6, you can break the six apart several ways to think differently about the problem. You could think of 6 as 3 and 3, so you multiply 4 x 3 + 4 x 3. You could also think of 6 as 5 and 1, so you multiply 4 x 5 + 4 x 1.

MULTIPLICATION REPRESENTATIONS
4 X 6 AND 6 X 4

number line jumps

4 jumps of 6

6 jumps of 4
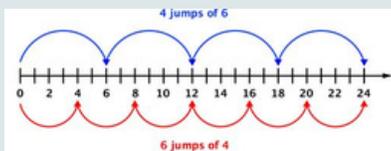
repeated addition

$$4 + 4 + 4 + 4 + 4 + 4 =$$
$$6 + 6 + 6 + 6 =$$

skip counting

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30

equal sized groups of

area model/arrays

6 columns

4 rows

FLUENCY WITH MULTIPLICATION

	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100
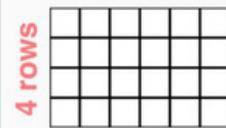
There are patterns and relationships that exist in multiplication facts. By studying patterns and relationships, students build a foundation for fluency with multiplication and division.

THE PROGRESSION OF MULTIPLICATION

This video illustrates the progression of multiplication from 2nd grade to the end of 5th grade.

MAKING SENSE SERIES
Progression of Multiplication

RESOURCES

Fluency Without Fear, Stanford University

Math Flips, flashcards with visual models