Third Grade: Module 3

DUVAL Math Parent Tips

DUVAL COUNTY
PUBLIC SCHOOLS

Multi-Digit Multiplication and Division

In this module we will go deep into our learning about these two related operations. Students will practice their math facts to become fluent, and will learn several strategies for multiplying and dividing numbers.

What Came Before this Module: We learned more about both measurement and the place value system. We also worked with telling time to the nearest minute and elapsed time.

What Comes After this Module: We will extend our multiplication skills by studying area and two-dimensional spaces. We will design a floor plan and calculate the area using our multiplication skills

Words to Know

Array: a set of numbers or objects that follow a specific pattern

Commutative Property: e.g. 3 x 2 = 2 x 3

Distributive Property: e.g. 12 × 3 = (10 + 2) x 3 = (10 × 3) + (2 × 3)

Factors: numbers that are multiplied to obtain a product

Multiple: e.g. multiples of 9 are 18, 27, 36, 45, etc.

Number bond: model used to show part-part-whole relationships

Product: the quantity resulting from multiplying factors

Quotient: the answer when one number is divided by another

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Special points of interest:

✓ Words to Know

✓ Represent and solve problems involving Multiplication and division

✓ Analysis of Patterns and Problem Solving

✓ Mathematical Practices

✓ Want to learn more about DUVAL Math?

Questions?

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Represent and Solve Problems Involving Multiplication and Division

Interpret the Unknown in Multiplication and Division

Problem 1: Interpret the unknown in multiplication.

Asmir buys 8 boxes of 9 candles for his dad's birthday. After putting some candles on the cake, there are 28 candles left. How many candles does Asmir use?

$8 \times 9 = c$
$c = 72$

$72 - 28 = a$
$a = 44$
Asmir used candles.

Just add 2 to both numbers!
$72 - 28$
$= 74 - 30$
$= 44$

Problem 2: Interpret the unknown in division.

The fabric store sells 1 meter of cloth for $8. Maria buys some cloth that costs a total of $56. She then uses 3 meters to sew a dress. How many meters of cloth does she have left?

$56 \div 8 = t$
$t = 7$

$7 - 3 = n$
$n = 4$
Maria has 4 meters of cloth left.

Reminder: What is a tape diagram?

A tape diagram uses a rectangle(s) with numbers to represent the number in a word problem. Now that numbers are getting bigger a rectangle is used to represent the number instead of drawing dots or pictures. A tape diagram allows the student to visualize the problem.

Reminder: What is decomposing?

Decompose it to break a number apart. When the numbers are not as big it s easier for students to multiply or divide problems. The number 25 can be decomposed into 20 + 5, or 10 + 10 + 5

Mrs. James has 48 pencils for her library. Mrs. James placed a pack of 6 pencils on each desk. How many packs of pencils does Mrs. James have?

48
6
$48 \div 6 = 8$
How many 6's
Mrs. James has 8 packs of pencils.

5×7 4×7

7 7 7 7 7 7 7 7 7

$9 \times 7 =$
$(5 \times 7) + (4 \times 7) =$
$35 + 28 = 63$
$9 \times 7 = 63$

Multiplication and Division with Units of 0, 1, 6-9 and Multiples of 10.

Analysis of Patterns and Problem Solving Including Units of 0 and 1

In **Lesson 16**, students use patterns to understand:

$$n \times 0 = 0 \quad \text{and} \quad n \times 1 = n$$

they will also understand that when dividing 0 by another number results in 0 but when dividing a number by 0 the answer is undefined.

In **Lesson 17**, students use a multiplication table to explore patterns of multiplication. They will recognize the patterns of particular factors and make connections to multiplication and division.

In **Lesson 18**, students apply the tools, representation, and concepts they have learned to solve two-step word problems using all four operations. (+, -, x, ÷)

They will also use the rounding skills learned in prior lessons to assess the reasonableness of the answers.

Troy has $105 in the bank. He earns the same amount of money each week for 7 weeks and puts this in money in the bank also. Now Troy has $273 in the bank. How much does Troy earn each week?

How much money did Troy put in the bank in 7 weeks?

$$273 - 105 = m \qquad m = 168$$

w = the number of dollars earned each week

$$168 \div 7 = w \qquad w = \$24$$

Troy earns $24 a week,

Multiplication

	0	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

factor x factor = product (multiple)

Standards for Mathematical Practice

Mathematical Practices Addressed in this Module:

MP.1 **Make sense of problems and persevere in solving them.** Students engage in exploratory lessons to discover and interpret patterns, and apply their observations to solving multi-step word problems involving all four operations.

MP.3 **Construct viable arguments and critique the reasoning of others.** As students compare solution strategies, they construct arguments and critique the reasoning of their peers. This practice is particularly exemplified in daily Application Problems and problem-solving specific lessons in which students share and explain their work with one another.

MP.4 **Model with mathematics.** Students use arrays, tape diagrams, and equations to represent word problem situations.

MP.5 **Use appropriate tools strategically.** Students analyze problems and select the appropriate tools and pathways to solutions. This is particularly evident as students select problem-solving strategies, and use arithmetic properties as simplifying strategies when appropriate.

MP.7 **Look for and make use of structure.** In this module, patterns emerge as tools for problem solving. Students make use of structure as they utilize the distributive property to establish the $9 = 10 - 1$ pattern, for example, or when they check the solution to a fact using units of 9 by making sure the sum of the digits in the product adds up to 9. They make use of the relationship between multiplication and division as they determine unknown factors and interpret the meanings thereof.

Want to learn more about DUVAL Math?

A great resource can be found following the link below:

http://www.duvalschools.org/Page/17706

Elementary Mathematics: Parent Partnerships for Success Grades K-2, and 3-5