

Vertical Progression:

1st Grade	<p>1.OA.A Represent and solve problems involving addition and subtraction.</p> <ul style="list-style-type: none"> ○ 1.OA.A.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g. by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. ○ 1.OA.A.2 Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. <p>1.OA.D Work with addition and subtraction equations.</p> <ul style="list-style-type: none"> ○ 1.OA.D.7 Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false.
2nd Grade	<p>2.OA.A Represent and solve problems involving addition and subtraction.</p> <ul style="list-style-type: none"> ○ 2.OA.A.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. <p>2.OA.C Work with equal groups of objects to gain foundations for multiplication.</p> <ul style="list-style-type: none"> ○ 2.OA.C.3 Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.
3rd Grade	<p>3.OA.D Solve problems involving the four operations and identify and explain patterns in arithmetic.</p> <ul style="list-style-type: none"> ○ 3.OA.D.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. ○ 3.OA.D.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations.
4th Grade	<p>4.OA.A Use the four operations with whole numbers to solve problems.</p> <ul style="list-style-type: none"> ○ 4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. <p>4.OA.C Generate and analyze patterns.</p> <ul style="list-style-type: none"> ○ 4.OA.C.5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.

Students will demonstrate command of the ELG by:

- Solving two-step word problems using the four operations and assess reasonableness of answers using mental computation and estimation strategies.
- Representing word problems using equations with letters standing for unknown quantities.
- Solving problems involving the four operations and identifying and explaining patterns in arithmetic.
- Moving fluently between addition and subtraction as well as between multiplication and division..

Vocabulary:

- computation
- compute
- difference
- equation
- estimate
- operation
- product
- quantity
- quotient
- sum

Sample Instructional/Assessment Tasks:

1) Standard: 3.OA.D.8

Source: <http://www.k-5mathteachingresources.com/support-files/3rdgrademultistepproblems.pdf>

Item Prompt:

On Monday Tom's Bakery had 90 chocolate muffins for sale. 25 chocolate muffins were sold in the morning and 46 in the afternoon. How many chocolate muffins were left?

Correct Answer:

19 chocolate muffins

2) Standard 3.OA.D.8

Source: <http://www.k-5mathteachingresources.com/support-files/two-step-word-problems-set-2.pdf>

Item Prompt:

Jose bought 4 cartons of juice for 80 cents each. He gave the cashier \$5.00. How much change should he receive?

Correct Answer:

\$1.80

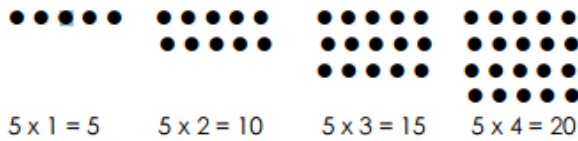
3) Standard 3.OA.D.9

Source: Read Tennessee

<http://www.readtennessee.org/sites/www/Uploads/Examples/3.OA.D.9final.pdf>

Item prompt:

Ralph loves to look for patterns in numbers. One day, he was looking at a multiplication chart and noticed that the product of 5 times an odd number always has 5 ones (5, 15, 25, 35, etc.) and the product of 5 times an even number always has zero ones (10, 20, 30, 40, etc.). He made some arrays to help him figure out the pattern.



Explain the pattern that Ralph found.

Sample explanation:

“When I look at the arrays, I can see that two rows makes ten dots. So, if the number is even, they match up in tens and that makes a zero in the ones place. If the number is odd there is one row that doesn’t match up and that always makes 5 left over in the ones place.”