Teacher Guide to Clarification

**1.OA.7**

**Work with addition and subtraction equations.**

1.OA.7 Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. *For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.*

**Understand the Equal Sign TRUE or FALSE**

1.OA.7 calls for students to work with the concept of equality by identifying whether equations are true or false. Therefore, students need to understand that the equal sign does not mean the answer comes next, but rather that the equal sign signifies a relationship between the left and right side of the equation. Interchanging the language of “equal to” and “the same as” as well as “not equal to” and “not the same as” will help students grasp the meaning of the equal sign. Students should understand that “equality” means “the same quantity as”. In order for students to avoid the common pitfall that the equal sign means “to do something” or that the equal sign means “the answer is,” they need to be able to:

* Express their understanding of the meaning of the equal sign
* Accept sentences other than a + b = c as true (a = a, c = a + b, a = a + 0, a + b = b + a)
* Know that the equal sign represents a relationship between two equal quantities
* Compare expressions without calculating

The number sentence 4 + 5 = 9 can be read as, four plus five is the same amount as nine.

In addition, Students should be exposed to various representations of equations, such as:

* an operation on the left side of the equal sign and the answer on the right side
(5 + 8 = 13)
* an operation on the right side of the equal sign and the answer on the left side
 (13 = 5 + 8)

Once students have a solid foundation of the key skills listed above, they can begin to rewrite true/false statements using the symbols, < and >.

Be

* numbers on both sides of the equal sign (6 = 6)
* operations on both sides of the equal sign (5 + 2 = 4 + 3).

Students need many opportunities to model equations using cubes, counters, drawings, etc. These key skills are hierarchical in nature and need to be developed over time. Experiences determining if equations are true or false help student develop these skills. Initially, students develop an understanding of the meaning of equality using models. However, the goal is for students to reason at a more abstract level. At all times students should justify their answers, make conjectures (e.g., if you add a number and then subtract that same number, you always get zero), and make estimations.

Kansas Association of Teachers of Mathematics (KATM) Flipbooks. Questions or to send feedback: melisa@ksu.edu. Retrieved from: <http://katm.org/wp/wp-content/uploads/flipbooks/1FlipBookedited.pdf>

This standard expects that students will understand that the equal sign is a symbol to indicate equivalence. The equal sign is a relationship and balance between the two quantities. It does not mean “is the ANSWER”.

Students need to be able to:

* Express their understanding of the meaning of the equal sign in words
* Accept sentences other than a + b = c as true (a = a, c = a + b, a = a + 0, a + b = b + a)
* Know that the equal sign represents a balanced relationship between two equal quantities
* Compare expressions without calculating

**Coherence and Connections: Need to Know**

|  |  |  |
| --- | --- | --- |
| Grade Below | Grade-Level | Grade Above |
| None | **1.OA.7**1.OA.8 | 2.OA.32.OA.4 |

**Fluency Expectations or Examples of Culminating Standards**

This standard relates to fluency when the additions and subtractions in the equations fall within 10, as they do in the italicized examples accompanying the standard. 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.

**Examples of Opportunities for Connecting Mathematical Content and Mathematical Practice**

Students working with sums of single-digit numbers (1.OA.C.6) have opportunities to look for and express regularity in repeated reasoning (MP.8). For example, students could be given pairs of addition problems like:

5 + 6 = ? 5 + 7 = ? 3 + 5 = ?

4 + 5 = 7 + 7 = ? 8 + 7 = ?

In the previous grade, kindergarten students generally saw equations only when the teacher wrote them on the board; kindergarten students were not expected to write equations themselves. Grade 1 students will write equations for a variety of reasons, such as expressing a decomposition of a number (16 = 9 + 7), expressing a piece of reasoning about numbers (9 + 7 = 9 + 1 + 6 along the way to making ten) or representing a word problem with an unknown (9 + ? = 16). Students use the equal sign appropriately, evaluate the truth of an equation and determine unknown numbers that will make an equation true.

*PARCC Draft Model Content Frameworks: Mathematics Grades K-2* (2013, December).
 Retrieved May 10, 2014, from <http://parcconline.org/sites/parcc/files/PARCCMCFMathematicsNovember2012V3_FINAL_0.pdf>

Connections to the Math Practice 3-Construct viable arguments and critique the reasoning of others and Math Practice 5-Use appropriate tools strategically:

Examples of true and false statements you can put on the board and students can discuss with a partner if the statement is true or false (Math Practice 3 ) and then prove their argument with a math tool (Math Practice 5)

* 12 + 2 – 2 = 12
* 9 + 3 = 10
* 5 + 3 = 10 – 2
* 3 + 4 + 5 = 3 + 5 + 4
* 3 + 4 + 5 = 7 + 5
* 13 = 10 + 4
* 10 + 9 + 1 = 19

Daily Discourse PowerPoint

**Classroom Resources**

**Turn over an equation card and place the card on the correct side of the board.**

**True or False Board**

|  |  |
| --- | --- |
| **True** | **False** |
|  |  |

|  |  |  |
| --- | --- | --- |
| 1+0=2 | 4+3=7 | 2+4=7 |
| 9=1+ 8 | 5=1+3 | 5=2+ 3 |
| 6=2+3 | 4+2=2+4 | 3+1=1+1+1+1 |
| 2+ 3=4 | 7=2+4 | 4+4=9 |
| 4+1=3+2 | 3+2= | 0+2=0 |

**Hot Questions**

Make each equation true

|  |  |  |  |
| --- | --- | --- | --- |
| 7 = 8– \_\_ | 3 + 4 + 5=3 + 5 + 4 | 4+3 = 1+4 +\_\_ | 1 + \_\_ + 3 = 7  |
|  \_\_= 8 | 1 + \_\_ = 1 | \_\_ + 9 = 19 | 4+\_\_ = 3+4 |
| \_\_+ 3 = 10 – 2  | \_\_ + 3 = 10 | 12 + 2 – 2 = \_\_  | \_\_ – 1 = 1 – 6  |

**True or False EXIT slips**

Circle the word to show whether the equation or number sentence is true or false.

Prove it with a math tool.

|  |
| --- |
|  1 + 1 + 3 = 7 True False |
|  7 = 8 – 1 True False |

|  |
| --- |
|  1 + 3 = 2 + 2 True False |
|  7 = 5 + 1 True False |

|  |
| --- |
| Circle all of the number sentences that are true. Do not calculate4 + 7 = 7 + 4 16 - 5 = 15 - 43 + 10 + 4 = 17 13 - 3 = 14 - 414 = 8 + 4 + 2 6 + 6 = 7 + 53 + 0 + 4 = 3 + 4 10 - 1 = 9 + 1 |
| Make this equation true.3 + 4 = + 6 |

**Additional Resources**

Illustrative Mathematics
<https://www.illustrativemathematics.org/illustrations/466>

<https://www.illustrativemathematics.org/illustrations/1057>

<https://www.illustrativemathematics.org/illustrations/475>

<https://www.illustrativemathematics.org/illustrations/1150>

<https://www.illustrativemathematics.org/illustrations/1152>

Howard County Wikispace (links at bottom of page) <https://grade1commoncoremath.wikispaces.hcpss.org/1.OA.7>

Hawaii Tasks
<http://standardstoolkit.k12.hi.us/equal-concentration-1-oa-7/>

<http://standardstoolkit.k12.hi.us/is-it-true-or-false-1-oa-71-oa-8/>

<http://standardstoolkit.k12.hi.us/true-or-false-1-oa-7/>

That Pesky Equal Sign
<http://www.schoolleadership20.com/m/discussion?id=1990010%3ATopic%3A173868>