

Homework Help for Math Out of the Box

Developing Number Concepts: Ordering and Arranging, Module A

Information about homework assignments is provided to help parents and other homework helpers with the mathematics ideas that are being developed. The homework help includes definitions of key vocabulary, questions to ask that will help students connect to the classroom investigations, problem solving examples, and other helpful explanations.

Homework 3A1 and 3A2

In Lessons 1–8, students examine strategies that can be used for basic facts fluency.

Solving Basic Facts

Each addition and subtraction fact is part of a fact family. Following are examples of several fact families:

$8 + 4 = 12$	$7 + 6 = 13$	$5 + 5 = 10$	$2 + 9 = 11$
$4 + 8 = 12$	$6 + 7 = 13$	$10 - 5 = 5$	$9 + 2 = 11$
$12 - 8 = 4$	$13 - 7 = 6$		$11 - 2 = 9$
$12 - 4 = 8$	$13 - 6 = 7$		$11 - 9 = 2$

If addition facts are known, the inverse subtraction facts can be solved quickly. For example, if a student knows that $8 + 2 = 10$, then the inverse, $10 - 2 = n$, is also known.

Solving for Missing Numbers

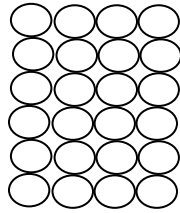
There are many strategies for determining missing numbers. Counting, testing numbers, or using knowledge of fact family relationships are all possible strategies.

Even and Odd Numbers

In a math investigation in class, students analyzed fact families to determine patterns of even and odd numbers. The following conclusions were drawn:

- When two even numbers or two odd numbers are added or subtracted, the result is an even number.
- When an even and odd or odd and even number are added, the result is an odd number.
- In subtraction, odd subtract even and even subtract odd result in odd numbers.

An array is one way to represent multiplication. In the problem 6×4 , an array can be made with 6 rows representing the balloons and 4 columns representing the number of people in each basket.



Homework 3B1 and 3B2

In Lessons 9–14 students examine base-10 representations of whole numbers and compare and order numbers.

Expanded form: A representation of a number in which the value of the digits are expanded into an addition statement. ($243 = 200 + 40 + 3$)

Standard form: A representation of a number using the digits 0–9, with each digit having a place value. (243)

Word form: A representation of a number in words. (two hundred forty-three)

When comparing numbers the following symbols and words can be used.

< is less than > is greater than = is equal to

Homework 3C1, 3C2, and 3C3

In Lessons 15–24, addition and subtraction concepts are investigated.

With the problem $379 + 124$, estimates can be made to the nearest hundreds or tens. Each student should decide his or her own estimating strategy and use estimates to check the reasonableness of an answer.

$$\begin{array}{r} 379 \\ + 124 \\ \hline 503 \end{array} \quad \begin{array}{r} 400 \\ + 100 \\ \hline 500 \end{array} \quad \begin{array}{r} 380 \\ + 120 \\ \hline 500 \end{array}$$

In class, students have examined many strategies for adding and subtracting with regrouping. Students can choose any strategy as long as they can explain the strategy. Since many third graders have not yet mastered addition and subtraction with regrouping, they may not use the most efficient strategies, or algorithms, when first trying different strategies.

Two common strategies for addition are shown below.

Adding from the left with hundreds, tens, and ones.

$$\begin{array}{r} 327 \\ + 358 \\ \hline 600 \\ 70 \\ \hline 15 \\ \hline 685 \end{array}$$

Adding from the right trading ones, tens, and hundreds, as needed.

$$\begin{array}{r} 1 \\ 327 \\ + 358 \\ \hline 685 \end{array}$$

Two common strategies for subtraction are shown below.

Counting up.

$$\begin{array}{r} 365 \\ - 285 \\ \hline 80 \end{array}$$

Count up from 285 to 300 = 15
Then, add 65 more. The answer is 80.

Trade hundreds, tens, and ones, as needed.

$$\begin{array}{r} 2 \ 15 \\ \cancel{3}65 \\ - 285 \\ \hline 80 \end{array}$$

Homework 3D1 and 3D2

In Lessons 25–30, students examine strategies that can be used for multiplication and division facts fluency.

Solving Basic Facts

Each multiplication and division fact is part of a fact family. Following are examples of several fact families:

$8 \times 2 = 16$	$3 \times 6 = 18$	$5 \times 5 = 10$	$4 \times 9 = 36$
$2 \times 8 = 16$	$6 \times 3 = 18$	$25 \div 5 = 5$	$9 \times 4 = 36$
$16 \div 8 = 2$	$18 \div 3 = 6$		$36 \div 4 = 9$
$16 \div 2 = 8$	$18 \div 6 = 3$		$36 \div 9 = 4$

If multiplication facts are known, the inverse division facts can be solved quickly. For example, if a student knows that $8 \times 2 = 16$, then the inverse, $16 \div 2 = n$, is also known.