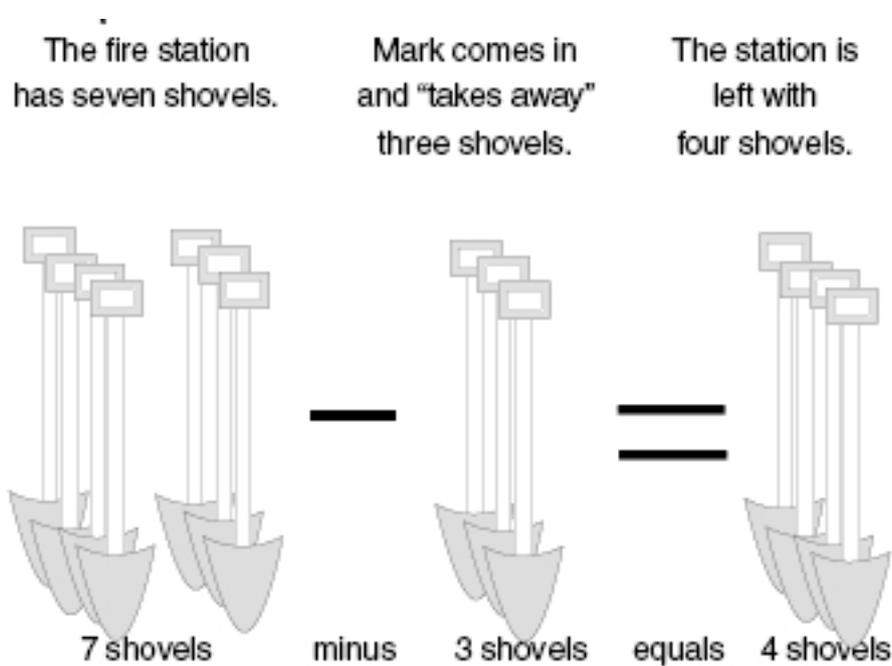


Subtraction: Computing a Difference

Subtraction is used in two types of situations. The first is "How much is left?" and the second is "How much more is needed?" Some words used in subtraction are "minus", "take away", "less", and "difference".

Example 1 - How many are left?



In the figure above, the fire station has 7 shovels. Mark "takes away" 3 shovels. How many shovels are left?

Set up the problem as 7 shovels minus 3 shovels. The answer to $7 - 3$ is 4 shovels.

Subtracting Large Numbers

1.3 Subtraction

Example 2 - Subtracting numbers. Subtract 5342 from 9854.

The diagram shows four steps of the subtraction process for 9854 - 5342:

- Step 1: Subtract ones.**
$$\begin{array}{r} 9854 \\ -5342 \\ \hline 2 \end{array}$$
- Step 2: Subtract tens.**
$$\begin{array}{r} 9854 \\ -5342 \\ \hline 12 \end{array}$$
- Step 3: Subtract hundreds.**
$$\begin{array}{r} 9854 \\ -5342 \\ \hline 612 \end{array}$$
- Step 4: Subtract thousands.**
$$\begin{array}{r} 9854 \\ -5342 \\ \hline 4512 \end{array}$$

FINAL ANSWER: 4512

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As shown in the example above, first subtract the ones. Next, subtract the tens. Keeping moving from right to left, so next subtract the hundreds, and finally, subtract the thousands. The answer to $9854 - 5342$ is 4512.

"Borrowing" Numbers

As you subtract numbers in the ones, tens, hundreds, etc. position, you might find that the number being subtracted is larger than the one from which you are subtracting. In this case, "borrowing" from the next column to the left is necessary.

Example 3 - Subtract 932 minus 784.

The diagram shows three steps of the subtraction process for 932 - 784, illustrating borrowing:

- Step 1: Subtract ones. "Borrow" from the tens column.**
$$\begin{array}{r} 21 \\ 932 \\ -784 \\ \hline 8 \end{array}$$
- Step 2: Subtract tens. "Borrow" from the hundreds column.**
$$\begin{array}{r} 82 \\ 932 \\ -784 \\ \hline 48 \end{array}$$
- Step 3: Subtract hundreds.**
$$\begin{array}{r} 812 \\ 932 \\ -784 \\ \hline 148 \end{array}$$

FINAL ANSWER: 148

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First, subtract the number in the ones column. Because 4 cannot be taken away from 2, 1 ten must be borrowed to get 12 ones. Now take away 4 from 12 to get 8.

Move to the tens column. Because 8 cannot be taken away from 2, borrow 1 hundred to get 12 tens, and take away 8 from 12 to get 4.

Finally, we move to the hundreds column. There are 8 hundreds left and we will take away 7 to get 1.

The answer to $932 - 784$ is 148.

Subtracting Signed Numbers

Signs are important in subtracting numbers. Subtracting a negative number changes the sign of the number subtracted. When subtracting a negative number, the subtraction sign and negative sign together produce a positive number. Subtracting a negative number therefore has the result of adding a positive number. See the examples below.

1.3 Subtraction

$$7 - (-3) = ? \text{ becomes } 7 + 3 = 10.$$

$$50 - (-20) = ? \text{ becomes } 50 + 20 = 70$$

$$84 - (+26) = ? \text{ becomes } 84 - 26 = 58$$

$$192 - (-301) = ? \text{ becomes } 192 + 301 = 493$$

$$-50 - (-20) = ? \text{ becomes } -50 + 20 = -30$$

In the last case, because a larger negative number (-50) was added to a smaller positive number (20), the end result was negative. See Chapter 1, Section 1.2 for more information on adding numbers of different signs.

Practice

1. Subtract 219 from 500.

-281
719
281
-219

Select the correct answer.

2. Subtract $714 - (-51)$.

663
765
-663
729

Select the correct answer.