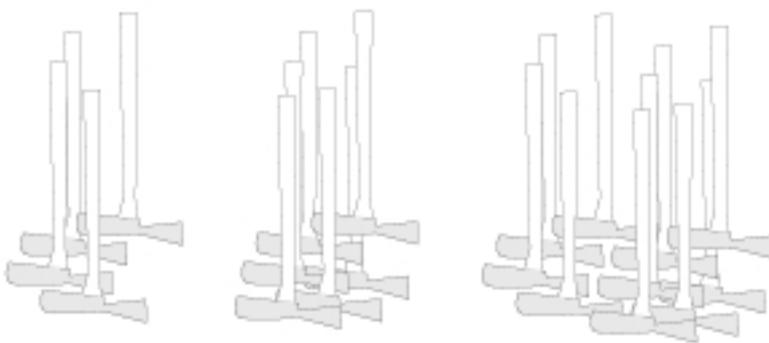


Addition: Adding to a Sum or Total

Addition is used when combining items, or putting items together to obtain a total. It helps answer questions such as "How many?" "How much?" or "How far?" Let's look at different ways that addition can be used. Some words used often to refer to addition are "plus", "and", "the sum of", "total", or "added to".

Example 1 - Pedro's crew has 4 pulaskis. Jane's crew has 6 pulaskis. How many pulaskis do they have together?



4 pulaskis and 6 pulaskis equals 10 pulaskis

As shown in the figure above, the addition needed to answer this question is: $4 + 6 = 10$.

Addition is used in combining distances or lengths.

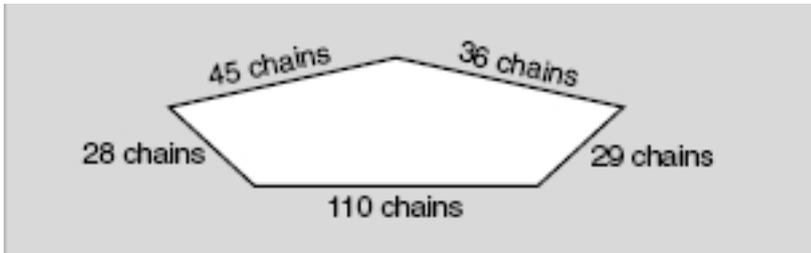
Example 2 - Crew 1 constructs 14 chains of handline on the day shift. Crew 2 constructs 11 chains of handline on the night shift. How many chains did crew 1 and 2 construct altogether?

14 chains + 11 chains = 25 chains

Addition is used to find the distance around an object.

The total distance around an object is called the perimeter.

Example 3 - The Division Supervisor (DIVS) used two dozers to construct a line. The dozers cleared a line of the following shape. How many chains of dozer line were constructed?



$$45 \text{ chains} + 36 \text{ chains} + 28 \text{ chains} + 29 \text{ chains} + 110 \text{ chains} = 248 \text{ chains}$$

Addition is used in combining areas.

Example 4 - The day shift had two spot fires that were contained at 6 acres and 8 acres each. What was the total area of the spot fires that burned during the day shift?

$$6 \text{ acres} + 8 \text{ acres} = 14 \text{ acres}$$

Addition is used in combining volumes.

Example 5 - Herman pumped 30 gallons of fuel into one tank, 25 gallons into the next tank, and 27 gallons into the last tank. How many gallons of fuel did Herman pump?

$$30 \text{ gallons} + 25 \text{ gallons} + 27 \text{ gallons} = 82 \text{ gallons}$$

Addition is used in combining larger numbers.

When adding several numbers, especially large numbers, add the ones (1s) first, then the tens (10s), then the hundreds (100s), and so on.

Example 6 - Add: $548 + 365$

First, add the ones. There are 13 ones, or 1 ten and 3 ones. Write 3 in the ones column and "carry over" the 1 above the tens.

Next, add the tens. There are 11 tens, or 1 hundred and 1 ten. Write 1 in the tens column and the 1 above the hundreds.

Now, add the hundreds. There are 9 hundreds.

Step 1: Add ones.

$$\begin{array}{r} 1 \\ 548 \\ + 365 \\ \hline 3 \end{array}$$

Step 2: Add tens.

$$\begin{array}{r} 11 \\ 548 \\ + 365 \\ \hline 13 \end{array}$$

Step 3: Add hundreds.

$$\begin{array}{r} 1 \\ 548 \\ + 365 \\ \hline 913 \end{array}$$

FINAL ANSWER

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The answer to $548 + 365$ is 913.

Adding Positive and Negative Numbers

Numbers can be positive or negative. Positive numbers are indicated with a + sign, or have no sign. If a number is written without a sign, the sign is assumed to be positive. Negative numbers are indicated with a - sign. For example, a negative pressure may be indicated as -25 inches of Hg, or as a vacuum of 25 inches of Hg.

Signs are important in adding numbers. Here are some easy rules to help determine the sign of a sum:

First Number	Second Number	First + Second
positive	positive	positive
negative	negative	negative
small positive	large negative	negative
large positive	small negative	positive

Example 7 - Adding numbers with like signs.

$$5 + 5 = 10$$

$$3 + 3 = 6$$

$$-5 + (-5) = -10$$

$$-3 + (-3) = -6$$

Example 8 - Adding numbers with unlike signs. Notice that the sign of the larger number is the sign that the answer will have.

$$5 + (-3) = 2$$

$$3 + (-3) = 0$$

$$3 + (-5) = -2$$

$$2 + (-3) = -1$$

