

## Expressions and Equations

Students extend their arithmetic work to include using letters to represent numbers. Students explore letters as representations of numbers and see that arithmetic is carried out exactly as it is with numbers. Students explore operations in terms of verbal expressions and determine that

### Using Tape Diagrams to Show the Relationship Between Addition and Subtraction

Draw a tape diagram to represent the following number sentence.

$$+ - =$$

Solution:

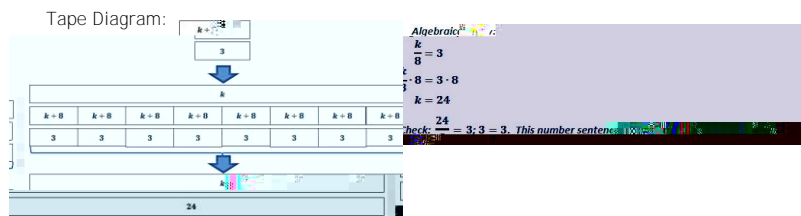
Explanation:

Start with three tiles (+).

Add five more (+).

Take away five tiles (-). You are left with three tiles (=).

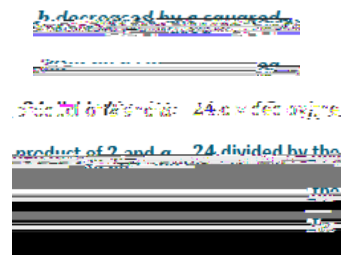
Here is another example.



1.

**$b$  decreased by  $c$  squared.**

2.



### Writing and Solving Equations

Solution:

### Substituting to Evaluate Addition and Subtraction Expressions

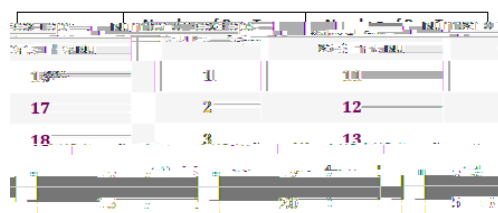
Noah and Carter are collecting box tops for their school. They each bring in 1 box top per day starting on the first day of school. However, Carter had a head start because his aunt sent him 15 box tops before

Solution:

a. Fill in the missing values that indicate the total number of box tops each boy brought to school.

School Day	Number of Box Tops Noah Has	Number of Box Tops Carter Has
1	11	16
2		
3		
4		
$D$		

a.



b:  $D +$  box tops

c:  $D +$  box tops

d: box tops

e: box tops

On day  $D$  of school, how many box tops will Carter have brought to school? On day  $D$  of school

On day  $D$  of school, how many box tops will Noah have brought to school? On day  $D$  of school

On day 10 of school, how many box tops will Carter have brought to school? e. On day 10