



## 1.6 Subtracting Signed Numbers

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### Need To Know



- Opposites
- Idea of Subtraction
- Rule for Subtraction
- Translation



## Opposites

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Definition:

The opposite (additive inverse) of a number "a" is written  $-a$ .

Recall:  $-(-a) = a$

Example: Find  $-x$  and  $-(-x)$  when  $x = 3$

The Law of Opposites

$$a + (-a) = 0$$

## Idea of Subtraction

Goal:

- Take our common sense idea of distance to make the rule of subtraction understandable.

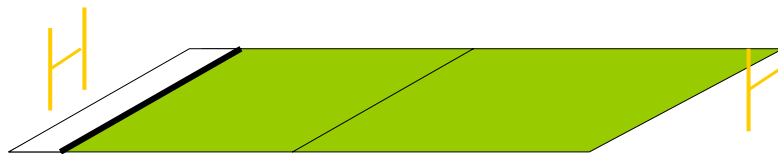
Problem:

- If a football team makes a play from the 33 yard line to the 39 yard line, how much distance did the team gain.
- Imagine a football team who punts the football from 2 yards behind the goal line. The ball stops on the 50 yard line. How many yards did the ball travel?

## Idea of Subtraction

Our first problem:

Find the distance from 33 yard line to the 39 yard line.

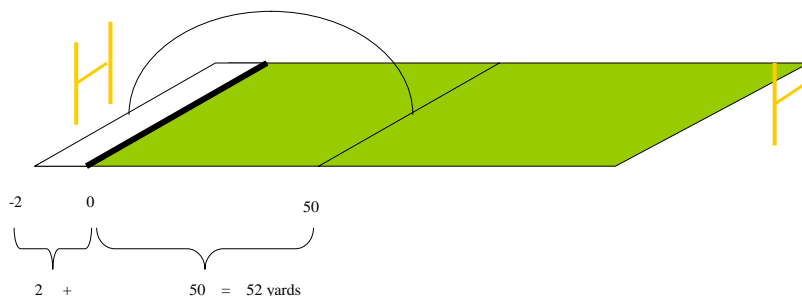


To find the distance between points we subtract:  
Distance = the end point – the start point.

## Idea of Subtraction

Our Second Problem:

Consider the distance on a picture.



## Rule For Subtraction

Rule for subtracting signed numbers

- Subtraction is the same as adding the opposite.
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- Examples: Change each to addition
  - $3 - 4$
  - $3 - (-4)$
  - $-3 - 4$
  - $-3 - (-4)$



## Subtraction of Signed Numbers

Write each as an addition problem and then simplify your answer.

$$11 - 5$$

$$11 - (-5)$$

$$-11 - 5$$

$$-11 - (-5)$$



## Subtraction Practice

Simplify

$$9 - 4 - 5$$

Simplify

$$-9x + 5 - 3x$$

$$24 - (-12) + 7 - 15$$

$$-5 + 3b - 7 - 5b$$



## Translation

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Difference, decreased, take away, reduced, less and **from** are all key words for subtraction.

Examples: Translate into mathematics and use the rule of subtraction to simplify.

Subtract 5 from 8.

Find the difference of 4 and  $-7$ .

end