

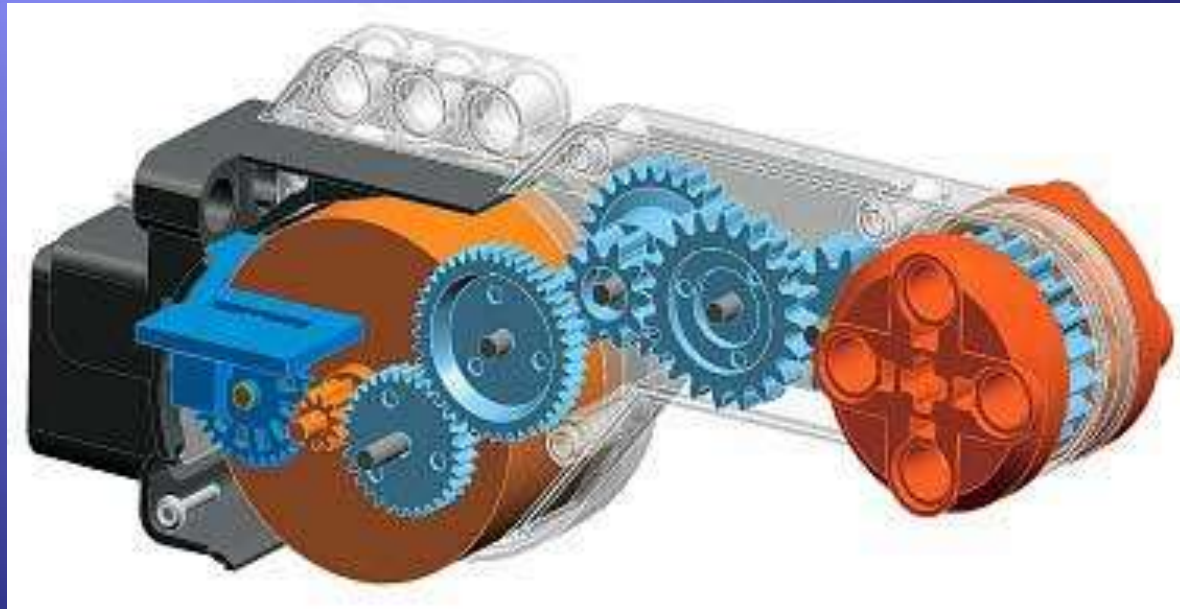
The Details

**INSIDE YOUR NXT ...**

# Motors, Moving, & Math

The screenshot shows a web browser window displaying the 'NXT Sensors' page. At the top, there is a navigation bar with tabs for 'Home', 'Introduction', 'Sensors', 'Projects', 'Reference', and 'Site Map'. The 'Sensors' tab is currently selected. Below the navigation bar, the page title is 'NXT Sensors Building and Programming'. On the left side, there is a vertical menu with categories: 'Basics', 'PROGRAMMING' (including 'Using the Programming Software', 'Robot Behaviors', and 'NXT Menu'), 'HARDWARE' (including 'Parts Identification', 'Building Instructions', and 'TECHNIC Primer'), and 'NXT Sensors' (including 'The NXT'). The main content area features six sensor categories, each with an image and a link: 'Touch Sensor', 'Sound Sensor', 'Light Sensor', 'Ultrasonic Sensor', 'Servo Motor', and 'DCX Sensors'. Each category includes a sub-link 'What is it? Attachment Programming'. At the bottom right of the browser window, the status bar shows 'Internet' and '100%' zoom level.

# Rotation sensors...



# Making Your Robot Turn

Accurate Turning Formula



# Making Your Robot Turn

## Spin Turn

- Let's say the wheel diameter = 2.25"
- The wheel circumference =  $\pi * 2.25 = 7"$
- So one rotation = 360 degrees = 7"

- Track distance = 5"
- So spin circumference =  $\pi * 5 = 15.7"$

- If one full spin = 15.7" then  
 $\frac{1}{4}$  turn =  $15.7 / 4 = 3.92"$

- So to make a spin turn, each wheel moves 3.9"....remember, each wheel must spin in the opposite direction!

- Finally, how many degrees will the wheel spin?

$$\frac{7''}{360^\circ} = \frac{3.925''}{x}$$

$$7x = 1413$$

$$x = 201.8^\circ$$

