**NCTM Algebra Tiles Virtual Manipulative**

**Algebra Tiles**

Using tiles to represent variables and constants, learn how to represent and solve algebra problem. Solve equations, substitute in variable expressions, and expand and factor. Flip tiles, remove zero pairs, copy and arrange, and make your way toward a better understanding of algebra.

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|  | **Instructions** |
|  | Choose an activity: **Solve**, **Substitute**, **Expand**, or **Factor**. **Note:** In **Solve** and **Substitute**, vertical lines indicate "is equal to" (=). In **Expand** and **Factor**, the large area is the product of the top and left areas, as in a standard multiplication table.    **Add Tiles**  Add tiles to the workspace from the bottom left bank. The value of each tile is indicated. When moved to the workspace, the value will be erased.  **Flip** turns tiles over, giving the inverse value. For example when a green *x* is flipped, it becomes a red –*x* tile. Flipping the red –*x* tile, gives the inverse green *x* tile. You can click the button to flip all tiles in the bank or move tiles to the workspace, and then click to flip those tiles over.  **Turn** rotates the green *x* and red –*x* tiles 90°. This is most useful in the **Expand** and **Factor** activities.  **Other Tools**  Tools may be used on single tiles by select them or a group of tiles by selecting several or dragging a rectangle around a group of tiles. The tool may be selected before the tile for a single action or after to allow for a repeated action.  **Pointer** selects and moves tiles. This is the default tool. When the empty workspace or a tile from the bank is selected, this tool is automatically selected. **Note:** Depending on the activity, some tiles may not be removed.  **Eraser** removes tiles from the workspace. **Note:** Depending on the activity, some tiles may not be removed.  **Remove Zero Pairs** allows only zero pairs to be removed from the workspace. This is most helpful in solving **Solve** and **Expand** problems or anytime in **Factor** problems to ensure tiles are properly removed. A *zero pair* is a pair of tiles that sums to 0, such as a yellow 1 tile and a red –1 tile.  **Copy** copies the currently selected tile(s). Move the tile(s) to see the copy. This is most helpful when a large number of tiles must be placed in the workspace, such as for *x*2 – 16.  **Completing a Problem**  All problems must be completed in two steps:   1. Build the model Place the correct pieces in the workspace. After you build the model of the given problem, **Check** your answer to move on to the next step. Only tile type, tile quantity, and workspace area are checked, not the way in which tiles are arranged.   If you want to start again, **Reset** to empty your workspace. 2. Solve the problem After you solve the problem, **Check** your answer. Where applicable, answers must be given in simplified form. Both the entered answer and workspace must be correct. If one or both is incorrect, the incorrect portion will be indicated.   If you want to start again, **Reset** to go back to your original model.   When you complete your problem or at any other point, you may start a **New** problem. |

Application and Instructions at: <http://illuminations.nctm.org/ActivityDetail.aspx?ID=216>