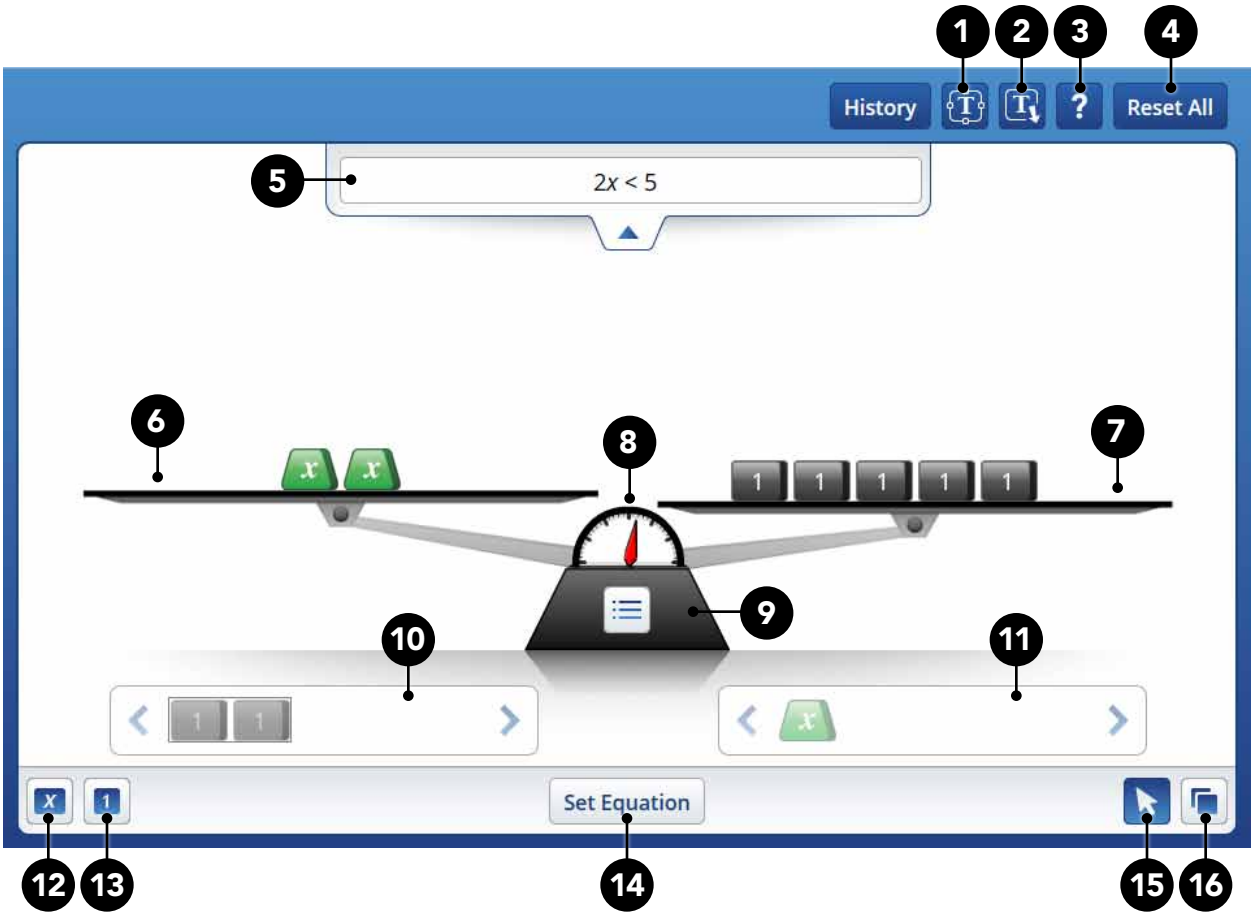
Pan Balance

In this tool, you can model, compare, manipulate expressions, equations, and inequalities using natural number values on a pan balance.



1. **Textbox** Add comments to the activity area.
2. **Textbox with Arrow** Add comments to the activity area, using the arrow to focus attention on a particular area.
3. **Help** Launch a help file PDF for the tool.
4. **Reset All** Reset all current work in the activity area for the tool back to the default settings.
5. **Equation Display Panel** Shows the current equation or inequality representing the expressions on each of the pans. You can hide or show the panel by selecting the small triangle at the bottom of the panel.
6. **Left Pan** You can place *x*- and 1- tiles on the left pan to model the left side of the equation. You can add a maximum of 30 tiles to the pan. Once a tile is on the pan, to remove it, you must place the tile in the holding bin below the pan.

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7. **Right Pan** You can place *x*- and 1- tiles on the left pan to model the left side of the equation. You can add a maximum of 30 tiles to the pan. Once a tile is on the pan, to remove it, you must place the tile in the holding bin below the pan.
8. **Balance Indicator** Shows the relative balance of the pans. When the pans are balanced, the needle is green, and when they are unbalanced, the needle is red.
9. **Partition Button** You can use the partition button to add partitions to each pan, allowing you to group tiles together.
10. **Left Pan Holding Bin** Will hold any tiles you removed from the left pan. Once each holding bin contains the same tiles or the pans are balanced, the holding bin empties its contents.
11. **Right Pan Holding Bin** Will hold any tiles you removed from the right pan. Once each holding bin contains the same tiles or the pans are balanced, the holding bin empties its contents.
12. ***x*-tile** When selected, each press in the activity area will add an *x*-tile.
13. **1-tile** When selected, each press in the activity area will add a 1-tile.
14. **Set Equation Button** Opens the set equation menu, which allows you to set the equation to be modeled on the pan.
15. **Pointer** Use the pointer to select and move tiles within the activity area. When the pointer is selected, you can create a selection rectangle to select more than one tile to manipulate. When selected, a tile will have a blue outline around it.
16. **Clone** Using the clone button, you can click on any selected tile(s) to create duplicates of the selected tile(s). You can use the clone feature until the tile limit is achieved on each pan.

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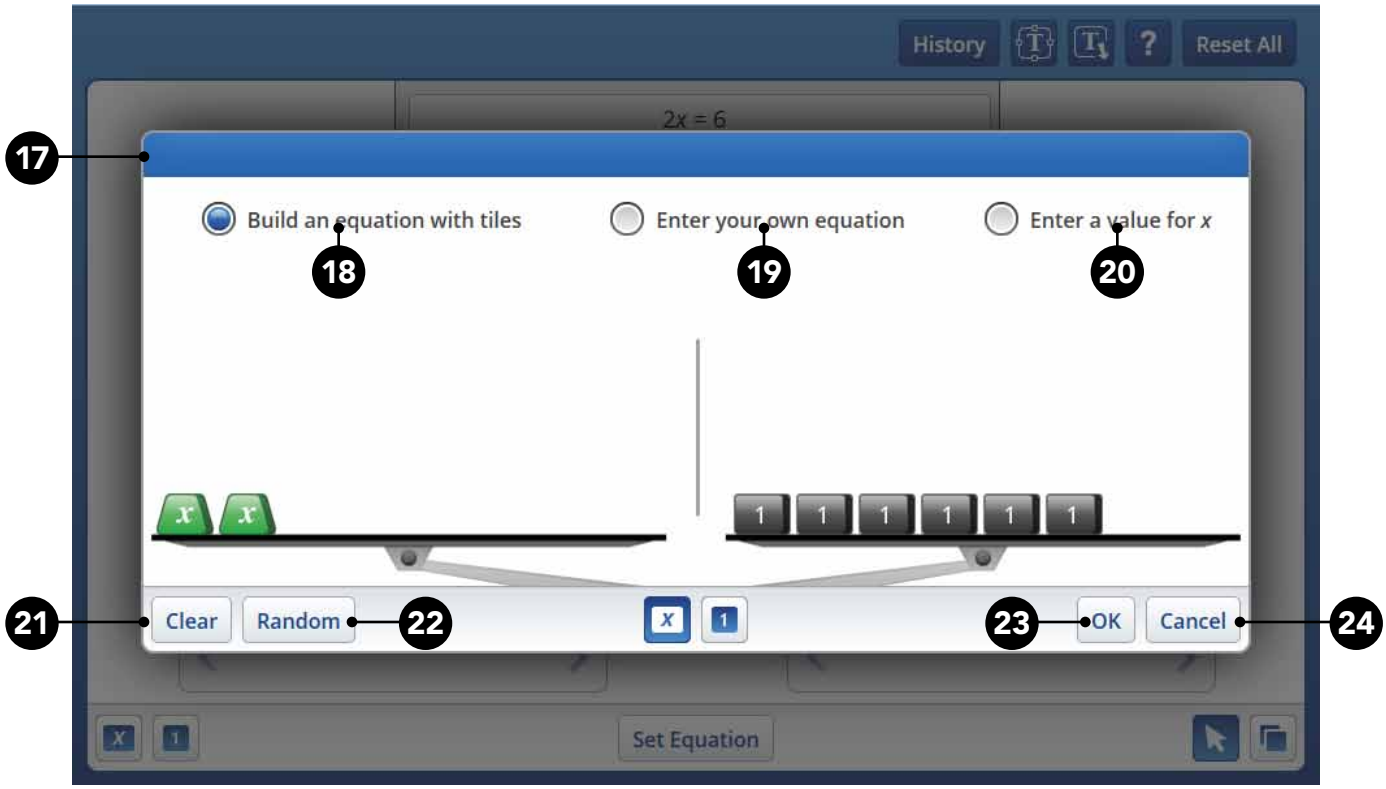

17. Set Equation Menu Using the set equation menu, there are three methods to set an equation on the pan balance. You can set an equation to model on the pan balance by building an equation with tiles, entering an equation, or entering a value for *x*.

18. Build an Equation With Tiles Button When you choose the build anequation with tiles button, you can model an equation to be placed on the pan balance using *x*- and 1- tiles. You can add tiles to the pans in the menu using the *x*- and 1- tile buttons at the bottom of the menu screen. To remove a tile that has been placed one of the pans in the menu, just select the tile you want to remove. The equation must have a whole number solution before it can be modeled on the pan balance.

19. Enter Your Own Equation Button When you choose the enter your own equation button, you can model an equation to be placed on the pan balance by selecting an equation type and then entering the values of the constants for that equation type. The equation must have a whole number solution before it can be modeled on the pan balance.

20. Enter a Value for *x* Button When you choose the enter a value for *x* button, you can model an equation to be placed on the pan balance by entering the value of *x*. A random equation will then be modeled with that value of *x* on the pan balance.

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21. **Clear Button** Pressing the clear button will remove any changes that you have made in the set equation menu, and set the values in the menu back to their defaults regardless of which set equation option is selected.
22. **Random Button** Pressing the random button will set up a random equation with a whole number solution regardless of which set equation option is selected.
23. **OK Button** Once an equation is modeled with a whole number solution, pressing the OK button will set the equation you are modeling on the pan balance.
24. **Cancel Button** Pressing the cancel button will close the set equation menu, and discard any changes you may have made in the menu.

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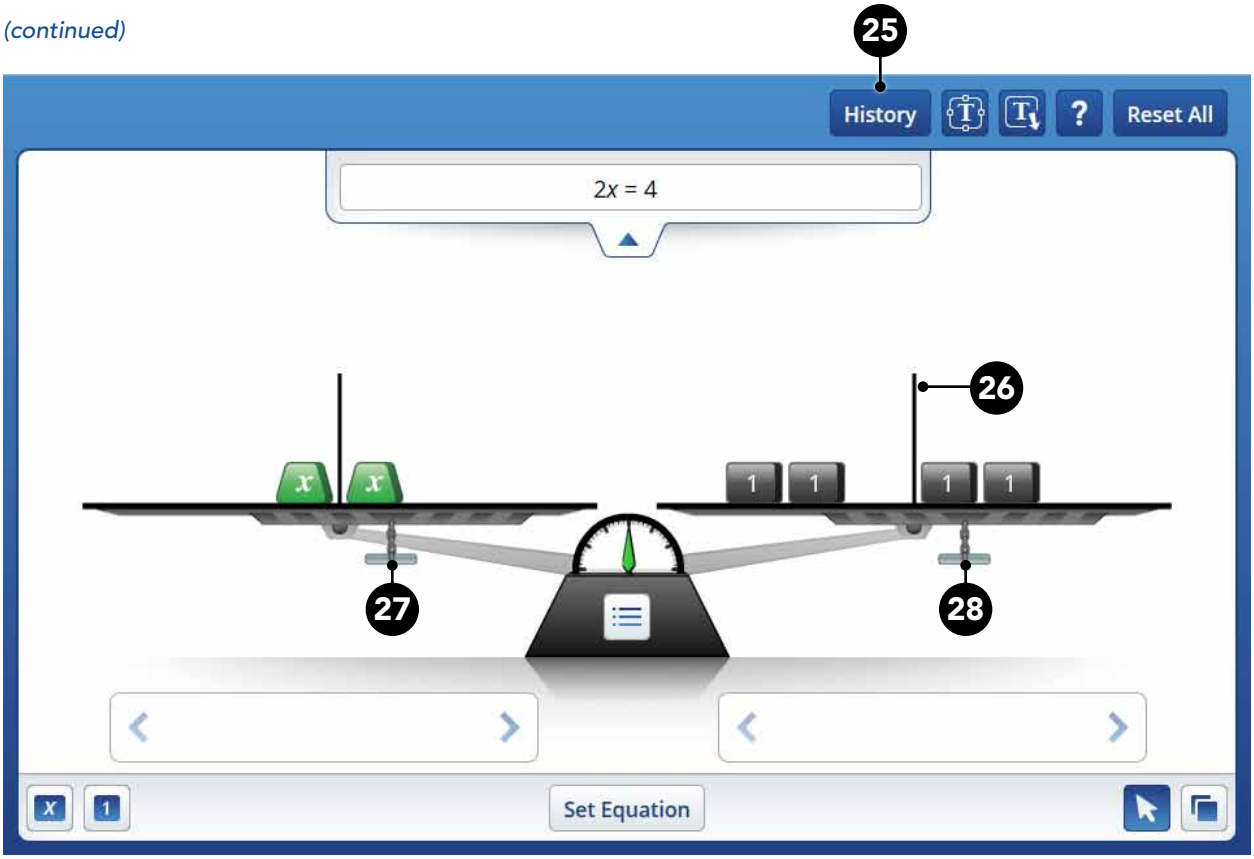

25. History Maintains a list of each state of equality as you solve your equation. The original equation and the current equation always appear in the list. Selecting an equation in the list restores the left and right pans to that prior state of equality. Once you manipulate the tiles in the bin(s) and a new state of equality is established, the history list will reflect only the states of equality from just prior and after the place where you selected the state of equality.

26. Partition(s) If 2 or more partitions are selected using the partition button, partitions will appear on each pan, splitting them into the same number of selected parts.

27. Left Pan Pulley When partitions on each of the pans, and the tiles are grouped equally into each partition on each pan, the pulleys will appear. Grabbing the handle on the pulley will remove all but one of the groups of tiles on each pan and place the other tiles in the holding bin. Grabbing either pulley will have the same effect on both pans.

28. Right Pan Pulley When partitions on each of the pans, and the tiles are grouped equally into each partition on each pan, the pulleys will appear. Grabbing the handle on the pulley will remove all but one of the groups of tiles on each pan and place the other tiles in the holding bin.