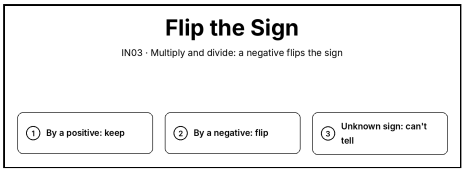
Flip the Sign: teacher script

IN03-V1 · IN03 Multiply and divide: a negative flips the sign · teachers only. Without a screen, read each Say line and draw each Draw step on the board. About 80 seconds as a video.

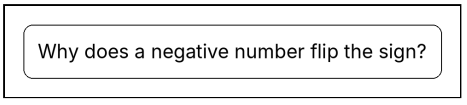
01



Say. Multiplying and dividing. By a positive number, keep the sign. By a negative number, flip it. And if you don't know the sign, you can't tell.

Draw. Write the title “Flip the Sign” and the steps: 1. By a positive: keep; 2. By a negative: flip; 3. Unknown sign: can't tell.

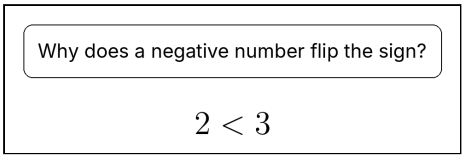
02



Say. Why does multiplying by a negative number flip the sign?

Draw. Clear the board. Write “Why does a negative number flip the sign?” in a box at the top.

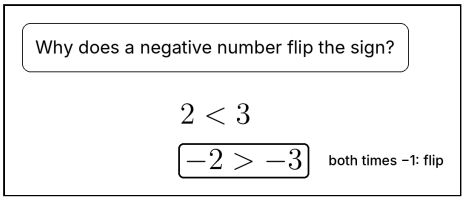
03



Say. 2 is less than 3.

Draw. Write 2 < 3 on the next line.

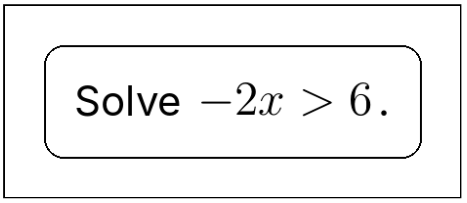
04



Say. Multiply both by negative 1: negative 2 is greater than negative 3. Multiplying by negative 1 is a mirror at 0, so the order flips.

Draw. Write −2 > −3 and box it on the next line. Beside it, write “both times −1: flip”.

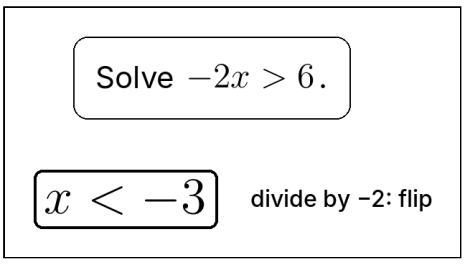
05



Say. Solve negative 2 x is greater than 6.

Draw. Clear the board. Write “Solve −2x > 6.” in a box at the top.

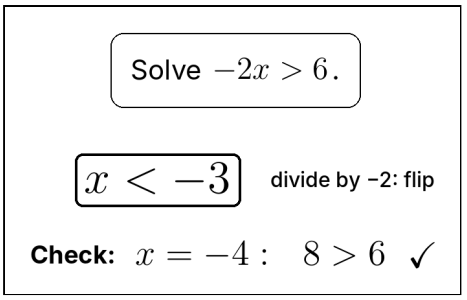
06



Say. Divide both sides by negative 2, and flip the sign: x is less than negative 3.

Draw. Write x < −3 and box it on the next line. Beside it, write “divide by −2: flip”.

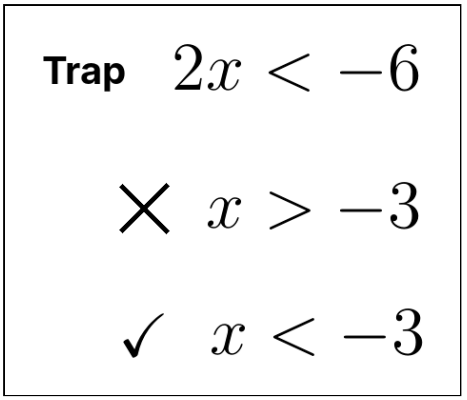
07



Say. Check with x equals negative 4: negative 2 times negative 4 is 8, and 8 is greater than 6.

Draw. Below, write “Check: x = −4:\ \ 8 > 6” and tick it ✓.

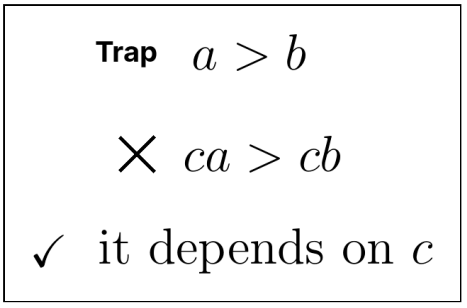
08



Say. Watch for the trap: in 2 x is less than negative 6, there is a negative number on the right, but you divide by 2, which is positive. So keep the sign: x is less than negative 3.

Draw. Clear the board. Write “Trap” and 2x < −6. Below, write x > −3 and cross it out ×. Then write x < −3 with a tick ✓.

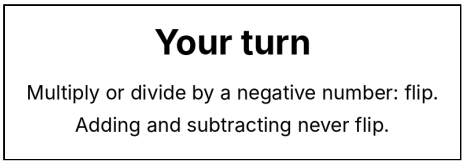
09



Say. Another trap: from a greater than b, you can't say c a is greater than c b. You don't know the sign of c: if c is negative, the sign flips, and if c is 0, they are equal.

Draw. Clear the board. Write “Trap” and a > b. Below, write ca > cb and cross it out ×. Then write it depends on c with a tick ✓.

10



Say. Now it is your turn. Multiply or divide by a negative number, and flip the sign. Adding and subtracting never flip it.

Draw. Point to today’s activity: Multiply or divide by a negative number: flip. Adding and subtracting never flip.