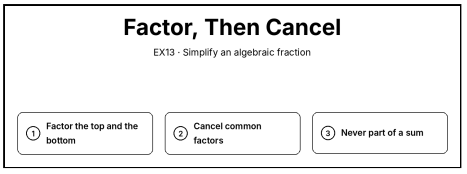
Factor, Then Cancel: teacher script

EX13-V1 · EX13 Simplify an algebraic fraction · teachers only. Without a screen, read each Say line and draw each Draw step on the board. About 66 seconds as a video.

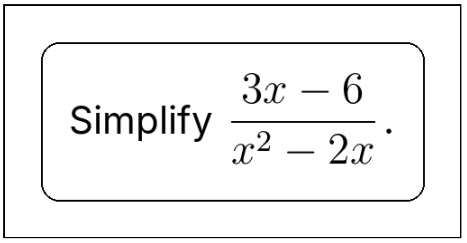
01



Say. Factor, then cancel. Factor the top and the bottom, then cancel the factors they share: never part of a sum.

Draw. Write the title “Factor, Then Cancel” and the steps: 1. Factor the top and the bottom; 2. Cancel common factors; 3. Never part of a sum.

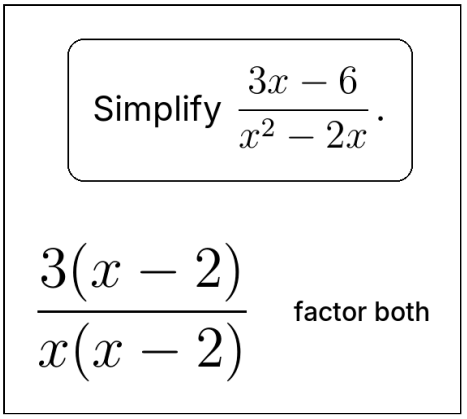
02



Say. Simplify 3x − 6, over x² − 2x.

Draw. Clear the board. Write “Simplify (3x − 6)/(x² − 2x).” in a box at the top.

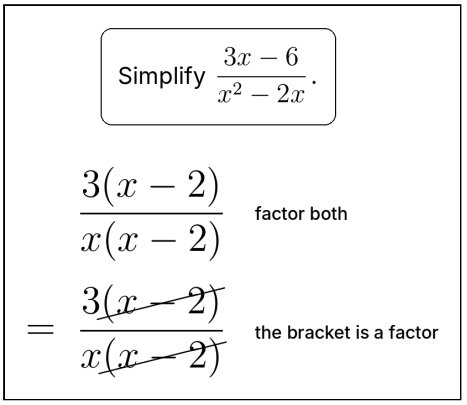
03



Say. Factor the top: three times the bracket x − 2. Factor the bottom: x times the same bracket.

Draw. Write (3(x − 2))/(x(x − 2)) on the next line. Beside it, write “factor both”.

04



Say. The bracket is a factor on the top and on the bottom, so it cancels.

Draw. Write = (3~~(x − 2)~~)/(x~~(x − 2)~~) on the next line. Beside it, write “the bracket is a factor”. Cross out the factors that cancel, one on top with one underneath.

05

Simplify $\dfrac{3x-6}{x^2-2x}$.

$$\frac{3(x-2)}{x(x-2)} \quad \text{factor both}$$

$$= \frac{\cancel{3(x-2)}}{x\cancel{(x-2)}} \quad \text{the bracket is a factor}$$

$$= \boxed{\frac{3}{x}}$$

Say. That leaves three over x.

Draw. Write = 3/x and box it on the next line.

06

Simplify $\dfrac{6x+9}{12}$.

Say. Now simplify 6x + 9, over twelve.

Draw. Clear the board. Write “Simplify (6x + 9)/12.” in a box at the top.

07

Simplify $\dfrac{6x+9}{12}$.

$$\frac{3(2x+3)}{12} \quad \text{factor the top}$$

Say. Factor the top: three times the bracket 2x + 3.

Draw. Write (3(2x + 3))/12 on the next line. Beside it, write “factor the top”.

08

Simplify $\dfrac{6x+9}{12}$.

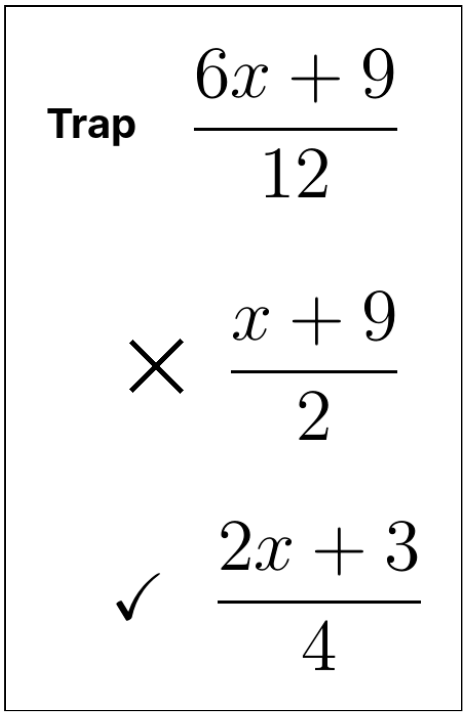
$$\frac{3(2x+3)}{12} \quad \text{factor the top}$$

$$= \boxed{\frac{2x+3}{4}} \quad 12 \div 3 = 4$$

Say. Three and twelve share three: 2x + 3, over four.

Draw. Write = (2x + 3)/4 and box it on the next line. Beside it, write “12 \div 3 = 4”.

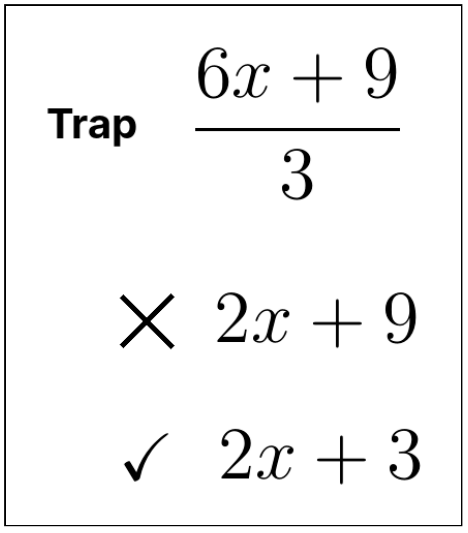
09



Say. Watch for the trap: cancelling part of a sum. Cancelling the six in six x with the twelve is wrong: the six is only part of the top. Factor first.

Draw. Clear the board. Write “Trap” and (6x + 9)/12. Below, write (x + 9)/2 and cross it out ×. Then write (2x + 3)/4 with a tick ✓.

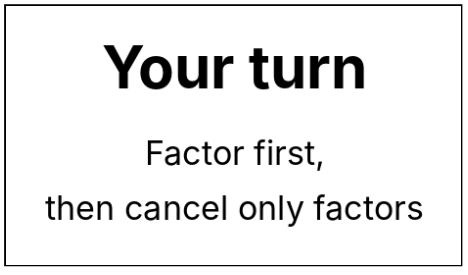
10



Say. And the bar divides every term. 6x + 9, over three, is not 2x + 9. It is 2x + 3.

Draw. Clear the board. Write “Trap” and (6x + 9)/3. Below, write 2x + 9 and cross it out ×. Then write 2x + 3 with a tick ✓.

11



Say. Now it is your turn. Factor first, then cancel only factors.

Draw. Point to today’s activity: Factor first, then cancel only factors