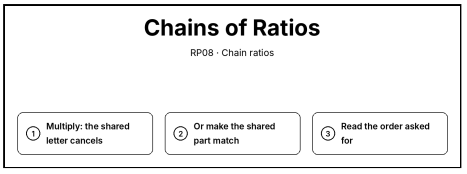
Chains of Ratios: teacher script

RP08-V1 · RP08 Chain ratios · teachers only. Without a screen, read each Say line and draw each Draw step on the board. About 84 seconds as a video.

01



Say. Chains of ratios. Multiply the ratios so the shared letter cancels. Or make the shared part match. And read the order the question asks for.

Draw. Write the title “Chains of Ratios” and the steps: 1. Multiply: the shared letter cancels; 2. Or make the shared part match; 3. Read the order asked for.

02

$\frac{x}{y} = \frac{2}{3}$ and $\frac{y}{z} = \frac{7}{5}$. Find $\frac{z}{x}$.

Say. x over y is two thirds, and y over z is seven fifths. Find z over x.

Draw. Clear the board. Write “x/y = 2/3 and y/z = 7/5. Find z/x.” in a box at the top.

03

$\frac{x}{y} = \frac{2}{3}$ and $\frac{y}{z} = \frac{7}{5}$. Find $\frac{z}{x}$.

$$\frac{x}{y} \cdot \frac{y}{z} = \frac{x}{z}$$ the y cancels

Say. Multiply: x over y times y over z is x over z. The y cancels.

Draw. Write x/y · y/z = x/z on the next line. Beside it, write “the y cancels”.

04

$\frac{x}{y} = \frac{2}{3}$ and $\frac{y}{z} = \frac{7}{5}$. Find $\frac{z}{x}$.

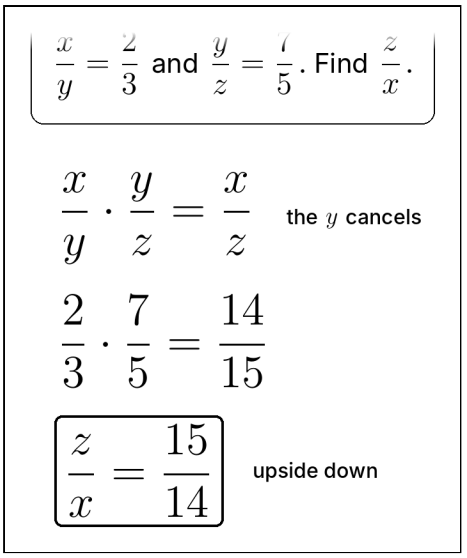
$$\frac{x}{y} \cdot \frac{y}{z} = \frac{x}{z}$$ the y cancels

$$\frac{2}{3} \cdot \frac{7}{5} = \frac{14}{15}$$

Say. Two thirds times seven fifths is fourteen fifteenths.

Draw. Write 2/3 · 7/5 = 14/15 on the next line.

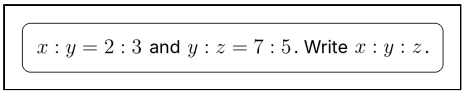
05



Say. The question asks for z over x, so turn it upside down: fifteen fourteenths.

Draw. Write z/x = 15/14 and box it on the next line. Beside it, write “upside down”.

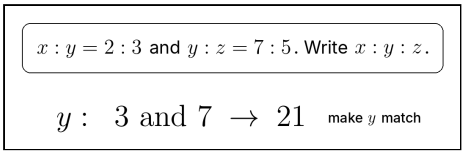
06



Say. x to y is 2 to 3, and y to z is 7 to 5. Write x to y to z.

Draw. Clear the board. Write “x : y = 2 : 3 and y : z = 7 : 5. Write x : y : z.” in a box at the top.

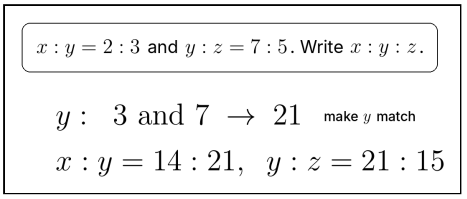
07



Say. In one ratio y is 3, and in the other it is 7. Make it 21 in both.

Draw. Write y: 3 and 7 \to 21 on the next line. Beside it, write “make y match”.

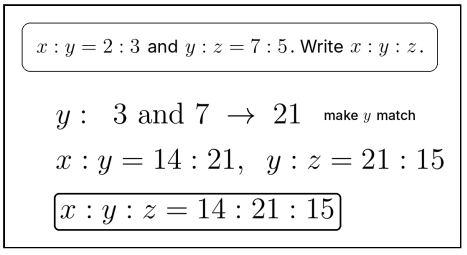
08



Say. Scale both: 14 to 21, and 21 to 15.

Draw. Write x : y = 14 : 21, y : z = 21 : 15 on the next line.

09



Say. So x to y to z is 14 to 21 to 15.

Draw. Write x : y : z = 14 : 21 : 15 and box it on the next line.

10

Trap $2 : 3$ and $7 : 5$

$\times$ $2 : 3 : 5$

✓ $14 : 21 : 15$

Say. Watch for the trap: joining without matching. In 2 to 3 to 5, y to z would be 3 to 5, not 7 to 5. Make the shared part match first.

Draw. Clear the board. Write “Trap” and 2 : 3 and 7 : 5. Below, write 2 : 3 : 5 and cross it out ×. Then write 14 : 21 : 15 with a tick ✓.

11

Trap $\frac{a}{b} = \frac{3}{4}, \quad \frac{a}{c} = 5$

$\times$ $\frac{a}{b} \cdot \frac{a}{c}$

✓ $\frac{a}{c} \div \frac{a}{b} = \frac{b}{c}$

Say. And when the shared letter is on top in both, multiplying doesn't cancel it. Divide instead: a over c, divided by a over b, is b over c.

Draw. Clear the board. Write “Trap” and a/b = 3/4, a/c = 5. Below, write a/b · a/c and cross it out ×. Then write a/c ÷ a/b = b/c with a tick ✓.

12

Your turn

Make the shared letter cancel, or match, then read the order asked for.

Say. Now it is your turn. Make the shared letter cancel, or match it, then read the order the question asks for.

Draw. Point to today’s activity: Make the shared letter cancel, or match, then read the order asked for.