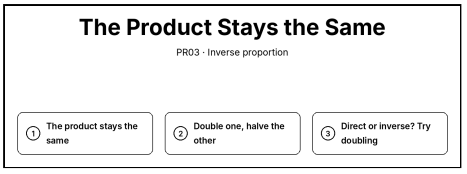
The Product Stays the Same: teacher script

PR03-V1 · PR03 Inverse proportion · teachers only. Without a screen, read each Say line and draw each Draw step on the board. About 76 seconds as a video.

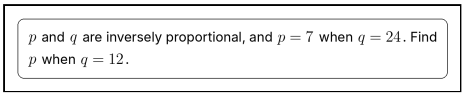
01



Say. Inverse proportion. Two quantities are inversely proportional when their product stays the same. Double one, and you halve the other. Direct or inverse? Try doubling.

Draw. Write the title “The Product Stays the Same” and the steps: 1. The product stays the same; 2. Double one, halve the other; 3. Direct or inverse? Try doubling.

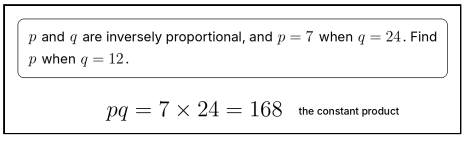
02



Say. p and q are inversely proportional, and p is 7 when q is 24. Find p when q is 12.

Draw. Clear the board. Write “p and q are inversely proportional, and p = 7 when q = 24. Find p when q = 12.” in a box at the top.

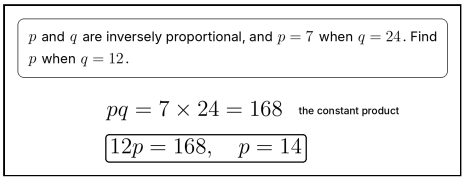
03



Say. The product stays the same: 7 times 24 is 168.

Draw. Write pq = 7 × 24 = 168 on the next line. Beside it, write “the constant product”.

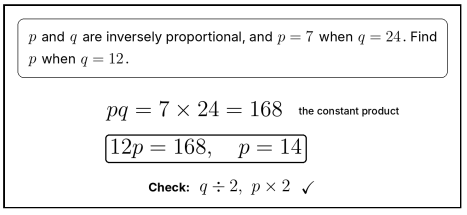
04



Say. So 12 p equals 168, and p is 14.

Draw. Write 12p = 168, p = 14 and box it on the next line.

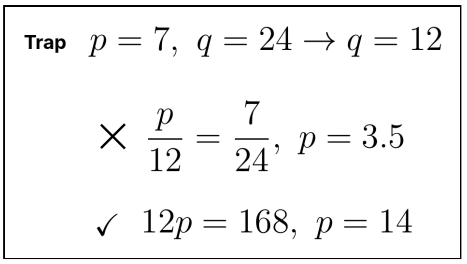
05



Say. Check: q was halved, so p doubled. 7 times 2 is 14.

Draw. Below, write “Check: q ÷ 2,\ p × 2” and tick it ✓.

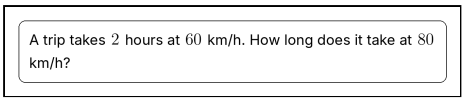
06



Say. Watch for the trap: treating it as direct. Here the product stays the same, not the ratio.

Draw. Clear the board. Write “Trap” and p = 7,\ q = 24 \to q = 12. Below, write p/12 = 7/24,\ p = 3.5 and cross it out ×. Then write 12p = 168,\ p = 14 with a tick ✓.

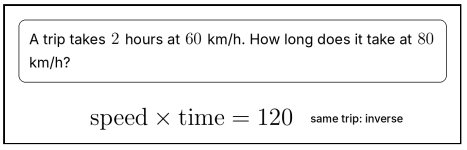
07



Say. A trip takes 2 hours at 60 kilometres per hour. How long does it take at 80 kilometres per hour?

Draw. Clear the board. Write “A trip takes 2 hours at 60 km/h. How long does it take at 80 km/h?” in a box at the top.

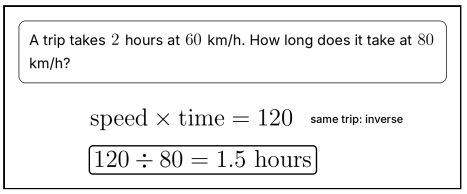
08



Say. For the same trip, speed times time is the same: 120 kilometres. Faster means less time.

Draw. Write speed × time = 120 on the next line. Beside it, write “same trip: inverse”.

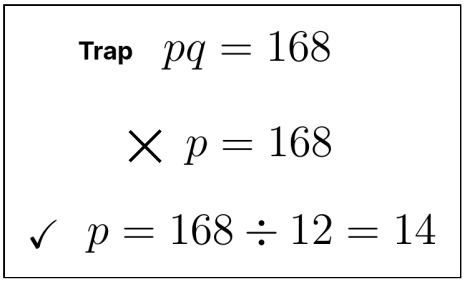
09



Say. So 120 divided by 80 is 1.5 hours.

Draw. Write 120 ÷ 80 = 1.5 hours and box it on the next line.

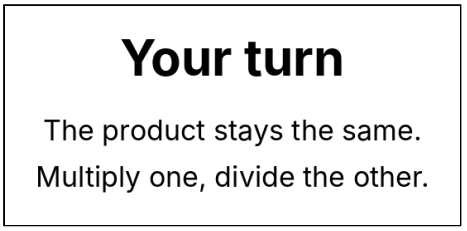
10



Say. One more trap: stopping at the constant. 168 is the product. Divide it to get the answer.

Draw. Clear the board. Write “Trap” and pq = 168. Below, write p = 168 and cross it out ×. Then write p = 168 ÷ 12 = 14 with a tick ✓.

11



Say. Now it is your turn. The product stays the same: multiply one, and divide the other.

Draw. Point to today’s activity: The product stays the same. Multiply one, divide the other.