

Teacher Key: Two Quantities, One Relationship

Use and look-fors. Ask students to label each rate and the whole in each percent. Avoid cross multiplication without an explanation of the equivalent relationship.

1. 12 cups water; scale by 3, or multiply 9 by $\frac{4}{3}$ cup water per cup concentrate.
2. 7 total cups. A part-to-part comparison uses water; a part-to-total comparison uses the whole mixture.
3. The ratios differ; doubling 3 requires doubling 4, giving 6:8.
4. 1.50 dollars per notebook; 12 dollars for 8 notebooks.
5. 14 cups concentrate, 21 cups water; 7 batches.
6. 30 members; $9 \div 0.30 = 30$.

Think Like a Mathematician

Extension solutions and teaching notes

7. The blue amount stays at 5 parts. Red increases by 3 equal parts, which equal 9 beads, so each part is 3 beads. Originally 6 red and 15 blue; final 15:15. The fixed blue amount makes the common part size determined.

8. A: \$0.75 each; B: \$0.70 each, so B has the lower unit price. A permits 4 packs = 16 pencils; B permits 2 packs = 12 pencils, so A supplies more under this budget. Complete packs require checking affordable pack counts, rather than assuming fractional packs can be bought.