Solving Proportions by Cross-Multiplication: Guided Worksheet Plan

Original tasks 1, 2, 3 / complete keys

Task 1

Solve 4/7 = x/21 for x.

Answer: x = 12

Reason: Cross-multiply: 4 times 21 equals 7 times x, so 84 = 7x. Divide both sides by 7 to get x = 12. Check: 4/7 and 12/21 both simplify to 4/7, and cross products are 4 times 21 = 84 and 7 times 12 = 84.

Check: Substitute 12 into the proportion and confirm both cross products equal 84.

Task 2

Solve 9/x = 3/5 for x.

Answer: x = 15

Reason: Cross-multiply: 9 times 5 equals x times 3, so 45 = 3x. Divide both sides by 3 to get x = 15. Since x is a denominator, note x cannot be zero; 15 satisfies this. Check: 9/15 simplifies to 3/5, and cross products are 9 times 5 = 45 and 15 times 3 = 45.

Check: Substitute 15 and confirm both cross products equal 45; also confirm the denominator is not zero.

Task 3

Solve 2.5/4 = x/10 for x.

Answer: x = 6.25

Reason: Cross-multiply: 2.5 times 10 equals 4 times x, so 25 = 4x. Divide both sides by 4 to get x = 6.25. Check: 2.5/4 = 0.625 and 6.25/10 = 0.625, so the ratios are equal. Cross products are 2.5 times 10 = 25 and 4 times 6.25 = 25.

Check: Substitute 6.25 and confirm both cross products equal 25, or confirm both ratios equal 0.625.

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Original tasks 4 / complete keys

Task 4

Solve 5/12 = 8/x for x. Give the answer as a fraction in lowest terms.

Answer: x = 96/5 or 19.2

Reason: Cross-multiply: 5 times x equals 12 times 8, so 5x = 96. Divide both sides by 5 to get x = 96/5, which equals 19.2. Since x is a denominator, x cannot be zero; 96/5 satisfies this. Check: 5/12 and 8 divided by 96/5 equal 8 times 5/96 = 40/96 = 5/12, so the ratios match. Cross products are 5 times 96/5 = 96 and 12 times 8 = 96.

Check: Substitute 96/5 and confirm both cross products equal 96; also confirm the denominator is not zero.

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Source rubric / reflection

- [ ] Identifies the missing term and writes the proportion clearly.
- [ ] Forms both cross products correctly, pairing each numerator with the opposite denominator.
- [ ] Sets the cross products equal and solves the resulting equation accurately.
- [ ] States any denominator restriction when relevant.
- [ ] Checks the answer by substitution or by simplifying both ratios.
- [ ] Presents work in a logical sequence with consistent units or unitless values.

Reflection: What did you check, what did you change, and what will you try next?