TOPIC: MIXTURE PROBLEM SOLVING

Intro to Mixture Problems

◆ **Mixture problems** involve two or more quantities being _____ to form a mixture.

    ► To solve mixture problems, we apply our problem-solving steps.

EXAMPLE

Miles has $2.20 in dimes and nickels. He has 8 more nickels than dimes. How many of each type of coin does he have?

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Mia has a jar containing nickels and dimes worth $4.80 in total. If she has 12 more dimes than nickels, how many of each coin does she have?

Marcus bought tickets for a basketball game. Student tickets cost $12 each and adult tickets cost $20 each. He spent a total of $464 on tickets and bought 28 tickets in all. How many student and adult tickets did Marcus purchase?

Maya needs 48 sq ft of tile for a backsplash. Basic tiles cost $9 per sq ft and designer tiles cost $25 per sq ft. She wants the overall average cost to be $14 per sq ft. How many square feet of each tile should she use?

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Mixture Problems Involving Percents

◆ To build an eqn for mixture problems, express each **part of the mixture** as a _____, then sum for the total.

▶ To solve, rewrite the equation in terms of one variable & solve for that variable.

A chemist needs 14 liters of a 50% acid solution for a lab experiment. The stockroom has only 40% and 70% solutions. How much of each solution should be mixed together to form 14 liters of a 50% solution?

Recall

$$\text{partial} = \text{percent} \cdot \text{whole}$$

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A technician needs to prepare a disinfectant by mixing a 70% isopropyl alcohol solution with some 50% solution to obtain 65% alcohol. If the technician uses 500 mL of the 50% solution, how many mL of the 70% solution must be added?

A candy maker has 300 mL of a 45% sugar syrup. She wants to dilute it with pure water to make a 30% syrup.
How many mL of water should she add?

Part of an amount of $15000 was invested at 7% annual simple interest and the rest at 9% annual simple interest.
If the total yearly interest from both accounts was $1,112, find the amount invested at each rate.

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A retirement fund invests some money in government bonds at 2.5% annual simple interest, and $5,000 more than that amount in corporate bonds at 4%. If the total annual interest earned is $1,450, how much was invested in each type of bond?

Elena has $18,500 to invest. She invests some of it at 8.4% annual simple interest for 1 year, and the remainder at 11.6% annual simple interest for 8 months. At the end of the year, her total interest earned is $1,500. How much did she invest at each rate?