

In Exercises 15–28, write an equation that can be used to solve the mixture problem. Solve each equation and answer the question asked.

15. Two Investments Bill Palow invested \$30,000 for one year in two separate accounts paying 3% and 4.1% annual simple interest. If Bill earned a total of \$1091.73 from the two investments, how much was invested in each account?

16. Two Investments Terry Edwards invested \$3000 for two years, part at 3.5% simple interest and the rest at 2.5% simple interest. After two years, she earned a total interest of \$190. How much was invested at each rate?

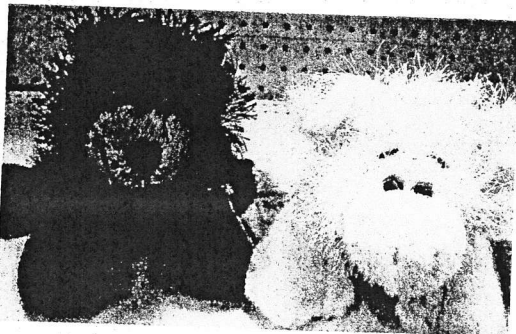
17. Mixing Coffee Joan Smith is the owner of a Starbucks Coffee Shop. She sells Kona coffee for \$6.20 per pound and amaretto coffee that sells for \$5.80 per pound. She finds that by mixing these two blends she creates a coffee that sells well. If she uses 18 pounds of amaretto coffee in the blend and wishes to sell the mixture at \$6.10 per pound, how many pounds of the Kona coffee should she mix with the amaretto coffee?



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18. Mixing Nuts J. B. Davis owns a nut shop. He sells almonds for \$6 per pound and walnuts for \$5.20 per pound. He receives a special request from a customer who wants to purchase 30 pounds of a mixture of almonds and walnuts for \$165. Determine how many pounds of almonds and walnuts should be mixed.

19. Investing in Webkinz Nicholas is a toy collector and is investing in Webkinz stuffed animals. He purchased some basset hounds for \$50 each and twice as many black cats for \$13 each. If Nicholas spent a total of \$304, how many basset hounds and how many black cats did Nicholas purchase?



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20. Sulfuric Acid Solutions Read Wickham, a chemistry teacher, needs a 5% sulfuric acid solution for an upcoming chemistry laboratory. When checking the storeroom, he realizes he has only 8 ounces of a 25% sulfuric acid solution. There is not enough time for him to order more, so he decides to make a 5% sulfuric acid solution by very carefully adding water to the 25% sulfuric acid solution. Determine how much water Read must add to the 25% solution to reduce it to a 5% solution.

21. Vinegar Solutions Distilled white vinegar purchased in supermarkets generally has a 5% acidity level. To make her sauerbraten, Chef Judy Ackermayr marinates veal overnight in a special 8% distilled vinegar that she creates herself. To create the 8% solution she mixes a regular 5% vinegar solution with a 12% vinegar solution that she purchases by mail. How many ounces of the 12% vinegar solution should she add to 40 ounces of the 5% vinegar solution to get the 8% vinegar solution?

22. Hydrogen Peroxide Solution David Robertson works as a chemical engineer for US Peroxide Corporation. David has 2500 gallons of a commercial-grade hydrogen peroxide solution that is 60% pure hydrogen peroxide. How much distilled water (which is 0% hydrogen peroxide) will David need to add to this solution to create a new solution that is 25% pure hydrogen peroxide?

23. Horseradish Sauces Sally Finkelstein has a recipe that calls for horseradish sauce that is 45% pure horseradish. At the grocery store she finds one horseradish sauce that is 30% pure horseradish and another that is 80% pure horseradish. How many teaspoons of each of these horseradish sauces should Sally mix together to get 4 teaspoons of horseradish sauce that is 45% pure horseradish?

24. Grass Seed Mixture The Pearlman Nursery sells two types of grass seeds in bulk. The lower quality seeds have a germination rate of 76%, but the germination rate of the higher quality seeds is not known. Seven pounds of the higher quality seeds are mixed with 14 pounds of the lower quality seeds. If a later analysis of the mixture reveals that the mixture's germination rate was 80%, what is the germination rate of the higher quality seed?

25. Acid Solutions Two acid solutions are available to a chemist. One is a 20% sulfuric acid solution, but the label that indicates the strength of the other sulfuric acid solution is missing. Two hundred milliliters of the 20% acid solution and 100 milliliters of the solution with the unknown strength are mixed together. Upon analysis, the mixture was found to have a 25% sulfuric acid concentration. Find the strength of the solution with the missing label.

26. Diluting Vinegar Alex wishes to use vinegar that is 13% acetic acid as a natural weed killer. He has some table vinegar that is 5% acetic acid and two cups of pickling vinegar that is 15% acetic acid. How many cups of table vinegar should Alex mix with the two cups of pickling vinegar to obtain vinegar that is 13% acetic acid?

27. Candy Mixture A supermarket is selling two types of candies, orange slices and strawberry leaves. The orange slices cost \$1.29 per pound and the strawberry leaves cost \$1.79 per pound. How many pounds of each should be mixed to get a 12-pound mixture that sells for \$17.48?



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