

4.6 Practice - Mixture Problems

Solve.

- 1) A tank contains 8000 liters of a solution that is 40% acid. How much water should be added to make a solution that is 30% acid?
- 2) How much antifreeze should be added to 5 quarts of a 30% mixture of antifreeze to make a solution that is 50% antifreeze?
- 3) Of 12 pounds of salt water 10% is salt; of another mixture 3% is salt. How many pounds of the second should be added to the first in order to get a mixture of 5% salt?
- 4) How much alcohol must be added to 24 gallons of a 14% solution of alcohol in order to produce a 20% solution?
- 5) How many pounds of a 4% solution of borax must be added to 24 pounds of a 12% solution of borax to obtain a 10% solution of borax?
- 6) How many grams of pure acid must be added to 40 grams of a 20% acid solution to make a solution which is 36% acid?
- 7) A 100 LB bag of animal feed is 40% oats. How many pounds of oats must be added to this feed to produce a mixture which is 50% oats?
- 8) A 20 oz alloy of platinum that costs \$220 per ounce is mixed with an alloy that costs \$400 per ounce. How many ounces of the \$400 alloy should be used to make an alloy that costs \$300 per ounce?
- 9) How many pounds of tea that cost \$4.20 per pound must be mixed with 12 lb of tea that cost \$2.25 per pound to make a mixture that costs \$3.40 per pound?
- 10) How many liters of a solvent that costs \$80 per liter must be mixed with 6 L of a solvent that costs \$25 per liter to make a solvent that costs \$36 per liter?
- 11) How many kilograms of hard candy that cost \$7.50 per kilogram must be mixed with 24 kg of jelly beans that cost \$3.25 per kilogram to make a mixture that sells for \$4.50 per kilogram?
- 12) How many kilograms of soil supplement that costs \$7.00 per kilogram must be mixed with 20 kg of aluminum nitrate that costs \$3.50 per kilogram to make a fertilizer that costs \$4.50 per kilogram?
- 13) How many pounds of lima beans that cost 90¢ per pound must be mixed with 16 lb of corn that cost 50¢ per pound to make a mixture of vegetables that costs 65¢ per pound?
- 14) How many liters of a blue dye that costs \$1.60 per liter must be mixed with 18 L of anil that costs \$2.50 per liter to make a mixture that costs \$1.90 per liter?
- 15) Solution A is 50% acid and solution B is 80% acid. How much of each should be used to make 100cc. of a solution that is 68% acid?
- 16) A certain grade of milk contains 10% butter fat and a certain grade of cream 60% butter fat. How many quarts of each must be taken so as to obtain a

- mixture of 100 quarts that will be 45% butter fat?
- 17) A farmer has some cream which is 21% butterfat and some which is 15% butter fat. How many gallons of each must be mixed to produce 60 gallons of cream which is 19% butterfat?
 - 18) A syrup manufacturer has some pure maple syrup and some which is 85% maple syrup. How many liters of each should be mixed to make 150L which is 96% maple syrup?
 - 19) A chemist wants to make 50ml of a 16% acid solution by mixing a 13% acid solution and an 18% acid solution. How many milliliters of each solution should the chemist use?
 - 20) A hair dye is made by blending 7% hydrogen peroxide solution and a 4% hydrogen peroxide solution. How many milliliters of each are used to make a 300 ml solution that is 5% hydrogen peroxide?
 - 21) A paint that contains 21% green dye is mixed with a paint that contains 15% green dye. How many gallons of each must be used to make 60 gal of paint that is 19% green dye?
 - 22) A candy mix sells for \$2.20 per kilogram. It contains chocolates worth \$1.80 per kilogram and other candy worth \$3.00 per kilogram. How much of each are in 15 kilograms of the mixture?
 - 23) To make a weed and feed mixture, the Green Thumb Garden Shop mixes fertilizer worth \$4.00/lb. with a weed killer worth \$8.00/lb. The mixture will cost \$6.00/lb. How much of each should be used to prepare 500 lb. of the mixture?
 - 24) A grocer is mixing 40 cent per lb. coffee with 60 cent per lb. coffee to make a mixture worth 54¢ per lb. How much of each kind of coffee should be used to make 70 lb. of the mixture?
 - 25) A grocer wishes to mix sugar at 9 cents per pound with sugar at 6 cents per pound to make 60 pounds at 7 cents per pound. What quantity of each must he take?
 - 26) A high-protein diet supplement that costs \$6.75 per pound is mixed with a vitamin supplement that costs \$3.25 per pound. How many pounds of each should be used to make 5 lb of a mixture that costs \$4.65 per pound?
 - 27) A goldsmith combined an alloy that costs \$4.30 per ounce with an alloy that costs \$1.80 per ounce. How many ounces of each were used to make a mixture of 200 oz costing \$2.50 per ounce?
 - 28) A grocery store offers a cheese and fruit sampler that combines cheddar cheese that costs \$8 per kilogram with kiwis that cost \$3 per kilogram. How many kilograms of each were used to make a 5 kg mixture that costs \$4.50 per kilogram?
 - 29) The manager of a garden shop mixes grass seed that is 60% rye grass with 70 lb of grass seed that is 80% rye grass to make a mixture that is 74% rye grass. How much of the 60% mixture is used?

- 30) How many ounces of water evaporated from 50 oz of a 12% salt solution to produce a 15% salt solution?
- 31) A caterer made an ice cream punch by combining fruit juice that cost \$2.25 per gallon with ice cream that costs \$3.25 per gallon. How many gallons of each were used to make 100 gal of punch costing \$2.50 per pound?
- 32) A clothing manufacturer has some pure silk thread and some thread that is 85% silk. How many kilograms of each must be woven together to make 75 kg of cloth that is 96% silk?
- 33) A carpet manufacturer blends two fibers, one 20% wool and the second 50% wool. How many pounds of each fiber should be woven together to produce 600 lb of a fabric that is 28% wool?
- 34) How many pounds of coffee that is 40% java beans must be mixed with 80 lb of coffee that is 30% java beans to make a coffee blend that is 32% java beans?
- 35) The manager of a specialty food store combined almonds that cost \$4.50 per pound with walnuts that cost \$2.50 per pound. How many pounds of each were used to make a 100 lb mixture that cost \$3.24 per pound?
- 36) A tea that is 20% jasmine is blended with a tea that is 15% jasmine. How many pounds of each tea are used to make 5 lb of tea that is 18% jasmine?
- 37) How many ounces of dried apricots must be added to 18 oz of a snack mix that contains 20% dried apricots to make a mixture that is 25% dried apricots?
- 38) How many milliliters of pure chocolate must be added to 150 ml of chocolate topping that is 50% chocolate to make a topping that is 75% chocolate?
- 39) How many ounces of pure bran flakes must be added to 50 oz of cereal that is 40% bran flakes to produce a mixture that is 50% bran flakes?
- 40) A ground meat mixture is formed by combining meat that costs \$2.20 per pound with meat that costs \$4.20 per pound. How many pounds of each were used to make a 50 lb mixture tha costs \$3.00 per pound?
- 41) How many grams of pure water must be added to 50 g of pure acid to make a solution that is 40% acid?
- 42) A lumber company combined oak wood chips that cost \$3.10 per pound with pine wood chips that cost \$2.50 per pound. How many pounds of each were used to make an 80 lb mixture costing \$2.65 per pound?
- 43) How many ounces of pure water must be added to 50 oz of a 15% saline solution to make a saline solution that is 10% salt?



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Answers - Mixture Problems

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| 1) 2666.7 | 16) 30, 70 | 31) 75, 25 |
| 2) 2 | 17) 40, 20 | 32) 55, 20 |
| 3) 30 | 18) 40, 110 | 33) 440, 160 |
| 4) 1, 8 | 19) 20, 30 | 34) 20 |
| 5) 8 | 20) 100, 200 | 35) 35, 63 |
| 6) 10 | 21) 40, 20 | 36) 3, 2 |
| 7) 20 | 22) 10, 5 | 37) 1.2 |
| 8) 16 | 23) 250, 250 | 38) 150 |
| 9) 17.25 | 24) 21, 49 | 39) 10 |
| 10) 1.5 | 25) 20, 40 | 40) 30, 20 |
| 11) 10 | 26) 2, 3 | 41) 75 |
| 12) 8 | 27) 56, 144 | 42) 20, 60 |
| 13) 9.6 | 28) 1.5, 3.5 | 43) 25 |
| 14) 36 | 29) 30 | |
| 15) 40, 60 | 30) 10 | |



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