

Mixture Problems - Extra Practice

1. Mike has coffee worth \$4 per pound that he wishes to mix with 20 pounds of coffee worth \$7 per pound to get a mixture that can be sold for \$5 per pound. How many pounds of the cheaper coffee should he use?
2. Sue plans to mix peppermints worth \$1.20 per lb with chocolates worth \$2.40 per lb to get a 40 lb mix that is worth \$1.65 per lb. How much of each should she use?
3. The Sweet Shoppe wishes to sell a special mix for Valentine's Day that consists of Dark Chocolate that costs \$4.00 per lb and Milk Chocolate that costs \$2.00 per lb. How much of each should be used to get a 50 lb mix that costs \$2.60 per lb?
4. Theresa blended 30 lbs of Orange Pekoe Tea worth \$6.00 per pound with 70 lbs of Green Tea worth \$3.20 per pound. What is the cost per pound of the blend?
5. To make a flour mixture, a miller combines soybeans that cost \$8.50 per bushel with wheat that costs \$4.50 per bushel. How many bushels of each did he use if his final 800 bushel mix cost \$5.50 per bushel?
6. Nadine's Nursery sells St. Augustine grass seed for \$10 per lb, and Zoysia grass seed for \$15 per lb. Nancy wants to buy 20 lbs of grass seed, and wants to pay a total of \$240. How much of each type should she get?
7. Josephine mixed Ambergris worth \$5.50 per milligram with Byzantium worth \$3.00 per milligram. How much of each did she use if her final 40 milligram mix cost \$4.00 per milligram?
8. A party mix is made by adding nuts that sell for \$2.50 per pound to a cereal mix that sells for \$1.00 per pound. How much of each should be used to get a 60 pound mix that sells for \$1.70 per pound?

Answers

Set-Up Equations

- 40 lbs $4x + 7(20) = 5(x + 20)$
- 25 lbs Peppermints, 15 lbs Chocolate $P + C = 40;$ $1.20P + 2.40C = 1.65(40)$
- 15 lbs Dark Choc, 35 lbs Milk Choc $D + M = 50;$ $4D + 2M = 2.6(50)$
- \$4.04 per lb $6(30) + 3.20(70) = x(100)$
- 200 bushels Soybeans, 600 bushels Wheat $S + W = 800;$ $8.50S + 4.50W = 5.50(800)$
- 12 lbs St. Augustine, 8 lbs Zoysia $A + Z = 20;$ $10A + 15Z = 240$
- 16 mg Ambergris, 24 mg Byzantium $A + B = 40;$ $5.50A + 3B = 4(40)$
- 28 lbs Nuts, 32 lbs Cereal mix $N + C = 60;$ $2.50N + 1.00C = 1.70(60)$

9. A computer manufacturer shipped a total of 50 machines to its two warehouses, one in the West and one in the East. It costs \$20 per machine to ship to the western warehouse, and \$25 per machine to ship to the eastern warehouse. The manufacturer spent a total of \$1090 on shipping. How many machines went where?
10. Tickets to the school play cost \$4.50 for adults and \$3.00 for students. One night 325 tickets were sold and \$1140 was collected. How many of each type of ticket were sold?
11. Matinee movie tickets cost \$5 each for adults and \$2 each for kids. For one showing, 460 tickets were sold, and \$1880 was collected. How many of each type were sold?
12. All 500 seats to the Friday Night Seniors' Play were sold, and a total of \$3312.50 was collected. If Adult tickets cost \$7.50 each and Senior tickets cost \$4 each, how many of each type were sold?
13. Steve has been saving the dimes and quarters out of his pocket change for two weeks. He then notices that he has 53 coins for a total of \$8.45. How many of each kind of coin does he have?
14. A bank teller received a deposit in \$5 and \$10 bills. Altogether there were 25 bills worth a total of \$165. How many bills of each denomination were deposited?
15. Frank wants to mix 8 liters of a 4% KCl solution with some 70% KCl solution to get a 50% KCl solution. How much of the 70% solution needs to be used?
16. How many liters of a 10% acid solution should be mixed with 30 liters of a 50% acid solution to get a mix that is 20% acid?
17. A pharmacist needs 100 gallons of 50% alcohol solution. She has available a 30% solution and an 80% solution. How much of each should she use?
18. How many ounces of 5% Bismouth solution and 20% Bismouth solution should be mixed together to get 10 ounces of a 15% Bismouth solution?

Answers

Set-Up Equations

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| 9. 32 machines West, 18 machines East | $W + E = 50;$ | $20W + 25E = 1090$ |
| 10. 110 Adults, 215 Students | $A + S = 325;$ | $4.50A + 3.00S = 1140$ |
| 11. 320 Adults, 140 Kids | $A + K = 460;$ | $5A + 2K = 1880$ |
| 12. 375 Adults, 125 Seniors | $A + S = 500;$ | $7.50A + 4S = 3312.50$ |
| 13. 32 Dimes, 21 Quarters | $D + Q = 53;$ | $.10D + .25Q = 8.48$ |
| 14. 17 Fives, 8 Tens | $F + T = 25;$ | $5F + 10T = 165$ |
| 15. 18.4 liters | $.04(8) + .70(x) = .50(8 + x)$ | |
| 16. 90 liters | $.10A + .50(30) = .20(A + 30)$ | |
| 17. 60 gal @ 30%, 40 gal @ 80% | $A + B = 100;$ | $.30A + .80B = .50(100)$ |
| 18. 3.33 oz @ 5%, 6.67 oz @ 20% | $x + y = 10;$ | $.05x + .20y = .15(10)$ |

19. A butcher has some hamburger that is 80% lean and some that is 88% lean. He wishes to make 800 lbs of a burger mix that is 83% lean. How much of each type should he use?
20. Pure salt is to be added to a 10% salt mix to get 9 ounces of a 20% salt mix. How much of each should be used?
21. How much water must be added to 5 quarts of an 80% antifreeze mix to dilute it down to a 50% mix?
22. How many milliliters of alcohol must be added to 200 milliliters of a 25% Iodine solution to make a 10% Iodine solution?
23. Marie Inherited \$60,000, and invested part of it at 10% and the rest at 8%. After one year, she received a total of \$5600 in interest. How much did she invest at each rate?
24. John invested a total of \$8000 last year, part at 8% and the rest at 9%. This year he received \$670 in interest. How much did he invest at each rate?
25. Gary borrowed \$40,000 to start up his new business. He was able to get part of the loan at 8%, but had to agree to 12% for the other part. After one year, he had to pay \$4080 in interest alone. How much did he borrow at each rate.
26. \$3500 is invested at 5.2%. How much more must be invested at 7.5% so that the total annual interest earned is \$575?
27. Maurice invested \$42,000 into two accounts, one paying 3.5% interest and the other paying 4.5%. How much did he put into each account if he earns \$1653.75 interest per year?

Answers

Set-Up Equations

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| 19. 500 lbs @ 80%, 300 lbs @ 88% | $x + y = 800;$ | $.80x + .88y = .83(800)$ |
| 20. 1 oz Pure salt, 8 oz 10% Mix | $P + M = 9;$ | $1.00P + .10M = .20(9)$ |
| 21. 3 quarts Water | | $0.00W + .80(5) = .50(W + 5)$ |
| 22. 300 milliliters | | $0.00A + .25(200) = .10(A + 20)$ |
| 23. \$40,000 @ 10%, \$20,000 @ 8% | $x + y = 60,000;$ | $.10x + .08y = 5600$ |
| 24. \$5000 @ 8%, \$3000 @ 9% | $x + y = 8000;$ | $.08x + .09y = 670$ |
| 25. \$18,000 @ 8%, \$22,000 @ 12% | $x + y = 40,000;$ | $.08x + .12y = 4080$ |
| 26. \$5240 more | | $.052(3500) + .075(x) = 575$ |
| 27. \$23,625 @ 3.5%, \$18,375 @ 4.5% | $x + y = 42,000;$ | $.035x + .045y = 1653.75$ |