

1. Four large cheeseburgers and two chocolate shakes cost a total of \$7.90. Two shakes cost 15 cents more than one cheeseburger. What is the cost of a cheeseburger? A shake?

x = ^{cost} cheeseburger

$$4x + 2y = 7.90$$

$$4x + 2y = 7.90$$

y = ^{cost} shake

$$x + .15 = 2y$$

$$x - 2y = -.15$$

cheeseburger costs \$1.55

shake costs 85¢

$$5x = 7.75$$

$$x = 1.55$$

$$y = .85$$

2. One group of people purchased 10 hot dogs and 5 soft drinks at a cost of \$12.50. A second group bought 7 hot dogs and 4 soft drinks at a cost of \$9.00. What is the cost of a single hot dog? A single soft drink?

x = cost hot dog

$$-4(10x + 5y = 12.50)$$

$$-40x - 20y = -50$$

y = cost drink

$$5(7x + 4y = 9.00)$$

$$35x + 20y = 45$$

hot dog costs \$1
drink costs 50¢

$$-5x = -5$$

$$x = \$1$$

$$10 + 5y = 12.50$$

$$5y = 2.50$$

$$y = .50$$

3. A Broadway theater has 500 seats divided into orchestra, main, and balcony seating. Orchestra seats sell for \$50, main seats sell for \$35, and balcony seats for \$25. If all the seats are sold, the gross revenue to the theater is \$17,100. If all the main and balcony seats are sold, but only half the orchestra seats are sold, the gross revenue is \$14,600. How many are there of each kind of seat?

x = # orchestra tix

$$x + y + z = 500$$

$$25x = 2,500$$

y = # main tix

$$50x + 35y + 25z = 17,100$$

$$x = 100$$

z = # balcony tix

$$\frac{1}{2}(50x) + 35y + 25z = 14,600$$

$$-35(y + z = 400)$$

x = 100 orchestra tix
y = 210 main tix
z = 190 balcony tix

$$25x + 35y + 25z = 14,600$$

$$35y + 25z = 12,100$$

$$-35y - 35z = -14,000$$

$$-10z = -1,900$$

$$z = 190$$

4. A movie theater charges \$8.00 for adults, \$4.50 for children, and \$6.00 for senior citizens. One day the theater sold 405 tickets and collected \$2320 in receipts. There were twice as many children's tickets sold as adult tickets. How many adults, children, and senior citizens went to the theater that day?

x = # adult tix

$$x + y + z = 405$$

$$-6(3x + z = 405)$$

y = # kid tix

$$8x + 4.5y + 6z = 2320$$

$$17x + 6z = 2320$$

z = # senior tix

$$-18x - 6z = -2430$$

$$-x = -110$$

110 adult tix, 220 kid tix, 75 senior tix

$$x = 110$$

$$z = 75$$

$$y = 220$$