

Name: LON

Systems of Equations Word Problems

1. The school that Lisa goes to is selling tickets to the annual talent show. On the first day of ticket sales the school sold 4 senior citizen tickets and 5 student tickets for a total of \$102. The school took in \$126 on the second day by selling 7 senior citizen tickets and 5 student tickets. What is the price each of one senior citizen ticket and one student ticket?

(a) Senior: 8
Student: 14

$$\begin{aligned} (-) 4a + 5s &= 102 & -4a - 5s &= -102 \\ 7a + 5s &= 126 & 7a + 5s &= 126 \\ \hline & & 3a &= 24 \\ & & a &= 8 \end{aligned}$$

$$\begin{aligned} 7(8) + 5s &= 126 \\ 56 + 5s &= 126 \\ -56 & \quad -56 \\ \hline 5s &= 70 & s &= 14 \end{aligned}$$

2. Casey and Gabriella are selling pies for a school fundraiser. Customers can buy apple pies and lemon meringue pies. Casey sold 6 apple pies and 4 lemon meringue pies for a total of \$80. Gabriella sold 6 apple pies and 5 lemon meringue pies for a total of \$94. What is the cost each of one apple pie and one lemon meringue pie?

Apple: 4
Lemon: 14

$$\begin{aligned} (-) 6a + 4c &= 80 & -6a - 4c &= -80 \\ 6a + 5c &= 94 & 6a + 5c &= 94 \\ \hline & & c &= 14 \end{aligned}$$

$$\begin{aligned} 6a + 5(14) &= 94 \\ 6a + 70 &= 94 \\ -70 & \quad -70 \\ \hline 6a &= 24 & a &= 4 \end{aligned}$$

3. The school that Izzy goes to is selling tickets to the annual dance competition. On the first day of ticket sales the school sold 3 senior citizen tickets and 3 child tickets for a total of \$69. The school took in \$91 on the second day by selling 5 senior citizen tickets and 3 child tickets. What is the price each of one senior citizen ticket and one child ticket?

Senior: 11
Child: 12

$$\begin{aligned} (-) 3s + 3c &= 69 & -3s - 3c &= -69 \\ 5s + 3c &= 91 & 5s + 3c &= 91 \\ \hline & & 2s &= 22 \\ & & s &= 11 \end{aligned}$$

$$\begin{aligned} 5(11) + 3c &= 91 \\ 55 + 3c &= 91 \\ -55 & \quad -55 \\ \hline 3c &= 36 \\ \frac{3c}{3} &= \frac{36}{3} \\ c &= 12 \end{aligned}$$

4. Michael and Carlos are selling cookie dough for a school fundraiser. Customers can buy packages of chocolate chip cookie dough and packages of gingerbread cookie dough. Michael sold 8 packages of chocolate chip cookie dough and 12 packages of gingerbread cookie dough for a total of \$364. Carlos sold 1 package of chocolate chip cookie dough and 4 packages of gingerbread cookie dough for a total of \$93. Find the cost each of one package of chocolate chip cookie dough and one package of gingerbread cookie dough.

chocolate chip: 17
gingerbread: 19

$$\begin{aligned} 93 - 4(19) &= C \\ 93 - 76 &= C \\ 17 &= C \end{aligned}$$

$$\begin{aligned} 8C + 12G &= 364 \\ C + 4G &= 93 \rightarrow C = 93 - 4G \\ 8(93 - 4G) + 12G &= 364 \\ 744 - 32G + 12G &= 364 \\ 744 - 20G &= 364 \\ -744 & \quad -744 \\ -20G &= -380 \\ G &= 19 \end{aligned}$$

5. Kayla's school is selling tickets to the annual dance competition. On the first day of ticket sales the school sold 3 senior citizen tickets and 5 child tickets for a total of \$70. The school took in \$216 on the second day by selling 12 senior citizen tickets and 12 child tickets. Find the price of a senior citizen ticket and the price of a child ticket.

Senior: \$10
Child: \$8

$$\begin{aligned} (3S + 5C = 70) \cdot 4 &\rightarrow -12S - 20C = -280 \\ 12S + 12C &= 216 \\ \hline -8C &= -64 \\ C &= 8 \end{aligned}$$

$$\begin{aligned} 3S + 5(8) &= 70 \\ 3S + 40 &= 70 \\ -40 & \quad -40 \\ 3S &= 30 \\ S &= 10 \end{aligned}$$

6. The local amusement park is a popular field trip destination. This year the senior class at High School A and the senior class at High School B both planned trips there. The senior class at High School A rented and filled 16 vans and 8 buses with 752 students. High School B rented and filled 5 vans and 5 buses with 380 students. Each van and each bus carried the same number of students. How many students can a van carry? How many students can a bus carry?

Van: 18
Bus: 58

$$\begin{aligned} 16v + 8b &= 752 \\ 5v + 5b &= 380 \rightarrow v = 76 - b \end{aligned}$$

$$\begin{aligned} 16(76 - b) + 8b &= 752 \\ 1216 - 16b + 8b &= 752 \\ -1216 & \quad -1216 \\ -8b &= -464 \\ b &= 58 \end{aligned}$$

$$\begin{aligned} v &= 76 - 58 \\ v &= 18 \end{aligned}$$