

**Systems of Equations – Day 2**  
**Integers, Fundraisers, Home Improvements, Ticket Sales, & Transportation**  
Unit 5: Real World Applications

Solve each question. Round your answer to the nearest hundredth when needed.

1. Find the value of two numbers if their sum is 24 and their difference is 2. <i>11 and 13</i>
2. The sum of two numbers is 18. Their difference is 4. What are the numbers? <i>7 and 11</i>
3. The sum of two numbers is 22.1. Their difference is 4.5. What are the numbers? <i>8.8 and 13.3</i>
4. The sum of two numbers is 25.7. Their difference is 1.7. What are the numbers? <i>12 and 13.7</i>
5. Amy and Scott are selling cheesecakes for a school fundraiser. Customers can buy New York style cheesecakes and chocolate marble cheesecakes. Amy sold 12 New York style cheesecakes and 12 chocolate marble cheesecakes for a total of \$192. Scott sold 5 New York style cheesecakes and 12 chocolate marble cheesecakes for a total of \$150. Find the cost each of one New York style cheesecake and one chocolate marble cheesecake. <i>\$6 New York style</i> <i>\$10 Chocolate marble</i>
6. Jimmy and Krystal are selling wrapping paper for a school fundraiser. Customers can buy rolls of plain wrapping paper and rolls of shiny wrapping paper. Jimmy sold 6 rolls of plain wrapping paper and 1 roll of shiny wrapping paper for a total of \$93. Krystal sold 1 roll of plain wrapping paper and 10 rolls of shiny wrapping paper for a total of \$163. What is the cost for each one roll of plain wrapping paper and one roll of shiny wrapping paper? <i>\$13 per plain wrapping paper</i> <i>\$15 per shiny wrapping paper</i>
7. Shawna and Ellie are selling cheesecakes for a school fundraiser. Customers can buy pecan cheesecakes and apple cheesecakes. Shawna sold 9 pecan cheesecakes and 2 apple cheesecakes for a total of \$207.20. Ellie sold 3 pecan cheesecakes and 9 apple cheesecakes for a total of \$234.90. Find the cost for each one pecan cheesecake and one apple cheesecake. <i>\$18.60 per pecan</i> <i>\$19.90 per apple</i>
8. Jennifer and Cody are selling flower bulbs for a school fundraiser. Customers can buy packages of tulip bulbs and packages of crocus bulbs. Jennifer sold 12 packages of tulip bulbs and 1 package of crocus bulbs for a total of \$93.50. Cody sold 3 packages of tulip bulbs and 7 packages of crocus bulbs for a total of \$79.40. What is the cost for each one package of tulip bulbs and one package of crocus bulbs? <i>\$7.10 per tulip bulbs</i> <i>\$8.30 per Crocus bulbs</i>
9. Beth and Kali each improved their yards by planting rose bushes and ivy. They bought their supplies from the same store. Beth spent \$144 on 6 rose bushes and 12 pots of ivy. Kali spent \$118 on 4 rose bushes and 10 pots of ivy. Find the cost for each rose bush and the cost for each pot of ivy. <i>\$2 per rose bush</i> <i>\$11 per ivy</i>

<p>10. Mary and James each improved their yards by planting rose bushes and ivy. They bought their supplies from the same store. Mary spent \$26 on 1 rose bush and 4 pots of ivy. James spent \$58 on 3 rose bushes and 8 pots of ivy. Find the cost for one rose bush and the cost for one pot of ivy.</p> <p><i>\$6 per rose bush</i>                      <i>\$5 per pot of ivy.</i></p>
<p>11. Dakota and Jasmine each improved their yards by planting hostas and shrubs. They bought their supplies from the same store. Dakota spent \$118.68 on 12 hostas and 2 shrubs. Jasmine spent \$79.86 on 6 hostas and 4 shrubs. What is the cost of one hosta and the cost of one shrub?</p> <p><i>\$8.75 per hosta</i>                      <i>\$6.84 per shrub</i></p>
<p>12. Coen and Ellie each improved their yards by planting hostas and ivy. They bought their supplies from the same store. Coen spent \$110.60 on 14 hostas and 5 pots of ivy. Ellie spent \$60.20 on 7 hostas and 3 pots of ivy. What is the cost of one hosta and the cost of one pot of ivy?</p> <p><i>\$4.40 per hosta</i>                      <i>\$9.80 per pot of ivy</i></p>
<p>13. Jaidee's school is selling tickets to a spring musical. On the first day of ticket sales the school sold 7 adult tickets and 12 student tickets for a total of \$95. The school took in \$100 on the second day by selling 14 adult tickets and 6 student tickets. Find the price of an adult ticket and the price of a student ticket.</p> <p><i>\$5 per adult ticket</i>                      <i>\$5 per student ticket</i></p>
<p>14. Kate's school is selling tickets to the annual dance competition. On the first day of ticket sales the school sold 14 senior citizen tickets and 13 child tickets for a total of \$337. The school took in \$229 on the second day by selling 5 senior citizen tickets and 13 child tickets. Find the price of a senior citizen ticket and the price of a child ticket.</p> <p><i>\$12 per senior citizen</i>                      <i>\$13 per child</i></p>
<p>15. The school that Dolores goes to is selling tickets to a choral performance. On the first day of ticket sales the school sold 13 adult tickets and 6 student tickets for a total of \$136.39. The school took in \$163.53 on the second day by selling 3 adult tickets and 12 student tickets. What is the price for each one adult ticket and one student ticket?</p> <p><i>\$4.75 per adult ticket</i>                      <i>\$12.44 per student ticket</i></p>
<p>16. The school that Jacob goes to is selling tickets to a choral performance. On the first day of ticket sales the school sold 1 adult ticket and 12 child tickets for a total of \$166.90. The school took in \$72.90 on the second day by selling 5 adult tickets and 4 child tickets. What is the price for one adult ticket and one child ticket?</p> <p><i>\$3.70 per adult ticket</i>                      <i>\$13.60 per child ticket</i></p>
<p>17. The water park is a popular field trip destination. This year the senior class at Oakwood and the senior class at HAHS both planned trips there. The senior class at Oakwood rented and filled 7 vans and 7 buses with 455 students. HAHS rented and filled 9 vans and 2 buses with 242 students. Each van and each bus carried the same number of students. Find the number of students in each van and on each bus.</p> <p><i>16 students per van</i>                      <i>49 students per bus</i></p>
<p>18. The senior class at Westville and GRF planned separate trips to Yellowstone National Park. The senior class at Westville rented and filled 3 vans and 13 buses with 831 students. GRF rented and filled 1 van and 13 buses with 797 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?</p> <p><i>17 students per van</i>                      <i>60 students per bus</i></p>

① Sum Equation  
Difference Equation

$$\begin{array}{r} x + y = 24 \\ x - y = 2 \\ \hline \end{array}$$

$$\frac{2x}{2} = \frac{26}{2}$$

$$\boxed{x = 13}$$

Using  $x + y = 24$

$$\begin{array}{r} 13 + y = 24 \\ -13 \quad -13 \\ \hline \end{array}$$

$$\boxed{y = 11}$$

② Sum Equation  
Difference Equation

$$x + y = 18$$

$$\underline{x - y = 4}$$

$$\frac{2x}{2} = \frac{22}{2}$$

$$\boxed{x = 11}$$

Using  $x + y = 18$

$$\begin{array}{r} 11 + y = 18 \\ -11 \quad -11 \\ \hline \end{array}$$

$$\boxed{y = 7}$$

③ Sum Equation  
Difference Equation

$$x + y = 22.1$$

$$\underline{x - y = 4.5}$$

$$\frac{2x}{2} = \frac{26.6}{2}$$

$$\boxed{x = 13.3}$$

Using  $x + y = 22.1$

$$\begin{array}{r} 13.3 + y = 22.1 \\ -13.3 \quad -13.3 \\ \hline \end{array}$$

$$\boxed{y = 8.8}$$

④ Sum Equation  
Difference Equation

$$x + y = 25.7$$

$$\underline{x - y = 1.7}$$

$$\frac{2x}{2} = \frac{27.4}{2}$$

$$\boxed{x = 13.7}$$

Using  $x + y = 25.7$

$$\begin{array}{r} 13.7 + y = 25.7 \\ -13.7 \quad -13.7 \\ \hline \end{array}$$

$$\boxed{y = 12}$$

⑤ Amy's Equation  
Scott's

$$\begin{aligned} 12N + 12c &= 192 \\ 5N + 12c &= 150 \end{aligned}$$

Subtract the equations

$$\frac{7N}{7} = \frac{42}{7}$$

$$N = \$6$$

Using

$$\begin{aligned} 12N + 12c &= 192 \\ 12(6) + 12c &= 192 \\ 72 + 12c &= 192 \\ -72 & \quad -72 \end{aligned}$$

$$\frac{12c = 120}{12} = \frac{120}{12}$$

$$c = \$10$$

$\$6$  per New York style ;  $\$10$  per Chocolate marble

⑥ Jimmy's Equation  
Krystal's Equation

$$-10 [6p + 1s = 93] - 10$$

$$1p + 10s = 163$$

$$-60p - 10s = -930$$

$$\frac{-59p}{-59} = \frac{-767}{-59}$$

$$p = \$13$$

Using

$$1p + 10s = 163$$

$$\begin{aligned} 13 + 10s &= 163 \\ -13 & \quad -13 \end{aligned}$$

$$\frac{10s = 150}{10} = \frac{150}{10}$$

$$s = \$15$$

$\$13$  per plain wrapping paper ;  $\$15$  per shiny wrapping paper

⑦ Shawna's Equation  
Ellie's Equation

$$9p + 2a = 207.20$$

$$-3 [3p + 9a = 234.90]$$

$$9p + 2a = 207.20$$

$$-9p - 27a = -704.70$$

$$\frac{-25a}{-25} = \frac{-497.50}{-25}$$

$$a = \$19.90$$

$\$18.60$  per pecan cheesecake  
 $\$19.90$  per apple cheesecake

Using

$$9p + 2a = 207.20$$

$$9p + 2(19.90) = 207.20$$

$$9p + 39.80 = 207.20$$

$$-39.80 \quad -39.80$$

$$\frac{9p = 167.40}{9} = \frac{167.40}{9}$$

$$p = \$18.60$$

⑧ Jennifer's Equation

Cody's Equation

$$\rightarrow [12t + 1c = 93.50] \cdot 7$$

$$3t + 7c = 79.40$$

$$-84t - 7c = -654.50$$

$$\frac{-81t}{-81} = \frac{-575.10}{-81}$$

$$t = \$7.10$$

using

$$12t + 1c = 93.50$$

$$12(7.10) + c = 93.50$$

$$85.20 + c = 93.50$$

$$\frac{-85.20}{-85.20} = \frac{-85.20}{-85.20}$$

$$c = \$8.30$$

$\$7.10$  per package Tulip bulbs;  $\$8.30$  per package crocus bulbs

⑨ Beth's Equation

Kali's Equation

$$4 [6r + 12p = 144] \cdot 4$$

$$-6 [4r + 10p = 118] \cdot -6$$

$$24r + 48p = 576$$

$$-24r - 60p = -708$$

$$\frac{-12p}{-12} = \frac{-132}{-12}$$

$$p = \$11$$

using

$$4r + 10p = 118$$

$$4r + 10(11) = 118$$

$$4r + 110 = 118$$

$$\frac{-110}{-110} = \frac{-110}{-110}$$

$$\frac{4r}{4} = \frac{8}{4}$$

$$r = \$2$$

$\$2$  per rose bush;  $\$11$  per pot of ivy

⑩ Mary's Equation

James' Equation

$$\rightarrow 3 [1r + 4p = 26] \cdot -3$$

$$3r + 8p = 58$$

$$-3r - 12p = -78$$

$$\frac{-4p}{-4} = \frac{-20}{-4}$$

$$p = \$5$$

using

$$1r + 4p = 26$$

$$r + 4(5) = 26$$

$$r + 20 = 26$$

$$\frac{-20}{-20} = \frac{-20}{-20}$$

$$r = \$6$$

$\$6$  per rose bush;  $\$5$  per pot of ivy

11) Dakota's Equation

Jasmine's Equation

$$-2[12h + 2s = 118.68] \cdot -2$$

$$6h + 4s = 79.86$$

$$-24h - 4s = -237.36$$

$$\frac{-18h}{-18} = \frac{-157.50}{-18}$$

$$h = \$8.75$$

Using

$$12h + 2s = 118.68$$

$$12(8.75) + 2s = 118.68$$

$$105 + 2s = 118.68$$

$$\frac{-105}{-105} \quad \frac{-105}{-105}$$

$$\frac{2s}{2} = \frac{13.68}{2}$$

$$s = \$6.84$$

\$8.75 per hosta

\$6.84 per shrub

12) Coen's Equation

Ellie's Equation

$$14h + 5p = 110.60$$

$$-2[7h + 3p = 60.20] \cdot -2$$

$$14h + 5p = 110.60$$

$$-14h - 6p = -120.40$$

$$\frac{-1p}{-1} = \frac{-9.80}{-1}$$

$$p = \$9.80$$

Using

$$7h + 3p = 60.20$$

$$7h + 3(9.80) = 60.20$$

$$7h + 29.40 = 60.20$$

$$\frac{-29.40}{-29.40} \quad \frac{-29.40}{-29.40}$$

$$\frac{7h}{7} = \frac{30.80}{7}$$

$$h = \$4.40$$

\$4.40 per hosta; \$9.80 per pot of ivy

13) Day 1 Sales

Day 2 Sales

$$-2[7a + 12s = 95] \cdot -2$$

$$14a + 6s = 100$$

$$-14a - 24s = -190$$

$$\frac{-18s}{-18} = \frac{-90}{-18}$$

$$s = \$5$$

Using

$$14a + 6s = 100$$

$$14a + 6(5) = 100$$

$$14a + 30 = 100$$

$$\frac{-30}{-30} \quad \frac{-30}{-30}$$

$$\frac{14a}{14} = \frac{70}{14}$$

$$a = \$5.00$$

\$5 per adult ticket

\$5 per student ticket

$$\begin{array}{r} \textcircled{14} \text{ Day 1 Sales} \\ \text{Day 2 Sales} \end{array} \quad \begin{array}{r} 14s + 13c = 337 \\ -1(5s + 13c = 229) \end{array}$$

$$\frac{9s}{9} = \frac{108}{9}$$

$$s = \$12$$

Using

$$5s + 13c = 229$$

$$5(12) + 13c = 229$$

$$\begin{array}{r} 60 + 13c = 229 \\ -60 \qquad -60 \end{array}$$

$$\frac{13c}{13} = \frac{169}{13}$$

$$c = \$13$$

$\$12$  per senior ticket  
 $\$13$  per child ticket

$$\begin{array}{r} \textcircled{15} \text{ Day 1 Sales} \\ \text{Day 2 Sales} \end{array} \quad \begin{array}{r} -2[13a + 6s = 136.39] \cdot -2 \\ 3a + 12s = 163.53 \\ -26a - 12s = -272.78 \end{array}$$

$$\frac{-23a}{-23} = \frac{-109.25}{-23}$$

$$a = \$4.75$$

Using

$$13a + 6s = 136.39$$

$$13(4.75) + 6s = 136.39$$

$$\begin{array}{r} 61.75 + 6s = 136.39 \\ -61.75 \qquad -61.75 \end{array}$$

$$\frac{6s}{6} = \frac{74.64}{6}$$

$$s = \$12.44$$

$\$4.75$  per adult ticket  
 $\$12.44$  per student ticket

$$\begin{array}{r} \textcircled{16} \text{ Day 1 Sales} \\ \text{Day 2 Sales} \end{array} \quad \begin{array}{r} -5[1a + 12c = 166.90] \cdot -5 \\ 5a + 4c = 72.90 \\ -5a - 60c = -834.50 \end{array}$$

$$\frac{-56c}{-56} = \frac{-761.6}{-56}$$

$$c = \$13.60$$

Using

$$1a + 12c = 166.90$$

$$1a + 12(13.60) = 166.90$$

$$\begin{array}{r} 1a + 163.20 = 166.90 \\ -163.20 \qquad -163.20 \end{array}$$

$$1a = \$3.70$$

$\$3.70$  per adult ticket  
 $\$13.60$  per child ticket

①7 Oakwood's Equation  
H A H S Equation

Using

$$9v + 2b = 242$$

$$9(16) + 2b = 242$$

$$\begin{array}{r} 144 + 2b = 242 \\ -144 \phantom{=} \\ \hline \end{array}$$

$$\frac{2b}{2} = \frac{98}{2}$$

$$b = 49$$

$$\begin{array}{r} 2[7v + 7b = 455] \cdot 2 \\ -7[9v + 2b = 242] \cdot -7 \\ \hline \end{array}$$

$$14v + 14b = 910$$

$$-63v - 14b = -1694$$

$$\begin{array}{r} -49v \phantom{=} = -784 \\ -49 \phantom{=} \phantom{=} \\ \hline \end{array}$$

$$v = 16$$

16 students per van  
49 students per bus

①8 Westville's Equation  
G R F's Equation

Using

$$1v + 13b = 797$$

$$\begin{array}{r} 17 + 13b = 797 \\ -17 \phantom{=} \\ \hline \end{array}$$

$$\frac{13b}{13} = \frac{780}{13}$$

$$b = 60$$

$$\begin{array}{r} 3v + 13b = 831 \\ -1[1v + 13b = 797] \cdot -1 \\ \hline \end{array}$$

$$\frac{2v}{2} = \frac{34}{2}$$

$$v = 17$$

17 students per van  
60 students per bus