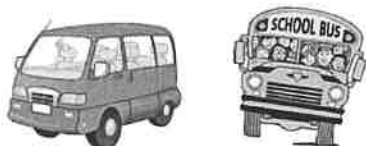


6.4 Problem Solving Using Systems DIGITS

A class of 195 students went on a field trip. They took 7 vehicles, some cars and some buses. Find the number of cars and the number of buses they took if each car holds 5 students and each bus holds 45 students.



Q1

System:

$$195 = 5C + 45B$$

$$7 = C + B$$



Answer:

They took 3 cars and 4 buses.

Q1

There are 13 animals in the barn. Some are chickens and some are pigs. There are 40 legs in all. How many of each animal are there?



Q2

System:

$$P + C = 13$$

$$4P + 2C = 40$$



Answer:

There are 6 chickens and 7 pigs.

Q2

Bill and Steve decide to spend the afternoon at an amusement park enjoying their favorite activities, the water slide and the gigantic Ferris wheel. Their tickets are stamped each time they slide or ride. At the end of the afternoon they have the following tickets:

Fun Time Amusements

Water Slide: ☒ ☒ ☒

Ferris Wheel: ☒ ☒ ☒

Total: \$17.70

Bill's Ticket

Fun Time Amusements

Water Slide: ☒ ☒

Ferris Wheel: ☒ ☒ ☒

Total: \$15.55

Steve's Ticket



How much does it cost to ride the Ferris Wheel?
How much does it cost to slide on the Water Slide?

Q3

System:

$$3W + 3F = \$17.70$$

$$2W + 3F = \$15.55$$



Answer:

The water slide costs \$2.15 and the Ferris Wheel costs \$3.75 .

Q3

Two small pitchers and one large pitcher can hold 8 cups of water. One large pitcher minus one small pitcher holds 2 cups of water. How many cups of water can each pitcher hold?



Q4

System:

$$2S + 1L = 8$$

$$1L - 1S = 2$$



Answer:

The small pitcher holds 2 cups and the large pitcher holds 4 cups.

Q4

The perimeter of a rectangle is 58 ft. The length is one more than 3 times the width. Find the dimensions of the rectangle.



Q5

System:

$$58 = 2L + 2W$$

$$L = 3W + 1$$

Answer:

The length is 22 feet and
the width is 7 feet.

Q5

The length is 7 more than 3 times the width. The perimeter of a rectangle is 86 ft. Find the dimensions of the rectangle.



Q6

System:

$$86 = 2L + 2W$$

$$L = 3W + 7$$

Answer:

The length is 34 inches and

the width is 9 inches.

Q6

Four pencils and two pens cost \$0.74. Six pencils and five pens cost \$1.53. Find the cost of a pencil and a pen.



Q7

System:

$$4L + 2N = \$0.74$$

$$6L + 5N = \$1.53$$



Answer:

A pencil costs \$0.08 and a pen costs \$0.21.

Q7

Together, teammates Pedro and Ricky got 2676 base hits last season. Pedro had 284 more hits than Ricky. How many hits did each player have?



Q8

System:

$$P + R = 2,676$$

$$P = 284 + R$$



Answer:

Pedro had 1,480 base hits & Ricky had 1,196 base hits.

Q8

River C is 300 miles longer than River D. If the sum of their lengths is 5,530 miles, what is the length of each river?



Q9

System:

$$C = 300 + D$$

$$C + D = 5,530$$

Answer:

The length of River C is 2,915 miles and the length of River D is 2,615 miles.

Q9

There were 166 paid admissions to a game. The price was \$2 for adults and \$0.75 for children. The amount taken in was \$293.25. How many adults and children attended?



Q10

System:

$$a + c = 166$$

$$\$2a + \$0.75c = \$293.25$$



Answer:

31 children and 135 adults

Q10

Farmer Brown planted corn and wheat on his 360 acres of land. The cost of planting and harvesting corn (which includes seed, planting, fertilizer, machinery, labor, and other costs) is \$270 per acre. The cost of planting and harvesting wheat is \$140 per acre. If Farmer Brown's total cost was \$81,600, how many more acres of corn than wheat did the farmer plant?



Q11

System:

$$C + W = 360$$

$$270C + 140W = 81,600$$

Answer:

There are 120 acres of wheat and 240 acres of corn. Therefore, there are 120 more acres of corn than wheat.

Q11

Topic 6: Problem Solving with Systems Worksheet

1. Kristy spent \$131 on shirts. Fancy shirts cost \$28 and plain shirts cost \$15. If she bought a total of 7 then how many of each kind did she buy?
2. All 231 students in Math Club went on a field trip. Some students rode in vans which hold 7 students each and some students rode in buses which hold 25 students each. How many of each type of vehicle did they use if there were 15 vehicles total?
3. The senior classes at High School A and High School B planned separate trips to New York City. The senior class at High School A rented and filled 1 van and 6 buses with 372 students. High School B rented and filled 4 vans and 12 buses with 780 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?
4. A farmhouse shelters 10 animals. Some are pigs and some are ducks. Altogether there are 36 legs. How many of each animal is there?
5. There are 11 animals in a farmhouse. Some are goats and some are chickens. Altogether there are 34 legs. How many of each animal is there?
6. The perimeter of a rectangle is 104 cm. The length is 12 cm more than the width. Find the length and the width.
7. A rectangle has a perimeter of 58 inches. The length is one more than 3 times the width. Find the length and the width.
8. The length of a rectangle is 7 inches more than three times the width. The perimeter is 86 inches. Find the length and width.

9. A Burrito Loco a customer bought 1 taco and a Pepsi for \$2.10. Another customer bought 2 tacos and 3 Pepsis for \$5.15. What is the price of 1 taco and 1 Pepsi?
10. Four oranges and five apples cost \$3.56. Three oranges and four apples cost \$2.76. Find the cost of an orange and the cost of an apple.
11. Six pineapples and three coconuts cost \$3.36. Two pineapples and five coconuts cost \$3.04. Find the cost of a pineapple and a coconut.
12. A burger and three orders of fries cost \$3.86. Five burgers and two orders of fries cost \$6.43. How much does a burger cost? How much does an order of fries cost?
13. Two bagels and a glass of juice is \$1.20. Three bagels and two glasses of juice cost \$2.05. Find the cost of a bagel and the cost of a glass of juice.
14. Halloween High is selling tickets to the annual haunted house. 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 of one senior citizen ticket and one student ticket for the haunted house?
15. There were 150 tickets sold for a school play. Tickets for students were \$2 and tickets for adults were \$3. The total amount of money collected was \$340. How many more students were sold than adult tickets?

Chapter 6.4 Problem Solving with Systems Worksheet

Key

1. Kristy spent \$131 on shirts. Fancy shirts cost \$28 and plain shirts cost \$15. If she bought a total of 7 then how many of each kind did she buy?

$$\begin{aligned} 28F + 15P &= 131 \\ F + P &= 7 \end{aligned}$$

2 fancy, 5 plain shirts

2. All 231 students in Math Club went on a field trip. Some students rode in vans which hold 7 students each and some students rode in buses which hold 25 students each. How many of each type of vehicle did they use if there were 15 vehicles total?

$$\begin{aligned} 7V + 25B &= 231 \\ V + B &= 15 \end{aligned}$$

8 vans & 7 buses

3. The senior classes at High School A and High School B planned separate trips to New York City. The senior class at High School A rented and filled 1 van and 6 buses with 372 students. High School B rented and filled 4 vans and 12 buses with 780 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?

$$\begin{aligned} 1V + 6B &= 372 \\ 4V + 12B &= 780 \end{aligned}$$

59 students on a bus &
18 students in a van

4. A farmhouse shelters 10 animals. Some are pigs and some are ducks. Altogether there are 36 legs. How many of each animal is there?

$$\begin{aligned} P + D &= 10 \\ 4P + 2D &= 36 \end{aligned}$$

8 pigs & 2 ducks

5. There are 11 animals in a farmhouse. Some are goats and some are chickens. Altogether there are 34 legs. How many of each animal is there?

$$\begin{aligned} G + C &= 11 \\ 4G + 2C &= 34 \end{aligned}$$

6 goats & 5 chickens

6. The perimeter of a rectangle is 104 cm. The length is 12 cm more than the width. Find the length and the width.

$$\begin{aligned} 104 &= 2W + 2L \\ L &= 12 + W \end{aligned}$$

20 cm = W
32 cm = L

7. A rectangle has a perimeter of 58 inches. The length is one more than 3 times the width. Find the length and the width.

$$\begin{aligned} 58 &= 2L + 2W \\ L &= 3W + 1 \end{aligned}$$

7 in = W
22 in = L

8. The length of a rectangle is 7 inches more than three times the width. The perimeter is 86 inches. Find the length and width.

$$\begin{aligned} L &= 3W + 7 \\ 86 &= 2L + 2W \end{aligned}$$

9 in = W
34 in = L

9. A Burrito Loco a customer bought 1 taco and a Pepsi for \$2.10. Another customer bought 2 tacos and 3 Pepsis for \$5.15. What is the price of 1 taco and 1 Pepsi?

$$t + p = \$2.10$$

$$2t + 3p = \$5.15$$

$$\text{Pepsi} = \$0.95$$

$$\text{Tacos} = \$1.15$$

10. Four oranges and five apples cost \$3.56. Three oranges and four apples cost \$2.76. Find the cost of an orange and the cost of an apple.

$$4o + 5a = \$3.56$$

$$3o + 4a = \$2.76$$

$$\text{apples} = \$0.36$$

$$\text{Oranges} = \$0.44$$

11. Six pineapples and three coconuts cost \$3.36. Two pineapples and five coconuts cost \$3.04. Find the cost of a pineapple and a coconut.

$$6p + 3c = \$3.36$$

$$2p + 5c = \$3.04$$

$$\text{Coconuts} = \$0.48$$

$$\text{pineapples} = \$0.32$$

12. A burger and three orders of fries cost \$3.86. Five burgers and two orders of fries cost \$6.43. How much does a burger cost? How much does an order of fries cost?

$$1B + 3F = \$3.86$$

$$5B + 2F = \$6.43$$

$$\text{Burger} = \$0.89$$

$$\text{Fries} = \$0.99$$

13. Two bagels and a glass of juice is \$1.20. Three bagels and two glasses of juice cost \$2.05. Find the cost of a bagel and the cost of a glass of juice.

$$2b + 1j = \$1.20$$

$$3b + 2j = \$2.05$$

$$\text{bagel} = \$0.35$$

$$\text{juice} = \$0.50$$

14. Halloween High is selling tickets to the annual haunted house. 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 of one senior citizen ticket and one student ticket for the haunted house?

$$4R + 5t = 102$$

$$7R + 5t = 126$$

$$\text{Senior} = \$8$$

$$\text{Student} = \$14$$

15. There were 150 tickets sold for a school play. Tickets for students were \$2 and tickets for adults were \$3. The total amount of money collected was \$340. How many more students were sold than adult tickets?

$$2s + 3a = 340$$

$$s + a = 150$$

110 students tickets
40 adult tickets

70 more student tickets, than adult tickets