

### 3-6 Problem Solving: Using Charts

**Objective:** To organize the facts of a problem in a chart.

**Example 1** Organize the given information in a chart: In game 1 Jesse scored twice as many points as Ramon. In game 2 Jesse scored six fewer points than he did in game 1. In game 2 Ramon scored eight more points than he did in game 1.

**Solution**

	Game 1 points	Game 2 points
Jesse	$2n$	$2n - 6$
Ramon	$n$	$n + 8$

**Example 2** Solve the problem using the two given facts:  
Find the number of Calories in a banana and in a peach.  
(1) A banana contains 65 Calories more than a peach.  
(2) Ten peaches have 50 fewer Calories than 4 bananas.

**Solution**

**Step 1** The problem asks for the number of Calories in a banana and in a peach.

**Step 2** Let  $p$  = the number of Calories in a peach.  
Then  $p + 65$  = the number of Calories in a banana.

	Calories per fruit	Number of fruit	Total Calories
Peach	$p$	10	$10p$
Banana	$p + 65$	4	$4(p + 65)$

**Step 3** Calories in 10 peaches = Calories in 4 bananas - 50

$$10p = 4(p + 65) - 50$$

**Step 4** Solve.  $10p = 4p + 260 - 50$

$$6p = 210$$

$$p = 35 \text{ and } p + 65 = 100$$

**Step 5** *Check:* (1) 100 Calories is 65 more than 35 Calories. (2) Ten peaches have  $10 \cdot 35$ , or 350, Calories and four bananas have  $4 \cdot 100$ , or 400, Calories.  $350 = 400 - 50$  ✓  
There are 35 Calories in a peach and 100 Calories in a banana.

**Solve each problem using the two given facts. If a chart is given, complete the chart to help you solve the problem.**

1. Find the number of full 8 hour shifts that Cleo worked last month.

(1) He worked three times as many 8 hour shifts as 6 hour shifts.

(2) He worked a total of 180 hours.

	Hours per Shift	No. of Shifts	Total hours worked
6 h shift	?	$x$	?
8 h shift	?	?	?

**3-6 Problem Solving: Using Charts** (continued)

2. Find the total weight of the boxes of cheddar cheese in a shipment of 3 lb boxes of cheddar cheese and 2 lb boxes of Swiss cheese.
- (1) There were 20 fewer 2 lb boxes of Swiss cheese than 3 lb boxes of cheddar cheese.
- (2) The total weight of the shipment was 510 lb.

	Weight per box	×	Number of boxes	=	Total weight
Cheddar	?		$x$		?
Swiss	?		?		?

3. Find the number of 20-ride tickets sold.
- (1) Twenty times as many 8-ride tickets as 20-ride tickets were sold.
- (2) The total number of tickets represented 3600 rides.

	Rides per ticket	×	Number of tickets sold	=	Total rides
20-ride tickets	?		$n$		?
8-ride tickets	?		?		?

4. Find the amount of time Maurice spent taking bowling lessons.
- (1) He took three times as many 2 h bowling lessons as he did 1 h tennis lessons.
- (2) He spent a total of 28 h taking bowling lessons and tennis lessons.

	Hours per lesson	×	Number of lessons	=	Total time
Bowling	?		?		?
Tennis	?		?		?

5. Find the number of Calories in a grapefruit and an orange.
- (1) An orange has 15 more Calories than a grapefruit.
- (2) Twenty oranges and ten grapefruit have 1800 Calories.
6. Find the number of Calories in a honeydew and in a cantaloupe.
- (1) A honeydew has 20 more Calories than a cantaloupe.
- (2) Six honeydew and three cantaloupes have 750 Calories.

**Mixed Review Exercises**

Solve.

1.  $15x = 360$

2.  $6 = \frac{3}{5}x$

3.  $9z - 5z = 0$

4.  $165 = 3x$

5.  $6y + 5 = 35$

6.  $-10 + 3y = -28$

7.  $4x - x = 21$

8.  $3(x + 2) = 4x$

9.  $6x - 7 = 2x + 41$

10.  $21 - x = 1 - 6x$

11.  $-x = 3x - 52$

12.  $5(y + 1) + 3 = 3y - 20$