

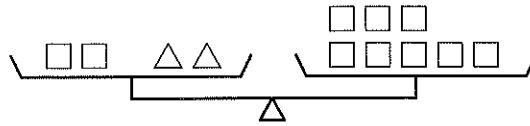
**STUDY LINK**  
**10•1**

# Pan-Balance Problems

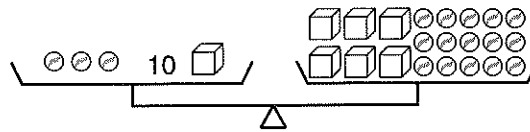


In each figure below, the two pans are in perfect balance. Solve these pan-balance problems.

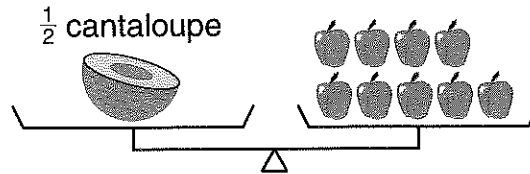
1. One triangle weighs  
as much as \_\_\_\_\_ squares.



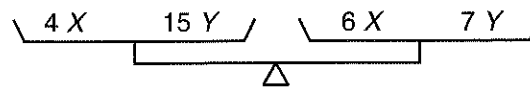
2. One cube weighs  
as much as \_\_\_\_\_ marbles.



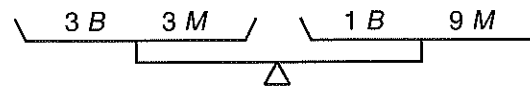
3. Two cantaloupes weigh  
as much as \_\_\_\_\_ apples.



4. One X weighs  
as much as \_\_\_\_\_ Ys.



5. One B weighs  
as much as \_\_\_\_\_ Ms.



**Practice**

6. 
$$\begin{array}{r} 4,217 \\ - 2,849 \\ \hline \end{array}$$

7. 
$$\begin{array}{r} 16,000 \\ - 8,245 \\ \hline \end{array}$$

8.  $11.47 - 8.896 = \underline{\hspace{2cm}}$

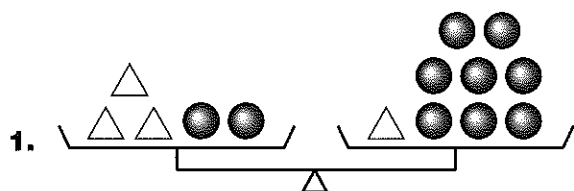
9.  $36 - 42 = \underline{\hspace{2cm}}$

**STUDY LINK**  
**10·2**

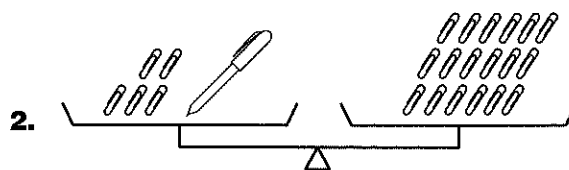
# Pan-Balance Problems



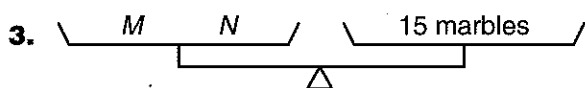
In each figure below, the two pans are in perfect balance. Solve these pan-balance problems.



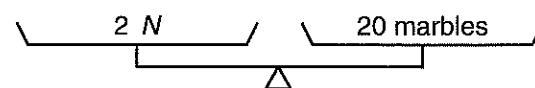
One triangle weighs  
as much as \_\_\_\_\_ balls.



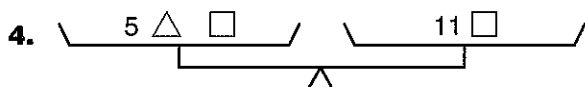
One pen weighs  
as much as \_\_\_\_\_ paper clips.



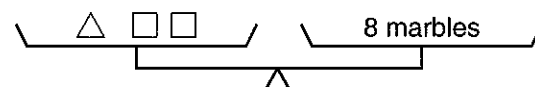
M weighs  
as much as \_\_\_\_\_ marbles.



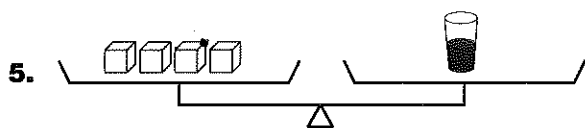
N weighs  
as much as \_\_\_\_\_ marbles.



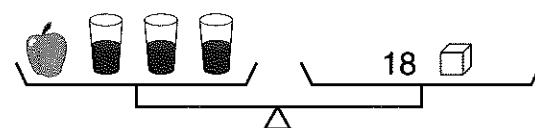
One  $\triangle$  weighs  
as much as \_\_\_\_\_  $\square$ s.



One  $\square$  weighs  
as much as \_\_\_\_\_ marbles.



One cup of juice weighs  
as much as \_\_\_\_\_ blocks.



One apple weighs  
as much as \_\_\_\_\_ blocks.

## Practice

Fill in the missing numbers to make true sentences.

6. \_\_\_\_\_ =  $(7 + 45) / 2$

7.  $((28 / 7) + 12) / 8 =$  \_\_\_\_\_

8.  $((14 * 3) + 14) - 6 =$  \_\_\_\_\_

9. \_\_\_\_\_ =  $(3 - 3) * ((34 / 2) * 115)$

**STUDY LINK**  
**10•3**

# Writing Algebraic Expressions



Complete each statement below with an algebraic expression, using the suggested variable.



1. Lamont, Augusto, and Mario grow carrots in three garden plots. Augusto harvests two times as many carrots as the total number of carrots that Lamont and Mario harvest. So Augusto harvests



Augusto

Lamont and Mario  
harvested  
 $L + M$  carrots.

\_\_\_\_\_ carrots.

2. Rhasheema and Alexis have a lemonade stand at their school fair. They promise to donate one-fourth of the remaining money ( $m$ ) after they repay the school for lemons ( $l$ ) and sugar ( $s$ ). So the girls donate

\_\_\_\_\_ dollars.

3. a. State in words the rule for the "What's My Rule?" table at the right.

\_\_\_\_\_  
 \_\_\_\_\_

- b. Circle the number sentence that describes the rule.

$Q = (3 + N) * 5$      $Q = 3 * (N + 5)$      $Q = 3N + 5$

<b>N</b>	<b>Q</b>
2	11
4	17
6	23
8	29
10	35

4. a. State in words the rule for the "What's My Rule?" table at the right.

\_\_\_\_\_  
 \_\_\_\_\_

- b. Circle the number sentence that describes the rule.

$R = E * 6 * 15$      $R = (E * 6) + 15$      $R = E * 15 + 6$

<b>E</b>	<b>R</b>
7	57
10	75
31	201
3	33
108	663

**Practice**

5.  $384 * 1.5 =$  \_\_\_\_\_

6.  $50.3 * 89 =$  \_\_\_\_\_

7.  $\frac{843}{7} =$  \_\_\_\_\_

8.  $70.4 / 8 =$  \_\_\_\_\_

**STUDY LINK**  
**10•4**

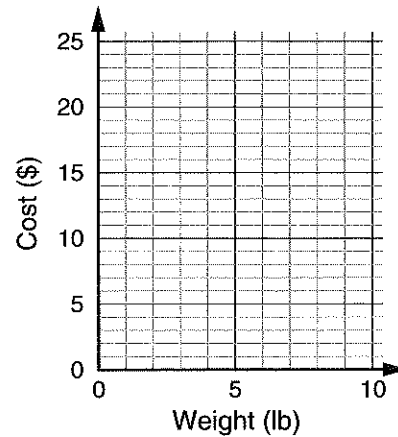
# Representing Rates



Complete each table below. Then graph the data and connect the points.

1. a. Cherry tomatoes cost \$2.50 per pound.  
 Rule: Cost = \$2.50 \* number of pounds

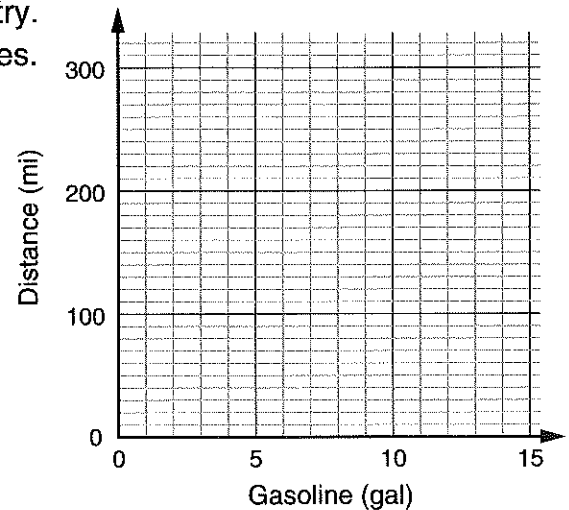
Weight (lb) ( $w$ )	Cost (\$) ( $2.50 * w$ )
1	
3	
	15.00
10	



- b. Plot a point to show the cost of 8 pounds.  
 How much would 8 pounds of cherry tomatoes cost? \_\_\_\_\_
- c. Would you use the graph, the rule, or the table to find out how much 50 pounds of cherry tomatoes would cost? Explain.
- \_\_\_\_\_
- \_\_\_\_\_

2. a. Chantel is planning a trip to drive across country.  
 Her car uses 1 gallon of gasoline every 24 miles.  
 Rule: distance = 24 \* number of gallons

Gasoline (gal) ( $g$ )	Distance (mi) ( $24 * g$ )
1	
4	
	168
13	



- b. Plot a point to show the distance the car would travel on 6 gallons of gasoline. How many miles would it go? \_\_\_\_\_
- c. Would you use the graph, the rule, or the table to find out how far the car would travel on 9 gallons of gasoline? Explain. \_\_\_\_\_
- \_\_\_\_\_

**STUDY LINK**  
**10•5**

## Cricket Formulas



In 1897, the physicist, A. E. Dolbear, published an article titled "The Cricket as a Thermometer." In it he claimed that outside temperatures can be estimated by counting the number of chirps made by crickets and then by using that number in the following formula:

$$\text{Outside temperature } (^{\circ}\text{F}) = \frac{(\text{number of cricket chirps per minute} - 40)}{4} + 50$$

- Write a number model for the formula. \_\_\_\_\_
- According to this formula, what is the estimated outside temperature if you count 80 chirps in a minute? \_\_\_\_\_

Other cricket formulas exist. The following formula is supposed to work particularly well with field crickets:

$$\text{Outside temperature } (^{\circ}\text{F}) = (\text{number of chirps in 15 seconds}) + 37$$

- Write a number model for the formula. \_\_\_\_\_
- According to this formula, what is the estimated outside temperature if you counted 35 chirps in 15 seconds? \_\_\_\_\_
- Compare the two formulas. If you count 30 chirps in 15 seconds, what is the estimated outside temperature for each formula?
  - First formula: \_\_\_\_\_
  - Second formula: \_\_\_\_\_

### Practice

6.  $7 - 2\frac{2}{5} =$  \_\_\_\_\_

7.  $1\frac{1}{2} + 2\frac{2}{3} + 3\frac{3}{4} + \frac{1}{12} =$  \_\_\_\_\_

8.  $(\frac{2}{3} * \frac{2}{3}) - \frac{2}{9} =$  \_\_\_\_\_

9.  $\frac{12}{9} \div \frac{1}{3} =$  \_\_\_\_\_

**STUDY LINK**  
**10•6**

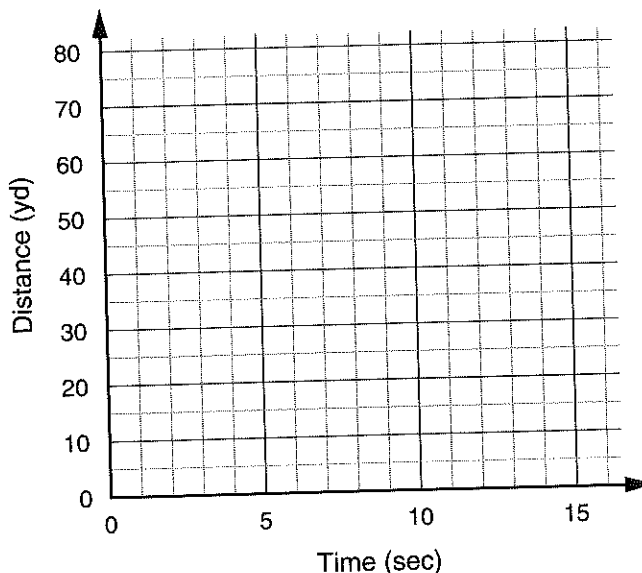
# Interpreting Tables and Graphs



Natasha is 12 years old and runs an average of 6 yards per second. Derek is 8 years old and runs about 5 yards per second. Natasha challenged Derek to an 80-yard race and told him she would win even if he had a 10-yard head start.

1. Complete the table showing the distances Natasha and Derek are from the starting line after 1 second, 2 seconds, 3 seconds, and so on.

Time (sec)	Distance (yd)	
	Natasha	Derek
Start	0	10
<b>1</b>		
<b>2</b>		20
<b>3</b>	18	
<b>4</b>		
<b>9</b>		55
<b>10</b>		
<b>11</b>		
<b>12</b>		
<b>13</b>		



2. Use the table to write rules for the distance covered by Natasha and Derek.

Natasha's Rule: \_\_\_\_\_

Derek's Rule: \_\_\_\_\_

3. Graph the results of the race between Natasha and Derek on the grid above. Label each line.

4. a. Who wins the race? \_\_\_\_\_

b. What is the winning time? \_\_\_\_\_

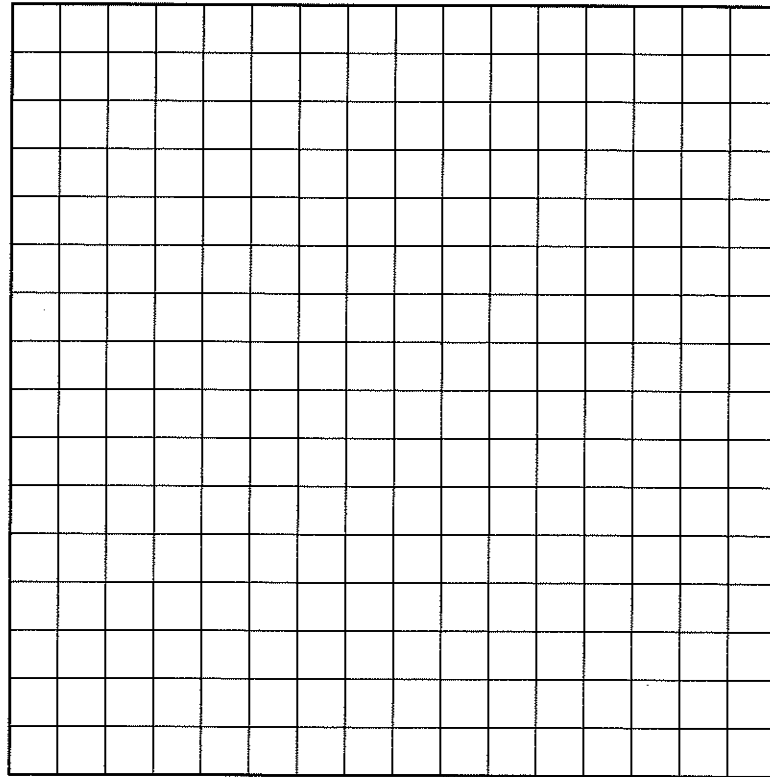
c. At what time in the race did Natasha take the lead? \_\_\_\_\_

**STUDY LINK**  
**10·7**

## Mystery Graphs



Create a mystery graph on the grid below. Be sure to label the horizontal and vertical axes. Describe the situation that goes with your graph on the lines provided.



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**Reminder:** Look for examples of ratios and bring them to school.

**STUDY LINK**  
**10•8**

# Finding Circumferences



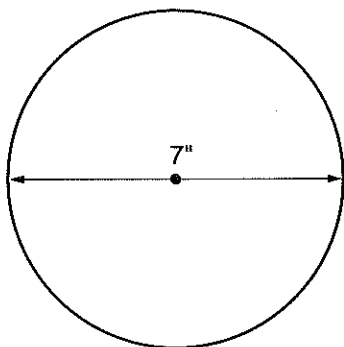
The formula for the circumference of a circle is:

$$\text{Circumference} = \pi * \text{diameter, or } C = \pi * d$$

Use the  $\pi$  key on your calculator to solve these problems. If your calculator doesn't have a  $\pi$  key, enter 3.14 each time you need  $\pi$ .

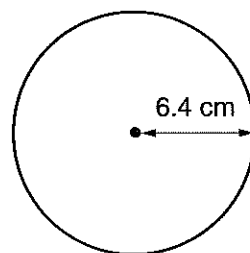
Find the circumference of each circle below. Show answers to the nearest tenth.

1. a.



Circumference  $\approx$  \_\_\_\_\_ inches

b.



Circumference  $\approx$  \_\_\_\_\_ centimeters

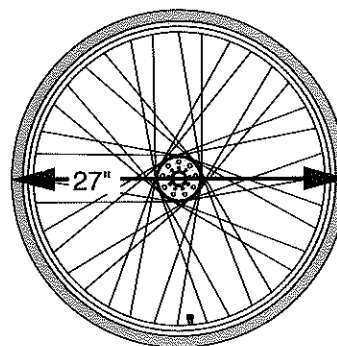
2. The wheels on Will's bicycle have a diameter of about 27 inches, including the tire.

a. What is the circumference of the tire?

About \_\_\_\_\_ inches

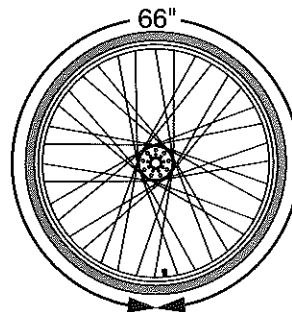
b. About how far will Will's bicycle travel if the wheels go around exactly once?

About \_\_\_\_\_ inches



3. Sofia measured the circumference of her bicycle tire. She found it was 66 inches. What is the diameter of the tire?

About \_\_\_\_\_ inches





**STUDY LINK**  
**10•9**

# Area and Circumference



Circle the best measurement for each situation described below.

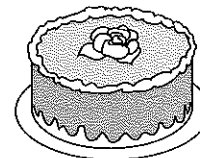
1. What size hat to buy (*Hint: The hat has to fit around a head.*)

area                  circumference                  perimeter



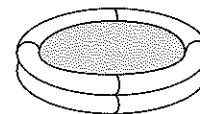
2. How much frosting covers the top of a round birthday cake

area                  circumference                  perimeter



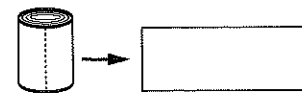
3. The amount of yard that will be covered by a circular inflatable swimming pool

area                  circumference                  perimeter



4. The length of a can label when you pull it off the can

area                  circumference                  perimeter



Fill in the oval next to the measurement that best completes each statement.

Area of a circle:  $A = \pi * r^2$   
 Circumference of a circle:  $C = \pi * d$

5. The radius of a circle is about 4 cm. The area of the circle is about  
 12 cm<sup>2</sup>                   39 cm<sup>2</sup>                   50 cm<sup>2</sup>                   25 cm<sup>2</sup>
6. The area of a circle is about 28 square inches. The diameter of the circle is about  
 3 in.                   6 in.                   9 in.                   18 in.
7. The circumference of a circle is about 31.4 meters. The radius of the circle is about  
 3 m                   5 m                   10 m                   15 m
8. Explain how you found your answer for Problem 7.

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