LESSON 26

Matching Linear Equations to *x*/*y* Tables

Review It!

When you match linear equations to *x*/*y* tables, remember this word:

linear equation an equation whose graph is a straight line

Given the equation $y = 2x + 7$, complete the table.

x	0	1	2	3	4
y	7	9	11		

Step 1 Find the *y*-value for $x = 3$.

Write the equation. $y = 2x + 7$

THINK Substitute 3 in parentheses so you don't read "23."

$= 2(\_\_\_\_) + 7$

$= \_\_\_\_ + 7$

REMEMBER $2(3) = 2 \times 3$

$= \_\_\_\_$

Step 2 Find the *y*-value for $x = 4$.

Write the equation. $y = 2x + 7$

THINK Substitute 4 in parentheses so you don't read "24."

$= 2(\_\_\_\_) + 7$

$= \_\_\_\_ + 7$

$= \_\_\_\_$

So, the *x*-values that complete the table are ____ and ____.

Try It! Complete each x/y table using the given equation.

1. $y = 3x - 1$

x	y
1	
2	
3	
4	
5	

2. $y = 4x + 5$

x	y
−1	
0	
1	
2	
3	

3. $y = -2x + 1$

x	y
−2	
−1	
0	
1	
2	

4. $y = 5x - 4$

x	y
−2	
−1	
0	
1	
2	

5. $y = \frac{1}{2}x + 1$

x	y
−4	
−2	
0	
2	
4	

6. $y = -x + 3$

x	y
−2	
−1	
0	
1	
2	

7. $y = 7x + 5$

x	y
−2	
−1	
0	
1	
2	

8. $y = \frac{2}{3}x + 1$

x	y
−6	
−3	
0	
3	
6	

9. $y = -3x + 1$

x	y
−2	
−1	
0	
1	
2	

1. What is 3(1) − 1? 1, or 2?

3. $-2 \times -2 = ?$ −4, or 4?

5. $\frac{1}{2} \times -2 = ?$ −1, or 1?

On Your Own!

Circle the answer for each question.

1. Which x/y table shows the corresponding values for the equation $y = x - 4$?

A.

x	−2	−1	0	1	2
y	6	5	4	3	2

B.

x	−2	−1	0	1	2
y	8	4	0	−4	−8

C.

x	−2	−1	0	1	2
y	−2	−3	−4	−3	−2

D.

x	−2	−1	0	1	2
y	−6	−5	−4	−3	−2

2. The table shows the x/y values for an equation. Which equation matches those values?

x	−2	−1	0	1	2
y	7	5	3	1	−1

A. $y = 2x + 3$

B. $y = 2x - 3$

C. $y = -2x + 3$

D. $y = -2x - 3$

3. The table shows the x/y values for an equation. Which equation matches those values?

x	−2	−1	0	1	2
y	−11	−8	−5	−2	1

A. $y = 3x - 5$

B. $y = 3x + 5$

C. $y = -3x - 5$

D. $y = -3x + 5$

4. Given the equation $y = 6x - 2$, what numbers complete this x/y table?

x	−1	0	1
y			

A. $\{-8, -2, -4\}$

B. $\{-8, 2, 4\}$

C. $\{4, -2, 4\}$

D. $\{-8, -2, 4\}$

5. Given the equation $y = -3x + 4$, what numbers complete this x/y table?

x	−1	0	1
y			

A. $\{1, 4, 1\}$

B. $\{-7, 4, 1\}$

C. $\{7, 4, 1\}$

D. $\{-7, 4, 4$

Name _____ Date _____

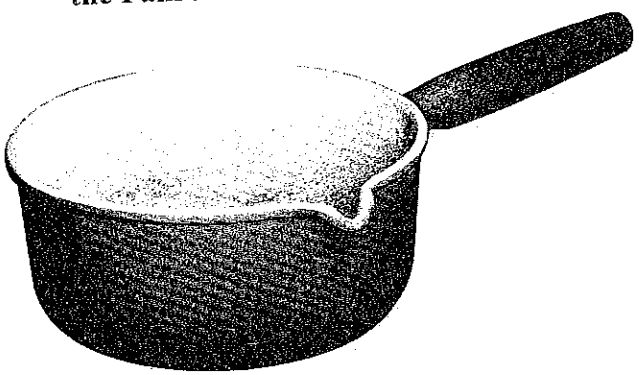
B.1 Solving Multi-Step Equations

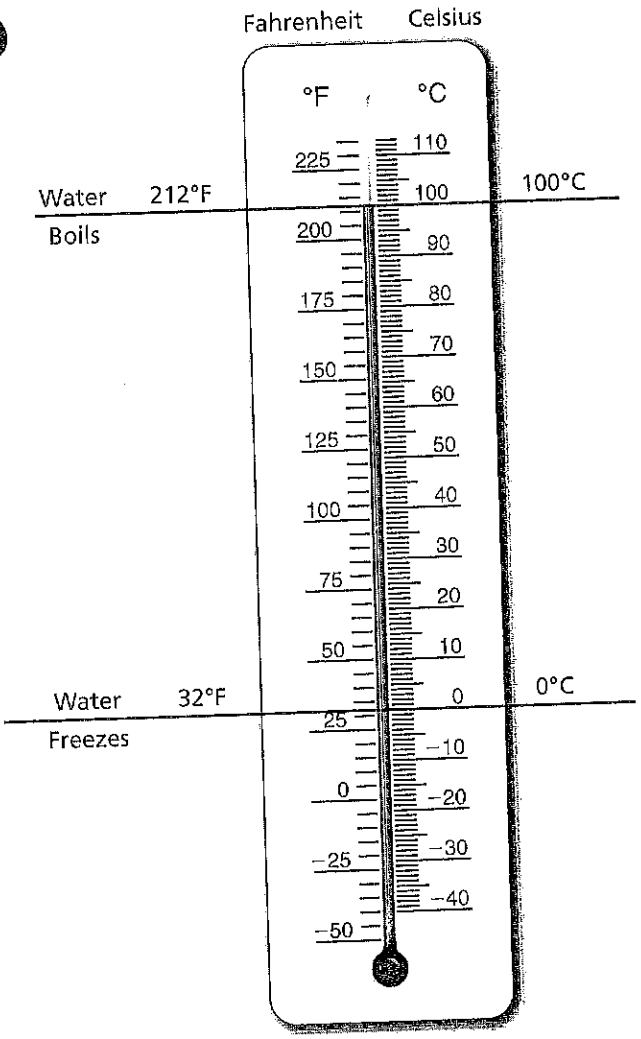
For use with Activity B.1

Essential Question How can you convert temperatures between the Fahrenheit and Celsius scales?

1 ACTIVITY: Comparing Fahrenheit and Celsius

Work with a partner. The temperature scales show the relationship between the Fahrenheit and Celsius scales. Use the two scales to complete the table.





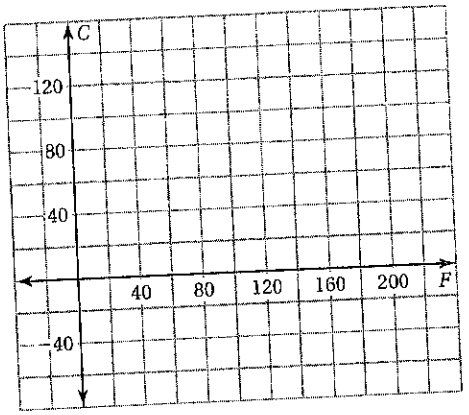
F	0°	32°	70°	80°	90°	100°	212°
C							

Name _____ Date _____

2 ACTIVITY: Comparing Fahrenheit and Celsius

Work with a partner.

a. Plot the points from the table in Activity 1.



b. Draw a line through the points.

c. Find the slope of the line. Write the slope as a fraction in simplest form.

d. Which of the following shows the relationship between C and F?

$C = \frac{5}{9}(F + 32)$ $C = \frac{5}{9}(F - 32)$

$C = \frac{9}{5}(F + 32)$ $C = \frac{9}{5}(F - 32)$

3 ACTIVITY: Converting Temperatures

Work with a partner. You have email pals in four countries that use the Celsius scale. Write each temperature in degrees Fahrenheit. Then use the scale in Activity 1 to check that your answer is reasonable.

a. Canada: 19°C

B.1 Solving Multi-Step Equations (continued)

b. Mexico: 35°C

c. Japan: 28°C

d. Russia: 6°C

What Is Your Answer?

4. IN YOUR OWN WORDS How can you convert temperatures between the Fahrenheit and Celsius scales? Give two examples.

Name _____ Date _____

B.1 Practice

For use after Lesson B.1

Solve the equation. Check your solution.

1. $-2x + 8x = 9 + 3$

2. $-5w + 10w - 18 = 12$

3. $6k + 7 - 3k + 7k = 27$

4. $9(b - 2) + 1 = 19$

5. $4 + 5(c - 6) + 8c = -13$

6. $\frac{1}{2}(y - 18) = -2$

7. The length of a rectangular prism is 5 feet and its height is 6 feet. Find the width of the prism if the surface area is 126 square feet.

8. You receive x dollars an hour for babysitting. You babysit 3 hours on Friday and 5 hours on Saturday. You receive $40 for the two days. Write and solve an equation to find how much you earn per hour.

Name_____ Date _____

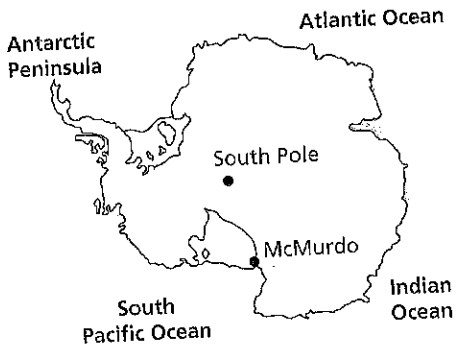
B.2 Solving Equations with Variables on Both Sides

For use with Activity B.2

Essential Question How can you solve an equation that has variables on both sides?

1 ACTIVITY: Using a Table, Graph, and Algebra

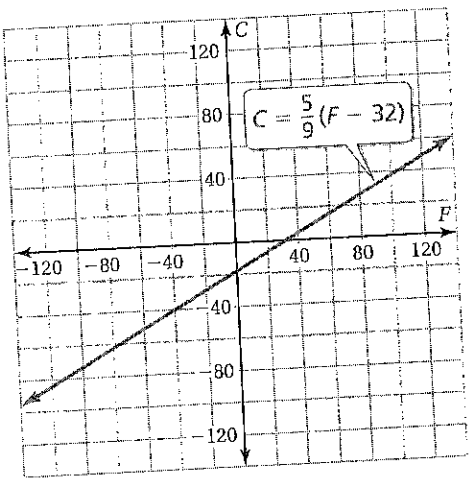
Work with a partner. You have an email pal in Antarctica. Your email pal tells you the temperature in McMurdo. You ask whether he gave the temperature in Celsius or Fahrenheit. He says "It's the same on both scales." What is the temperature?



a. TABLE Use "Guess, Check, and Revise" with a table to find the only temperature that is the same on both scales.

F							
C							

b. GRAPH Draw the line given by $C = F$ in the coordinate plane. Locate the point at which the graph of $C = F$ intersects the graph of $C = \frac{5}{9}(F - 32)$.



c. ALGEBRA Let x be the temperature that is the same on both scales. Substitute x for C and F in the equation $C = \frac{5}{9}(F - 32)$. Then solve for x.

Name _____ Date _____

B.2 Practice

For use after Lesson B.2

Solve the equation. Check your solution.

1. $x = -2x - 21$

2. $-3x = 4x - 14$

3. $5p - 11 = 9p + 17$

4. $3.8d + 7 = -8.2d + 70$

5. $-7n + 6 = -3(3n + 10)$

6. $6(y - 5) = -2(5y - 1)$

7. You start a business making painted flower containers. You spend \$300 on paint and \$5 on each container. You charge \$20 for each container. How many containers do you have to sell to break even?

8. There are 322 students in the seventh grade at your school. There are 48 more girls than boys. How many of each are in the seventh grade?

Name _____ Date _____

B.3 Solving Equations Using Tables and Graphs

For use with Activity B.3

Essential Question How can you use tables and graphs to solve equations?

1 ACTIVITY: Using a Table, Graph, and Algebra

Work with a partner. You start a website design company. How many sites must you design before you start making a profit?

- **You pay $4000 for a new computer and software.**
- **It costs you $100 to design each website.**
- **You charge $500 to design each website.**

Let x represent the number of sites you design.

$C = 4000 + 100x$ Cost of designing x sites

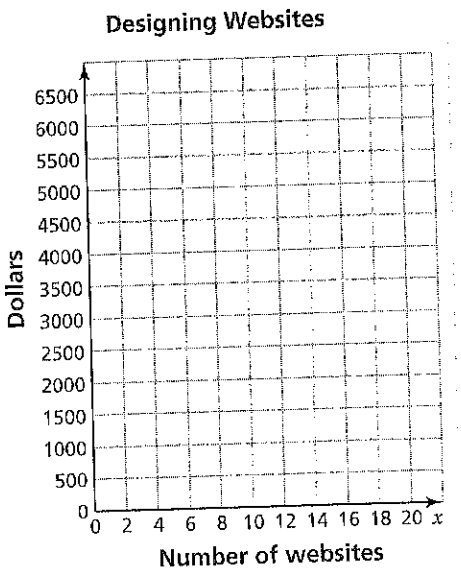
$R = 500x$ Income for designing x sites

You will start making a profit when $C = R$. That is, when you have designed enough websites to cover your start-up cost of $4000 and $100 for each site.

a. **TABLE** Use "Guess, Check, and Revise" with a table to find the value of x for which $C = R$.

x							
C							
R							

b. **GRAPH** Graph $C = 4000 + 100x$ and $R = 500x$ in the same coordinate plane. Find the value of x for which the two lines intersect.



c. **ALGEBRA** Set C equal to R. Solve for x.