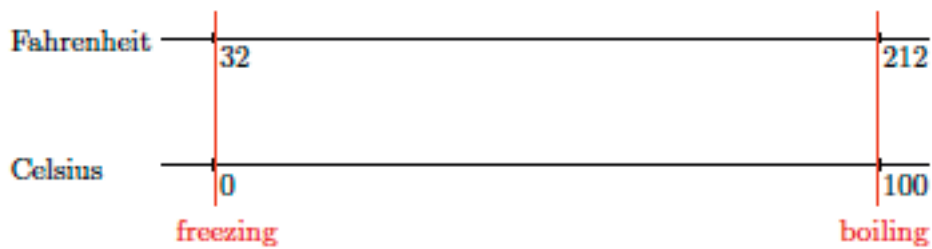# Lesson 30: Conversion Between Celsius and Fahrenheit

Classwork

Mathematical Modeling Exercise

(1) If t is a number, what is the degree in Fahrenheit that corresponds to $t°C$?

(2) If t is a number, what is the degree in Fahrenheit that corresponds to $(-t)°C$?

Exercises

Determine the corresponding Fahrenheit temperature for the given Celsius temperatures in Exercises 1–5.

1. How many degrees Fahrenheit is 25°C?

2. How many degrees Fahrenheit is 42°C?

3. How many degrees Fahrenheit is 94°C?

4. How many degrees Fahrenheit is 63°C?

5. How many degrees Fahrenheit is t°C?

Problem Set

1. Does the equation $t°C = (32 + 1.8t)°F$ work for any rational number t? Check that it does with $t = 8\frac{2}{3}$ and $t = -8\frac{2}{3}$.

2. Knowing that $t°C = \left(32 + \frac{9}{5}t\right)°F$ for any rational t, show that for any rational number d, $d°F = \left(\frac{5}{9}(d - 32)\right)°C$.

3. Drake was trying to write an equation to help him predict the cost of his monthly phone bill. He is charged $35 just for having a phone, and his only additional expense comes from the number of texts that he sends. He is charged $0.05 for each text. Help Drake out by completing parts (a)–(f).

    a. How much was his phone bill in July when he sent 750 texts?

    b. How much was his phone bill in August when he sent 823 texts?

    c. How much was his phone bill in September when he sent 579 texts?

    d. Let y represent the total cost of Drake's phone bill. Write an equation that represents the total cost of his phone bill in October if he sends t texts.

    e. Another phone plan charges $20 for having a phone and $0.10 per text. Let y represent the total cost of the phone bill for sending t texts. Write an equation to represent his total bill.

    f. Write your equations in parts (d) and (e) as a system of linear equations, and solve. Interpret the meaning of the solution in terms of the phone bill.