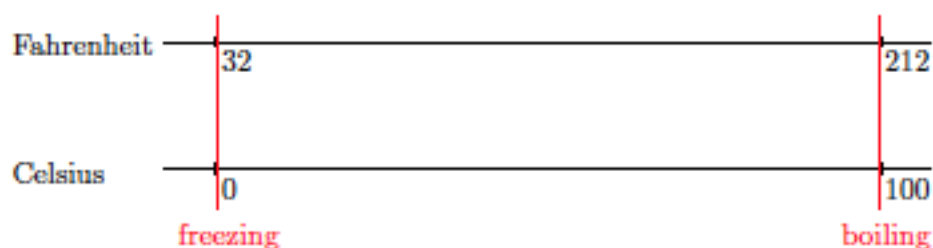


Lesson 30: Conversion Between Celsius and Fahrenheit

Classwork

Mathematical Modeling Exercise

- (1) If t is a number, what is the degree in Fahrenheit that corresponds to $t^{\circ}\text{C}$?
- (2) If t is a number, what is the degree in Fahrenheit that corresponds to $(-t)^{\circ}\text{C}$?



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 $t^{\circ}\text{C}$?

Problem Set

1. Does the equation, $t^{\circ}\text{C} = (32 + 1.8t)^{\circ}\text{F}$, 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 $t^{\circ}\text{C} = \left(32 + \frac{9}{5}t\right)^{\circ}\text{F}$ for any rational t , show that for any rational number d , $d^{\circ}\text{F} = \left(\frac{5}{9}(d - 32)\right)^{\circ}\text{C}$.
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.