Unit 4 Lesson 4: Interpreting Functions

1 Math Talk: Finding Outputs (Warm up)

Student Task Statement

Mentally evaluate the output for the input of 3.

$f(x) = 4 \left(x - \frac{1}{2} \right)$

$g(x) = 2(6 - x)$

$h(x) = \frac{5}{3}x + \frac{1}{3}$

$j(x) = 0.2x - 1$

2 It's Getting Hotter

Student Task Statement

A machine in a laboratory is set to steadily increase the temperature inside. The temperature in degrees Celsius inside the machine after being turned on is a function of time, in seconds, given by the equation $f(t) = 22 + 1.3t$.

1. What does $f(3)$ mean in this situation?

2. Find the value of $f(3)$ and interpret that value.

3. What does the equation $f(t) = 35$ mean in this situation?

4. Solve the equation to find the value of t for the previous question.

5. Write an equation involving f that represents each of these situations:
   a. The temperature in the machine 30 seconds after it is turned on.

   b. The time when the temperature inside the machine is 100 degrees Celsius.

3 You Charge How Much?

Student Task Statement
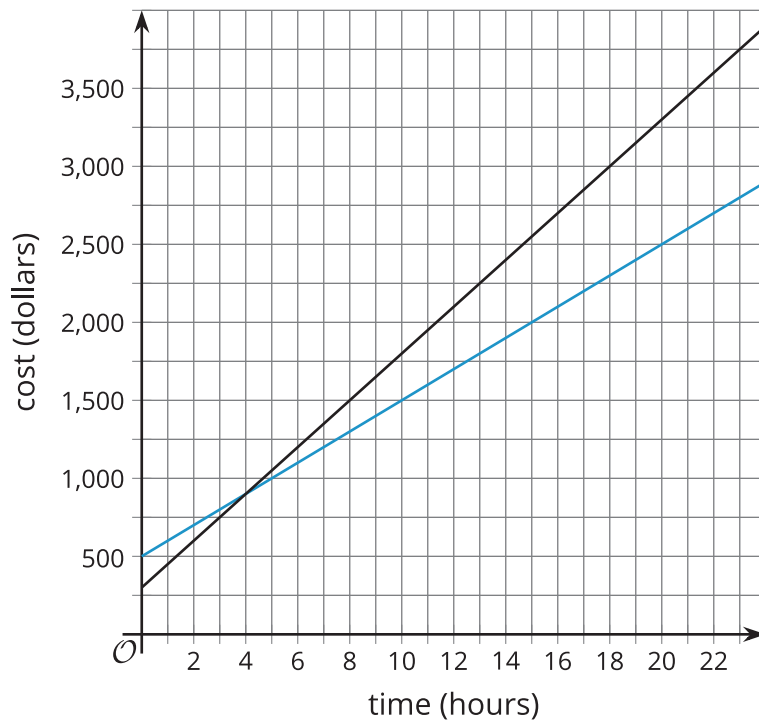
Two companies charge to rent time using their supercomputers. Their fees are given by the equations $f(t) = 500 + 100t$ and $g(t) = 300 + 150t$. The lines $y = f(t)$ and $y = g(t)$ are graphed.

1. Which line represents $y = f(t)$? Explain how you know.

2. The lines intersect at the point $(4, 900)$. What does this point mean in this situation?

3. Which is greater, $f(10)$ or $g(10)$? What does that mean in this situation?

4. Your group has $1,500 to spend on supercomputer time. Which company should your group use?

    a. Explain or show your reasoning using the equations.

    b. Explain or show your reasoning using the graph.