## Lesson 4: Interpreting Functions

* Let’s interpret some functions.

### 4.1: Math Talk: Finding Outputs

Mentally evaluate the output for the input of 3.

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

$g\left(x\right)=2\left(6−x\right)$

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

$j\left(x\right)=0.2x−1$

### 4.2: It’s Getting Hotter



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 $f\left(t\right)=22+1.3t$.

1. What does $f\left(3\right)$ mean in this situation?
2. Find the value of $f\left(3\right)$ and interpret that value.
3. What does the equation $f\left(t\right)=35$ 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:
	1. The temperature in the machine 30 seconds after it is turned on.
	2. The time when the temperature inside the machine is 100 degrees Celsius.

### 4.3: You Charge How Much?



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

1. Which line represents $y=f\left(t\right)$? Explain how you know.
2. The lines intersect at the point $\left(4,900\right)$. What does this point mean in this situation?
3. Which is greater, $f\left(10\right)$ or $g\left(10\right)$? What does that mean in this situation?
4. Your group has $1,500 to spend on supercomputer time. Which company should your group use?
	1. Explain or show your reasoning using the equations.
	2. Explain or show your reasoning using the graph.



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