**Getting the Gold**

Many of those who made the long trek to California during Westward Expansion were in search of gold. Although few were able to get rich, many tried.

A common way to find gold was to pan for it in streams. To pan for gold, all a person needed was a $9 shovel, a $50 burro, and a $1 pan. A person could get an ounce of gold each day, on average, by panning.

One ingenious person discovered a way to get gold from a stream by using a trough. The trough was a long chute that miners set in the stream and rocked back and forth to separate the gold from the silt of the stream.

Although it was more expensive to get started with the trough method, that technique produced about twice as much gold each day as did the pan method. To use a trough, a person needed a team of two burros, a shovel, and a trough. The trough cost $311.

At that time, gold was worth $15 an ounce. The following questions involve the amount of profit (income minus expenses) from each method after a certain number of days. A loss of money is considered a negative profit.

1. How much profit will each method yield
   1. after 16 days?
   2. after 30 days?
   3. after 5 days?
2. Make two graphs on the same set of axes. One graph should show the profit from panning, and the other should show the profit from using a trough.
3. Find rules to show the profit using each method.
   1. Find a rule showing how much profit the panning method will yield after x days?
   2. Find a rule showing how much profit the trough method will yield after x days.
4. How many days will it take for a miner using each method to break even?
5. After how many days will the two methods yield the same amount of profit?