Rational Models Practice

Goal: Be able to model rational functions in general cases and interpret the model in a meaningful way.

Scenario 1 (with time):

A. In situation A, I imagine two taps that work together to fill a bathtub that can hold 100L of water. Tap B can fill up 6L two times faster than tap A. A person turns on tap B first. After 3 minutes she then turns on tap A.

   What does the efficiency of tap B need to be to fill up the 100L bathtub in the next 3 minutes?

B. In situation B, I imagine two types of plants are in a room, 20 plants of type A and 40 plants of type B. A plant A can produce 1L of oxygen 30 minutes faster than a plant B.

   After 4 hours, the total amount of oxygen produced working together is equal to the oxygen produced with 50 plants of type A working alone, what is the efficiency of oxygen production for plants A and B at that time?

Scenario 2 (**without** time):

C. In situation C, I imagine two types of mobile plans are available. Bell costs 0.5 dollars per call and Tellus costs 0.8 dollars per call. We make 9 calls with Bell and 14 calls with Tellus.

   What the overall cost per call is?

D. In situation D, I imagine, in a local household, heater A costs \$5.00 to raise the room temperature by 10℃. A more efficient heater, heater B, costs \$3.00 to raise the same room by 10℃.

   When 1 heater of type A, and several heaters of type B works separately in rooms of the same size, how many B heater are needed to control the price at $\$3.50$ per 10℃?