Quantitative Analysis of a Bronze Alloy

Bronze is an alloy or mixture of the metals copper and tin. The properties of bronze depend on the percentage of copper in the mix. A chemist decides to study the properties of a given alloy of bronze as the proportion of copper is varied. She starts with 10 kg of bronze that contain 4 kg of tin and 6 kg of copper. She either adds or removes tin.

Let $f(x)$ be the fractional percentage of tin in the mix if x kg of tin are added ($x > 0$) or removed ($x < 0$).

a. Fill in some values in the table.

Amt of tin added, x (kg)	Fractional percentage of tin in the mix, $f(x)$ (These fractions need not be simplified.)

b. State the domain and range of f.

domain: _____

range:_____

What does your answer mean in the context of bronze?

c. Plot the points in the table using a grapher.
Recopy your graphing screen:

Give a reasonable viewing window: $\square \le x \le \square$ and $\square \le y \le \square$

d. Report a formula for f in terms of x. $f(x) =$ _____
Insert your formula in the Y= editor.

e. Interpret the y-intercept of the graph in terms of the chemist's work.

f. Is the endpoint of the range of the function included or not included? Explain.

g. Evaluate and interpret $f(-2.5)$.

h. Solve and interpret $f(x) = 0.98$.