

Challenge Section 4.5

Step 1 Find the value of a in the formula $y = 100a^x$
with the points $(0, 100\%)$
 $(8\text{hr}, 50\%)$

$$50 = 100a^8$$

$$\frac{1}{2} = a^8$$

$$\left(\frac{1}{2}\right)^{\frac{1}{8}} = a$$

$$a = (.5)^{\frac{1}{8}}$$

Step 2 now find C in the formula $y = Ca^x = C(.5)^{\frac{x}{8}}$
with the points $(0, C)$ and $(\frac{24}{8}, 5.75\text{g})$

$$5.75 = C(.5)^{\frac{48}{8}}$$

$$5.75 = C(.5)^6$$

$$C = \frac{5.75}{(.5)^6} = 368 \text{ grams.}$$

need 368 grams.