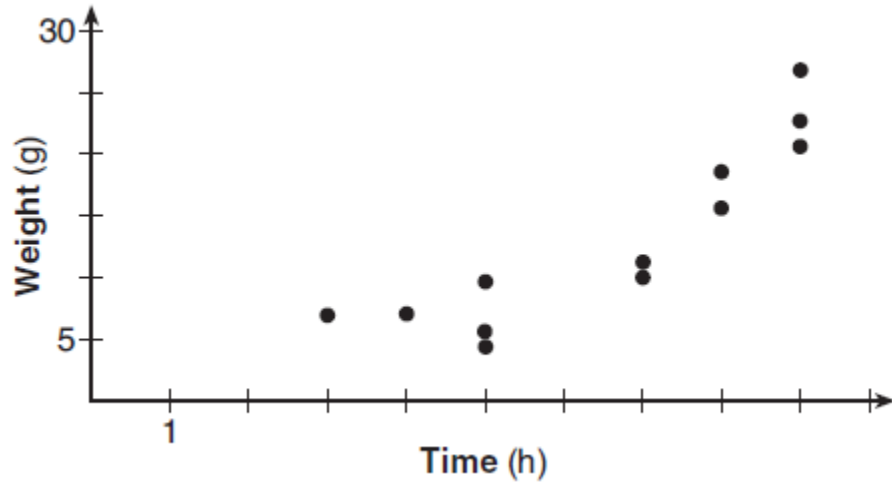


1.) A scatterplot showing the weight,  $w$ , in grams, of each crystal after growing  $t$  hours is shown below.



The relationship between weight,  $w$ , and time,  $t$ , is best modeled by

- (A)  $w = 4^t + 5$       (B)  $w = 1.4^t + 2$       (C)  $w = 5(2.1)^t$       (D)  $w = 8(0.75)^t$

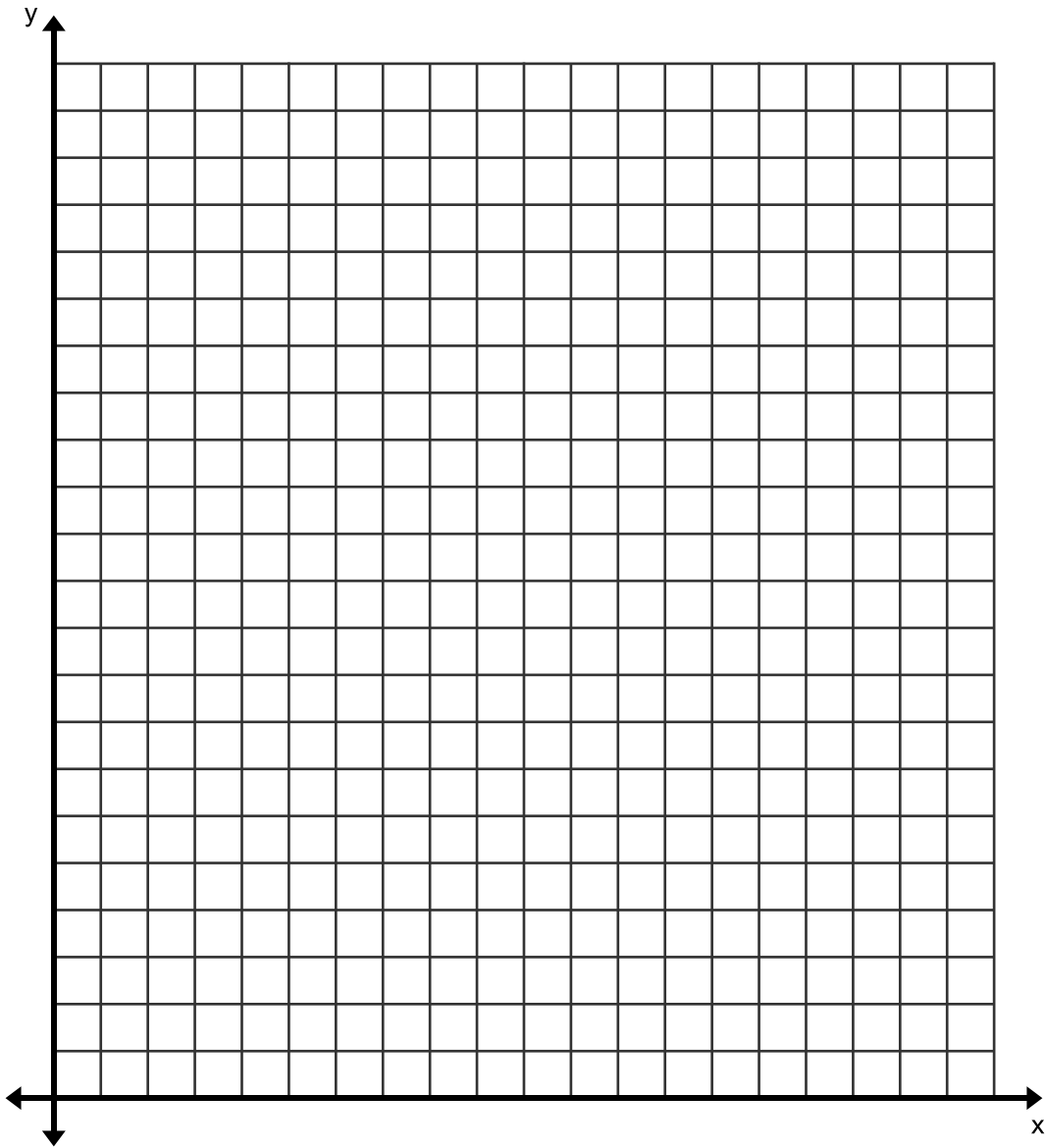
2.) To the nearest tenth, find the value of  $x$  that satisfies  $\left(\frac{1}{3}\right)^x = 2x + 30$ .

3.) The value of a certain small passenger car based on its use in years is modeled by  $V(t) = 22,000(0.9)^t$ , where  $V(t)$  is the value in dollars and  $t$  is the time in years.

Dan had to take out a loan to purchase the small passenger car.

The function  $L(t) = 17,000(0.95)^t$ , where  $L(t)$  is measured in dollars, and  $t$  is the time in years, models the unpaid amount of Zach's loan over time.

a. Graph  $V(t)$  and  $L(t)$  over the interval  $0 \leq t \leq 8$ , on the set of axes below.



b. State when  $V(t) = L(t)$ , to the nearest hundredth, and interpret its meaning in the context of the problem.

c. How many years later will the **value** of Dan's car to be worth \$10,000. Round to the nearest tenth.