Exercise 23

For the following exercises, consider this scenario: The weight of a newborn is 7.5 pounds. The baby gained one-half pound a month for its first year.

When did the baby weight 10.4 pounds?

[TYPO: Replace "weight" with "weigh."]

Solution

Because the baby's weight increases at a constant rate, a linear function can be used to model it. The slope is 0.5, the rate that the baby's weight increases (in pounds per month), and the initial weight is 7.5 (in pounds).

$$W(t) = 0.5t + 7.5$$

Set $W = 10.4$ and solve the equation for t.

$$10.4 = 0.5t + 7.5$$

$$10.4 - 7.5 = 0.5t$$

$$2.9 = 0.5t$$

$$t = \frac{2.9}{0.5} = 5.8$$

The baby weighs 10.4 pounds at about 6 months after being born.