

Problem 55

Evel Knievel's ramp engineer designs a ramp given by the following piecewise function where x is measured in feet. Find the height of the ramp in feet.

$$f(x) \begin{cases} \frac{1}{2}x & 0 \leq x \leq 4 \\ f(4) + (x - 4) & 4 < x \leq 7 \\ f(7) + 2(x - 7) & 7 < x \leq 9 \\ f(9) + 4(x - 9) & 9 < x \leq 10 \end{cases}$$

Answer

13ft

Explanation

The height is given by $f(10)$. $f(4) = 2 \Rightarrow f(7) = 2 + 3 = 5 \Rightarrow f(9) = 5 + 4 = 9 \Rightarrow f(10) = 9 + 4 = 13$