

PROBLEM-OF-THE-DAY: ALGEBRA 1**WEEK:** October 2 to October 5**DAY:** Thursday

RISD Objective: Provided the equation of a function, students will evaluate the function for a particular value of x . Or students will determine the value of x if given the function value.

PROBLEM #32

Once it breaks through the soil, a stalk of corn grows $\frac{7}{8}$ of an inch each day. A function for the height of the corn, $h(d)$, for a number of days, d , is given by the following function:

$$h(d) = \frac{7}{8}d.$$

- a) How tall will the stalk of corn be in 31 days? Show your work.
- b) How many days will it take the stalk of corn to reach 6 ft. tall? Show and explain your work (round to the nearest day).

MODEL SOLUTION #32

a) Since the height function is $h(d) = \frac{7}{8}d$, to find the height after 31 days, I need to substitute 31 in for d .

$$\begin{aligned}h(31) &= \left(\frac{7}{8}\right)(31) \\ &= \frac{217}{8} \\ &= 27\frac{1}{8}\end{aligned}$$

So, the corn will be $27\frac{1}{8}$ inches tall in 31 days.

b) In this case we know the height, which is 6 feet, so we will substitute this in for the function and solve for d . But the function is for inches, so we first need to convert 6 feet to 72 inches and substitute the 72 in for the function.

$$72 = \frac{7}{8}d$$

$$72\left(\frac{8}{7}\right) = d$$

$$82.29 = d$$

So, the stalk will be 6 ft. tall after about 82 days.