

School-to-Career Activity

(Use with Lesson 11-3)

Outdoor Nursery Operator

Suppose you operate an outdoor nursery and garden center near Raleigh, North Carolina. You are planning to grow a new type of ornamental shrub. After researching the shrub, you find that it grows best if planted when the average daily high temperature is 66°F or more. You also learn that during the first two years of growth, the shrub should be shaded from direct sunlight when exposed to daily high temperatures exceeding 90°F .

An agricultural consultant has given you the quadratic function

$$f(t) = -0.00186t^2 + 0.741t + 7.836,$$

which models the average daily high temperature in degrees Fahrenheit for Raleigh between March 15 and October 15. In the model, t represents the number of days since January 1. Assume that the model applies to a non-leap year.



1. According to the model, what is the earliest date that you could plant the shrubs? (Round to the nearest whole number).
2. If you decide to delay planting the shrubs until the average daily high temperature reaches 70°F , when should you plant them?
3. Does the model indicate that you should be prepared to shade the shrubs at any time after the shrubs have been planted? Explain your reasoning.
4. Why might it be a good idea to be prepared to shade the shrubs regardless of the model?