

Name \_\_\_\_\_

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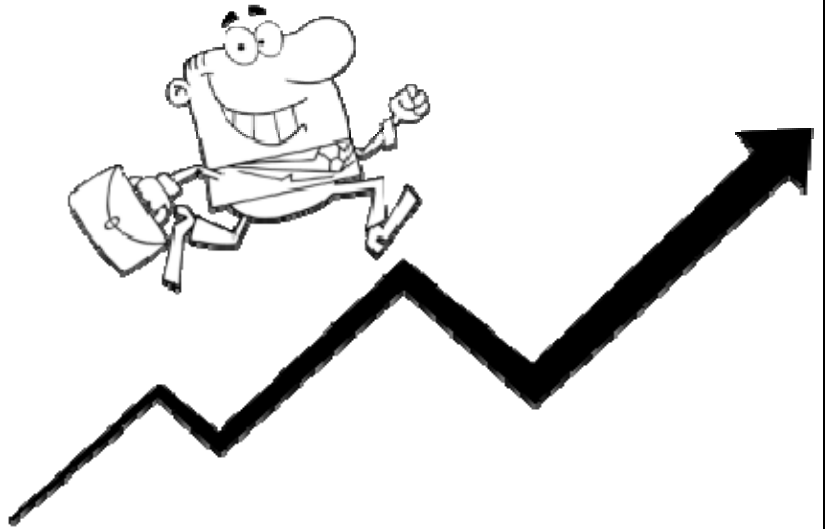
### Problems Involving Both Logarithms and Exponents - Step-by-Step Lesson

The profit growth of a sneaker company is 10% every 3 years.

If the company were to stay on that track, how long would it take for the company to grow 6 times its current profit?

Hint: Use the growth formula:

$$A = P(1+i)^n$$



#### Explanation:

We can calculate the growth potential of the company by using the growth formula.

$$A = P(1+i)^n$$

Assume  $P = x$ .

Since we want to know when the growth will be six times the current value,  $A = 6x$ . For this example  $n$  represents a period of 3 years, therefore the  $n$  is reduced by a factor of 3 for this propose.

Substitute the information given into formula.

$$6 = (1.1)^{n/3}$$

$$\log 6 = n/3 * \log 1.1$$

$$n = 3 \log 6 / \log 1.1$$

$$n = 2.334453 / 0.04139268$$

$$n = 56.397725$$

It will take approximately 56 years & 3 months for the growth of 6 times the current profits.

