Name

7-2B Lesson Master

Questions on SPUR Objectives
See pages 452–455 for objectives.

USES Objective D

In 1–3, match the scenario to the correct formula listed below.

A $2(2)^t$ B $2(1.02)^t$ C $2(1.2)^t$

1. A plant sprouts to 2 cm tall. For the next t times it is measured, the plant has grown by 20%. What is its height after t times? _____

2. A couple has two children. After they grow up, each child has two children. When their children grow up, each of them has two. The pattern continues for t generations, with the first generation being the original couple's children. In terms of t, how many people have been born into the family after t generations? _____

3. A savings account has a 2% annual yield. Suppose Luis deposits $2 into an account. How much money is in the account after t years? _____

In 4–7, use the following scenario to answer the questions.

Becky's parents decide to give her an allowance of 25 cents per week for doing chores. They give her a choice about how her allowance will change over time. Choice A is that every six months she will get a raise of $1. Choice B is that every six months her allowance will double.

4. How many raises will she have received after 4 years? _____

5. What will her allowance be for choice A after 4 years? _____

6. What will her allowance be for choice B after 4 years? _____

7. Which option should Becky choose? Provide a mathematical justification for why that choice is better.

_____

_____

8. A certain bacterium doubles in number every 30 minutes. Suppose you start with a culture of 10 of these bacteria.

   a. How many times do the bacteria double in number after 12 hours? _____

   b. What is the number of bacteria after 12 hours? _____

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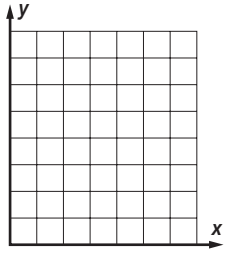
REPRESENTATIONS Objective H

9. Let $y = 2 \cdot 3^x$.

   a. To the right, make a table for $x = 0, 1, 2, 3, 4$.

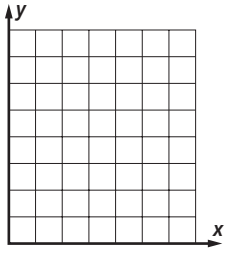
   b. Graph the values from Part a.



10. A student researching a possible career discovers that a career as a computer engineer has tremendous growth over the next several years. The average pay will grow by 8.5% every year for the next four years. This year, average salaries were $250,000.

   a. To the right, make a table of values showing the average salaries 0, 1, 2, 3, and 4 years from now.

   b. Graph the salaries for the first four years.



11. A study shows that wind is the fastest-growing energy source. Suppose the equation $y = 1{,}200 \cdot (1.29)^t$ represents the total wind power (in mega-watts) in a given country, where t is the number of years after 2003.

   a. What do 1.29 and 1,200 in the equation represent?

   _____

   b. What does the equation predict for the amount of wind power in 2010? Round to the nearest megawatt. _____