### Lesson 6 Practice Problems

1. A population of 1,500 insects grows exponentially by a factor of 3 every week. Select **all** equations that represent or approximate the population, , as a function of time in days, , since the population was 1,500.
2. The tuition at a public university was $21,000 in 2008. Between 2008 and 2010, the tuition had increased by 15%. Since then, it has continued to grow exponentially.

* Select **all** statements that describe the growth in tuition cost.
  1. The tuition cost can be defined by the function , where represents years since 2008.
  2. The tuition cost increased 7.5% each year.
  3. The tuition cost increased about 7.2% each year.
  4. The tuition cost roughly doubles in 10 years.
  5. The tuition cost can be approximated by the function , where represents decades since 2008.

1. Here is a graph that represents . Find the values of and . Show your reasoning.

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1. The number of fish in a lake is growing exponentially. The table shows the values, in thousands, after different numbers of years since the population was first measured.

|  |  |
| --- | --- |
| * years | * population |
| * 0 | * 10 |
| * 1 |  |
| * 2 | * 40 |
| * 3 |  |
| * 4 |  |
| * 5 |  |
| * 6 |  |

* 1. By what factor does the population grow every two years? Use this information to fill out the table for 4 years and 6 years.
  2. By what factor does the population grow every year? Explain how you know, and use this information to complete the table.
* (From Unit 4, Lesson 3.)

1. The value of a home increases by 7% each year. Explain why the value of the home doubles approximately once each decade.

* (From Unit 4, Lesson 4.)

1. Here is the graph of an exponential function .

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* The coordinates of are . The coordinates of are . If the -coordinate of is , what is its -coordinate? Explain how you know.
* (From Unit 4, Lesson 5.)



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