

Name \_\_\_\_\_ Date \_\_\_\_\_

## A Picture Is Worth a Thousand Words

### Understanding Quantities and Their Relationships

Read each scenario and identify the independent and dependent quantities. Be sure to include the appropriate units of measure.

#### 1. Endangered Species:

The Elkwood Aquatic Society is working with various reptile species to increase their populations. In their latest effort, the initial population of 450 endangered turtles tripled each year for the past five years.

- independent quantity:
  
- dependent quantity:

#### 2. Video Games:

Gillian is playing video games at an arcade. Gillian starts with \$40 and is playing games that cost 50 cents per game.

- independent quantity:
  
- dependent quantity:

#### 3. Commuter Flight:

A commuter flight between two cities in Oregon takes about 40 minutes. The plane will increase its altitude for the first half of the flight until it gets to 18,000 feet, and then it will descend for the second half of the flight. The plane ascends and descends at a constant rate of 900 feet per minute.

- independent quantity:
  
- dependent quantity:



**4. Sales Commission:**

Julian works as a salesman for a textbook company. He receives a monthly salary of \$3000 as well as a 10% commission on the amount of sales.

- independent quantity:
  
- dependent quantity:

**5. Cooling Tea:**

A freshly made cup of tea is served at a temperature of about 180°F. The tea cools rapidly at first, and then slows down gradually as it approaches room temperature.

- independent quantity:
  
- dependent quantity:

**6. Cross Country:**

Brady runs for his high school cross country team. His strategy for each 5-kilometer race is always the same. He begins by increasing his speed so that by the time he reaches the first kilometer, he is running at a speed of 0.3 km/min. He then maintains that speed for the next 2 kilometers. He then gradually speeds up for the remaining 2 kilometers so that when he crosses the finish line, he is running at a speed of 0.5 km/min.

- independent quantity:
  
- dependent quantity:

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Analyze each graph and determine which of the provided scenarios it models. For each graph, label the x- and y-axis with the appropriate quantity and unit of measure.

**Endangered Species**

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**Video Games**

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**Sales Commission**

Julian works as a salesman for a textbook company. He receives a monthly salary of \$3000 as well as a 10% commission on the amount of sales.

**Cooling Tea**

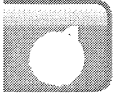
A freshly made cup of tea is served at a temperature of about 180°F. The tea cools rapidly at first, and then slows down gradually as it approaches room temperature.

**Commuter Flight**

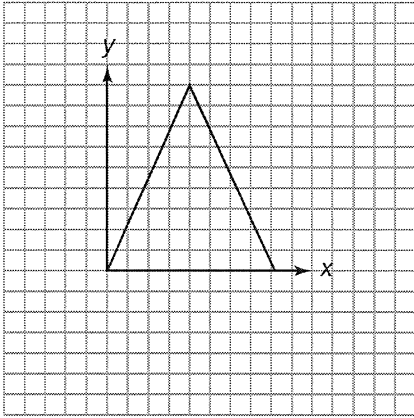
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**Cross Country**

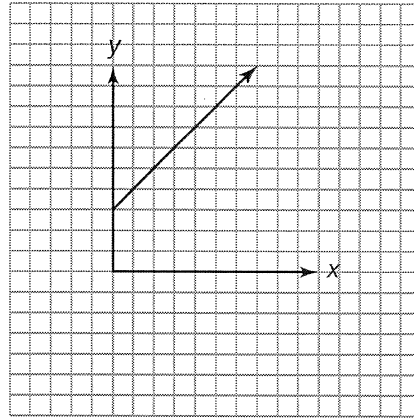
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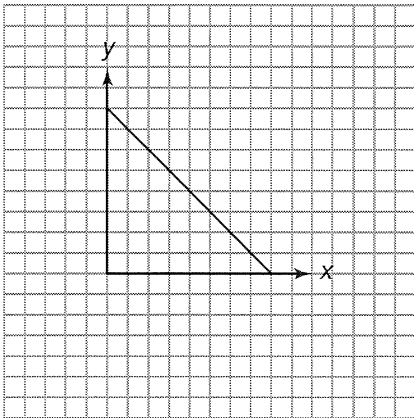
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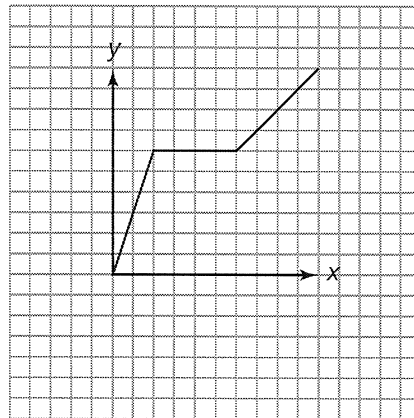
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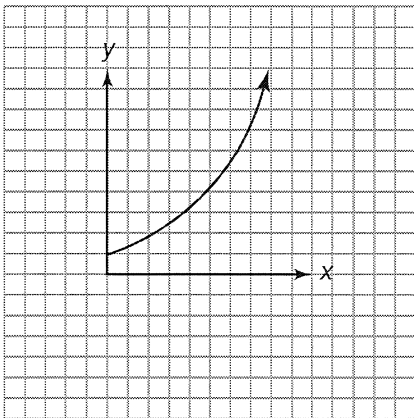
9.



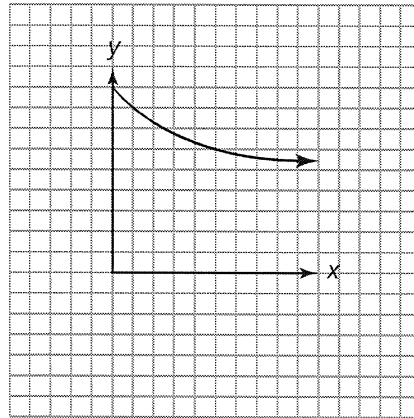
10.



11.



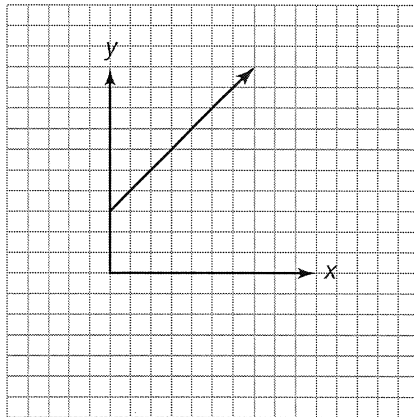
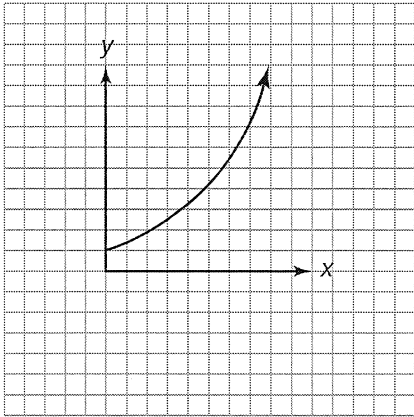
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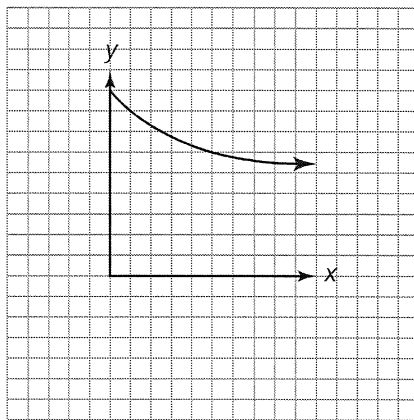
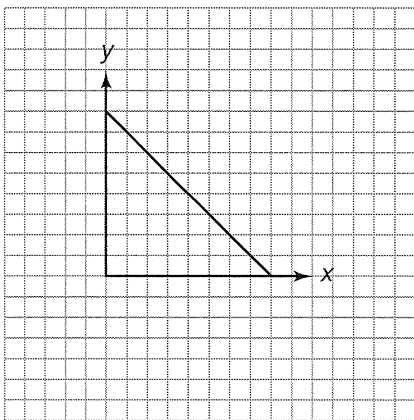
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Compare each pair of graphs and describe any similarities and differences you notice.

13.



14.



15.

