

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

## A Picture Is Worth a Thousand Words

### Understanding Quantities and Their Relationships

#### Vocabulary

Write a definition for each term in your own words.

1. independent quantity
2. dependent quantity

#### Problem Set

Determine the independent and dependent quantities in each scenario.

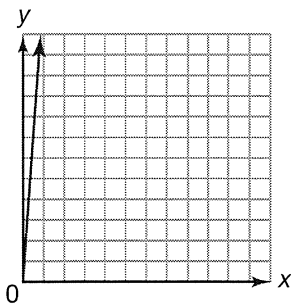
1. Selena is driving to visit her grandmother who lives 325 miles away from Selena's home. She travels an average of 60 miles per hour.  
Independent quantity: time (hours)  
Dependent quantity: distance (miles)
2. Benjamin works at a printing company. He is making T-shirts for a high school volleyball team. The press he runs can imprint 3 T-shirts per minute with the school's mascot.
3. On her way to work each morning, Sophia purchases a small cup of coffee for \$4.25 from the coffee shop.

4. Phillip enjoys rock climbing on the weekends. At some of the less challenging locations he can climb upwards of 12 feet per minute.
  
5. Jose prefers to walk to work when the weather is nice. He walks the 1.5 miles to work at a speed of about 3 miles per hour.
  
6. Gavin works for a skydiving company. Customers pay \$200 per jump to skydive in tandem skydives with Gavin.

Choose the graph that best models each scenario.

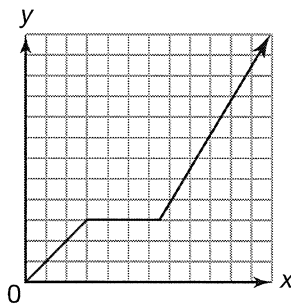
7. Kylie is filling her backyard pool to get ready for the summer. She is using a garden hose to fill the pool at a rate of 14 gallons per minute.

Graph A

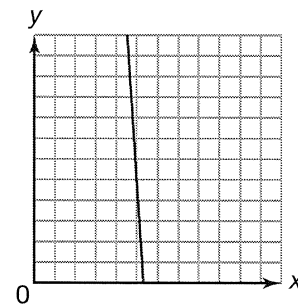


Graph A

Graph B

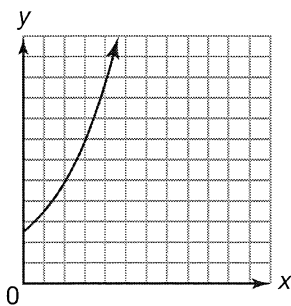


Graph C

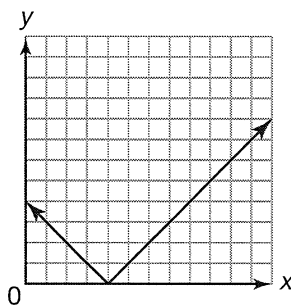


8. Hector is training to participate in competitive trampoline. In his best jump, he can reach a maximum height of about 9 meters and can spend about 2 seconds in the air performing tricks.

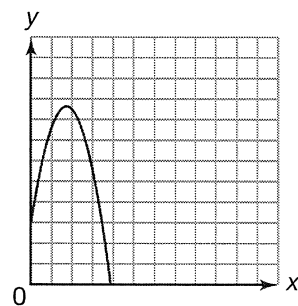
Graph A



Graph B



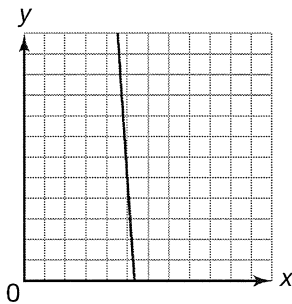
Graph C



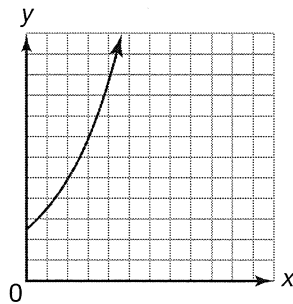
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9. Jasmine is saving for college. She has invested \$500 in a mutual fund that is expected to earn an average of 7% annually.

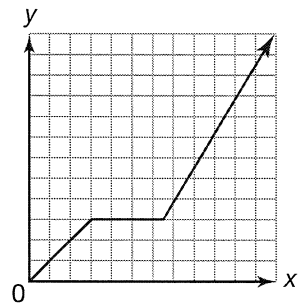
Graph A



Graph B

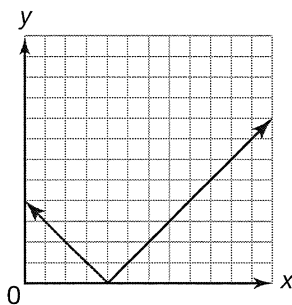


Graph C

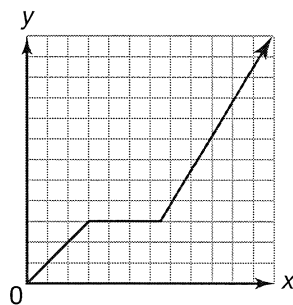


10. Each day Maria starts her walk to school at 7:45 AM. At 7:50 AM she stops at her friend Jenna's house. Jenna is usually late and Maria must wait at least 5 minutes for her to get ready. At 7:55 AM Maria and Jenna leave Jenna's house and arrive at school at 8:10 AM.

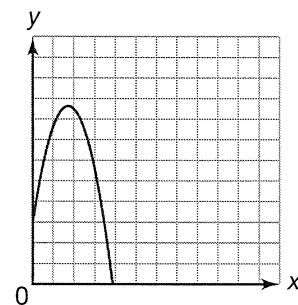
Graph A



Graph B

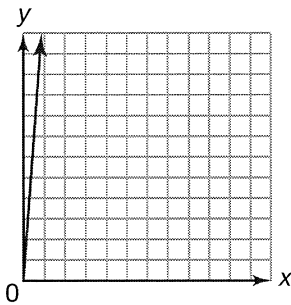


Graph C

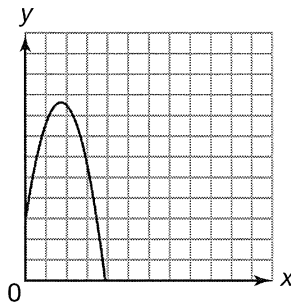


11. Marcus is at the top of an observation tower. He drops an action figure with a parachute attached and watches it descend to the ground.

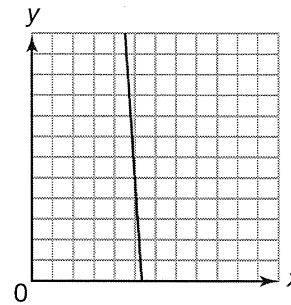
Graph A



Graph B

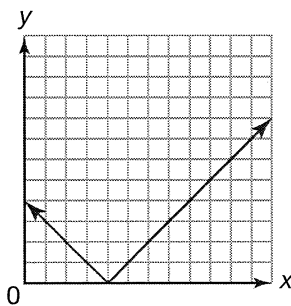


Graph C

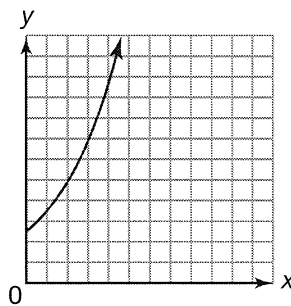


12. Janelle holds a raffle to raise money for a children's hospital. Participants who enter the raffle guess the number of peanuts in a jar. Janelle records the number of peanuts each participant guesses and the number of peanuts their guess is off by.

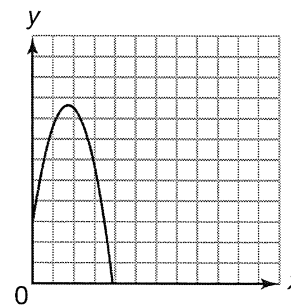
Graph A



Graph B



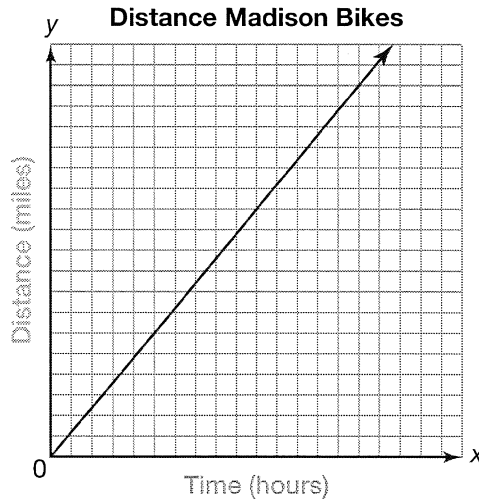
Graph C



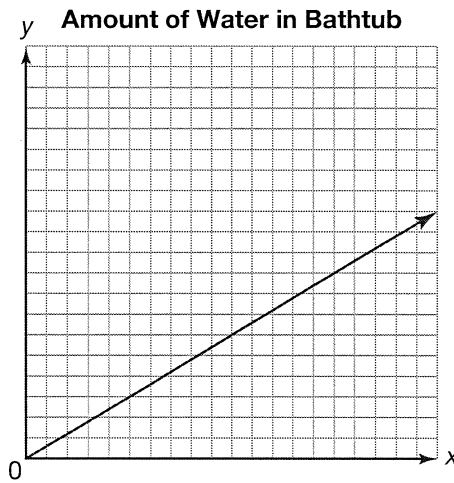
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Label the axes of the graph that models each scenario with the independent and dependent quantities.

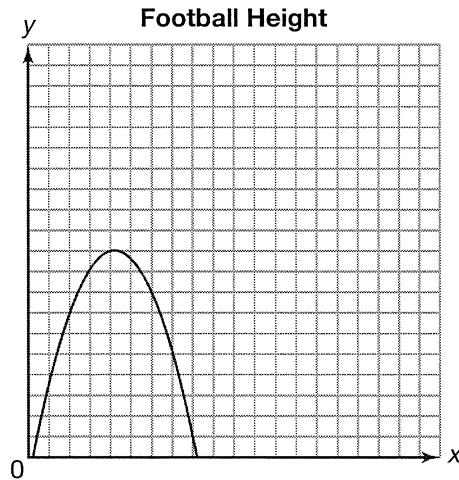
13. Madison enjoys bicycling for exercise. Each Saturday she bikes a course she has mapped out around her town. She averages a speed of 12 miles per hour on her journey.



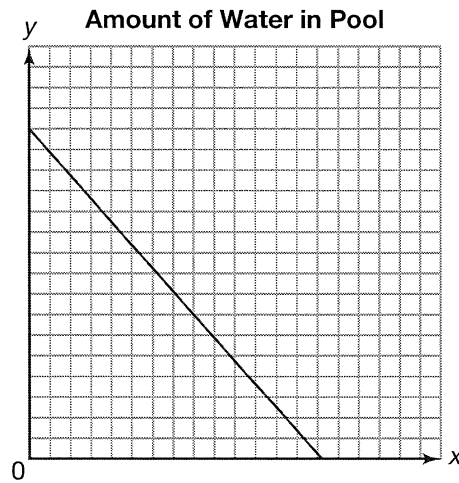
14. Natasha is filling the bathtub with water in order to give her dog Buster a bath. The faucet fills the tub at an average rate of 12 gallons per minute.



15. Marcus throws a football straight up into the air. After it reaches its maximum height of 20 feet, it descends back to the ground.

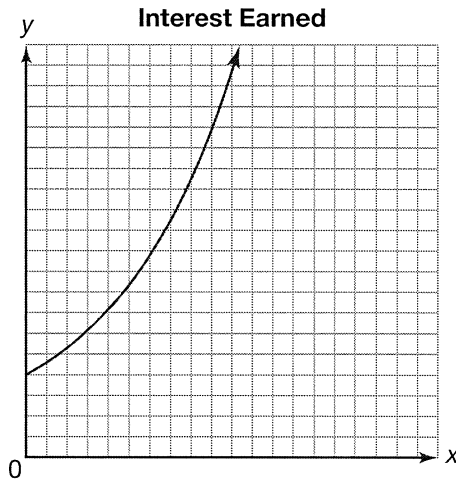


16. Chloe is using a pump to drain her backyard pool to get ready for winter. The pump removes the water at an average rate of 15 gallons per minute.



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17. Jermaine is saving money to purchase a used car. He places \$850 dollars in a savings account that earns 1.65% interest annually.



18. Zachary enjoys hiking. On the first day of his latest hiking trip, he hikes through flat terrain for about 8 miles. On the second day, he hikes through very steep terrain for about 3 miles. On the third day he hikes through some hilly terrain for about 6 miles.

