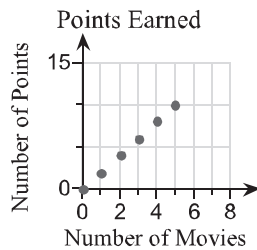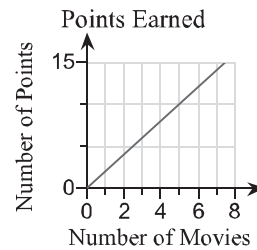Name _____ Class _____ Date _____

Practice 5-1

Graphing Proportional Relationships

1. An electronics store has a frequent shopper program. The buyer earns 4 points for every movie purchased. Which graph models this situation?
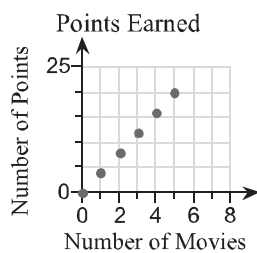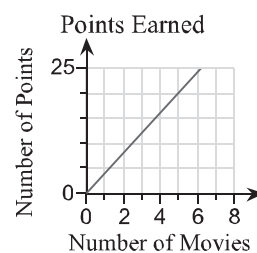
   ○ A.   Points Earned

   Number of Movies

   ○ C.   Points Earned

   Number of Movies

   ○ B.   Points Earned

   Number of Movies
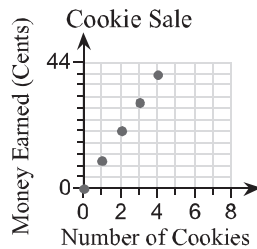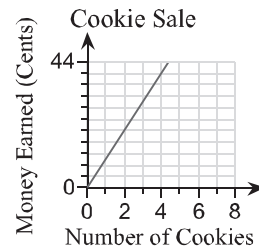
   ○ D.   Points Earned

   Number of Movies

2. A class is having a bake sale. The class earns 12 cents for each cookie sold.
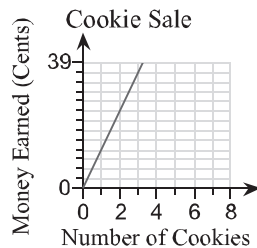
   a) Which graph models this situation?

   ○ A.   Cookie Sale

   Number of Cookies

   ○ C.   Cookie Sale

   Number of Cookies

   ○ B.   Cookie Sale

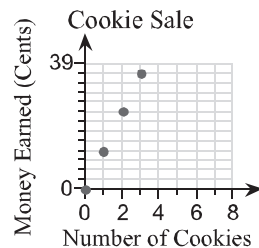   Number of Cookies

   ○ D.   Cookie Sale
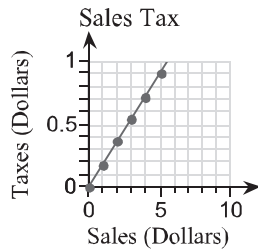
   Number of Cookies

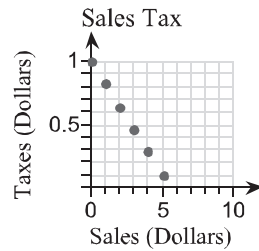   b) How many cookies does the class need to sell to earn 36 cents?

3. A clothing store has an 18% sales tax on all items purchased.
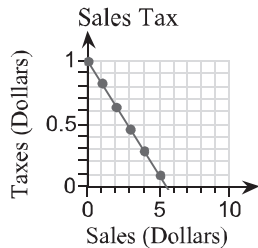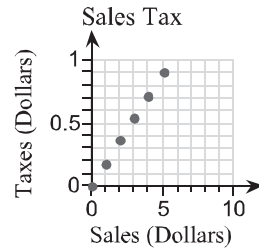
a) Which graph models this situation?

○ A.

Sales Tax

Taxes (Dollars) vs Sales (Dollars)

○ C.

Sales Tax

Taxes (Dollars) vs Sales (Dollars)

○ B.

Sales Tax

Taxes (Dollars) vs Sales (Dollars)
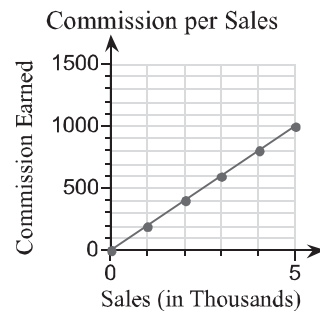
○ D.

Sales Tax

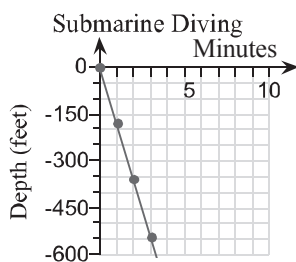Taxes (Dollars) vs Sales (Dollars)

b) Is the amount of taxes proportional to the purchase?

4. A salesperson earns a commission that is a percent of the sales. The graph shows the proportional relationship between sales and commission. What percent commission does the salesperson earn?
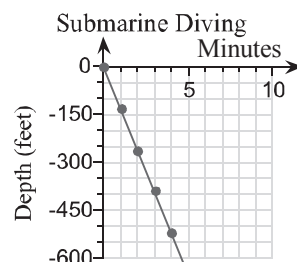
Commission per Sales

Commission Earned vs Sales (in Thousands)

5. A submarine dives at 130 feet per minute. Which graph models this situation? Start when the submarine is at sea level (0 feet).

○ A.

Submarine Diving
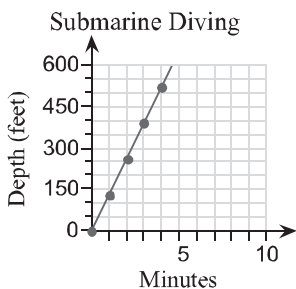
Depth (feet) vs Minutes

○ C.

Submarine Diving
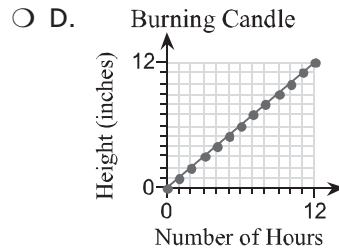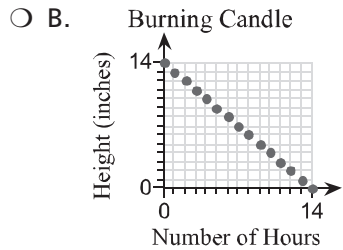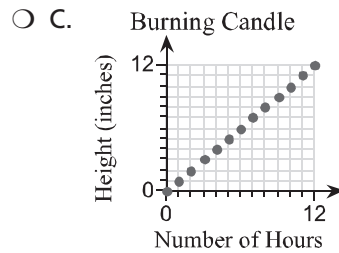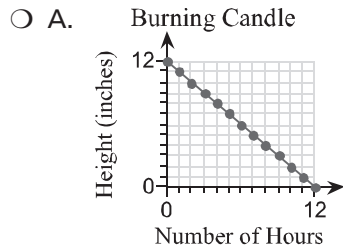
Depth (feet) vs Minutes

○ B.

Submarine Diving

Depth (feet) vs Minutes

6. A 12-inch candle burns at a rate of 1 inch per hour.

a) Which graph models this situation?

○ A.   Burning Candle

○ C.   Burning Candle

○ B.   Burning Candle

○ D.   Burning Candle

b) How long will the candle last?

7. Error Analysis A tree grows 5 inches each year. Angela is asked to find when the tree will be $1\frac{2}{3}$ feet tall. Angela incorrectly says 20 years.

a) Which graph models the situation?

○ A.   Tree Growth

○ C.   Tree Growth

○ B.   Tree Growth

○ D.   Tree Growth
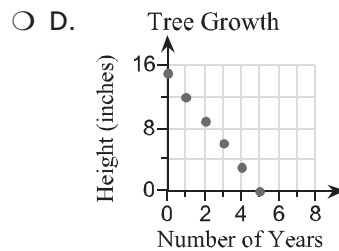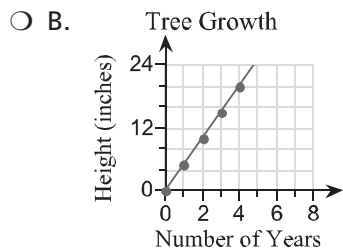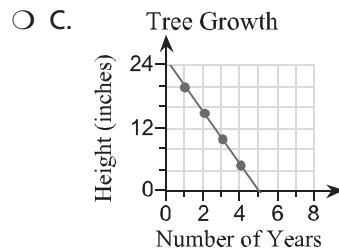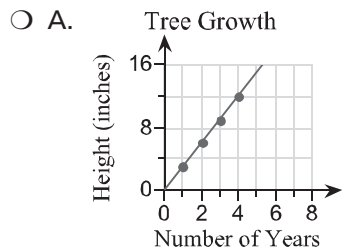
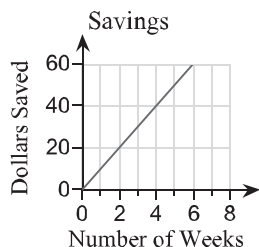**b)** How many years will it take for the tree to be $1\frac{2}{3}$ feet tall?

c) Which mistake might Angela have made?

○ A. Angela did not convert the height of the tree correctly.

○ B. Angela gave the height of the tree in inches not the number of years.

○ C. Angela gave the height of the tree in feet not the number of years.

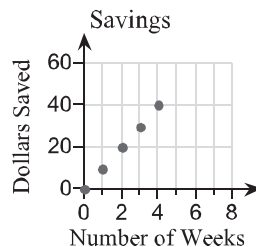○ D. Angela drew a graph with a negative relationship instead of a positive relationship.

8. **Mental Math** Leonid is saving for a video game. Leonid earns $350 a week but he saves $330 a week for other expenses.
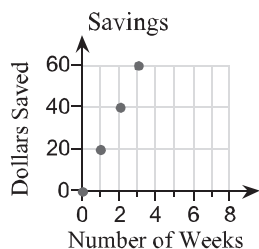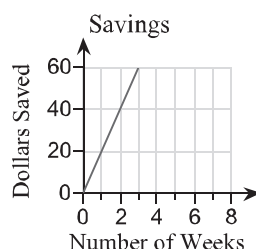
a) Which graph models the situation?

○ A.

Savings

Dollars Saved

60 —
40 —
20 —
0 —
0 2 4 6 8
Number of Weeks

○ C.

Savings

Dollars Saved

60 —
40 —
20 —
0 —
0 2 4 6 8
Number of Weeks

○ B.

Savings

Dollars Saved

60 —
40 —
20 —
0 —
0 2 4 6 8
Number of Weeks

○ D.

Savings

Dollars Saved
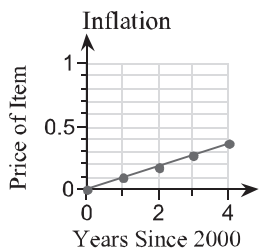
60 —
40 —
20 —
0 —
0 2 4 6 8
Number of Weeks

b) If the video game costs $60, how many weeks will it take before Leonid can afford the video game?
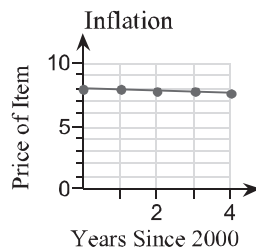
9. **Writing** The price of a certain clothing item in the year 2000 was $7.25. Due to inflation the price increased 9% each year.

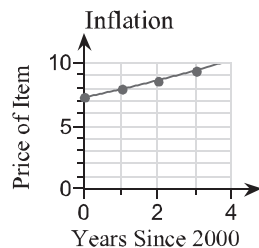a) Which graph represents the price of the item since 2000?

○ A.

Inflation

Price of Item

1 —
0.5 —
0 —
0 2 4
Years Since 2000

○ C.

Inflation

Price of Item

10 —
5 —
0 —
2 4
Years Since 2000

○ B.

Inflation

Price of Item

10 —
5 —
0 —
0 2 4
Years Since 2000

b) Is the relationship proportional? If the relationship is proportional what would make the relationship not proportional? If the relationship is not proportional what would make the relationship proportional?

10. **The Water Cycle** Suppose that for a certain lake the same percent of water that evaporates from it is replaced every time it rains. The graph models the proportional relationship between water evaporated and rainfall. What percent of water lost is replaced when it rains?
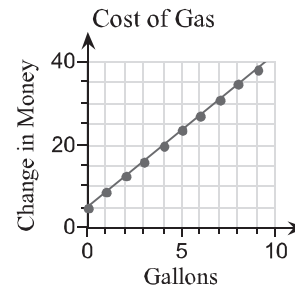
The Water Cycle
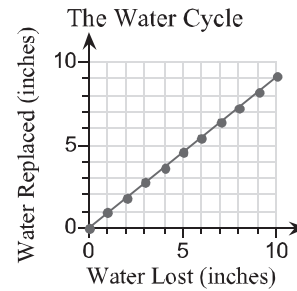
11. **Reasoning** Jimmy pays $3.69 for every gallon of gas he puts in his car. Which graph models the change in the amount of money Jimmy has?
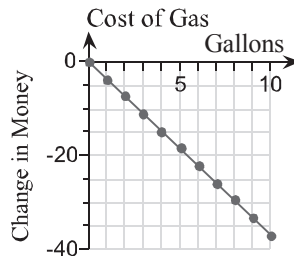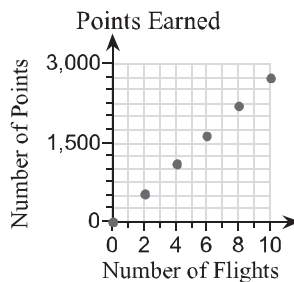
   ○ A.   Cost of Gas
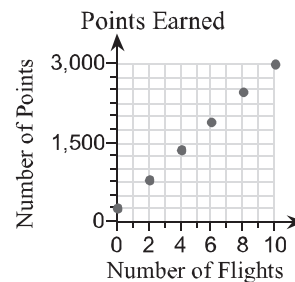

   ○ C.   Cost of Gas

   ○ B.   Cost of Gas
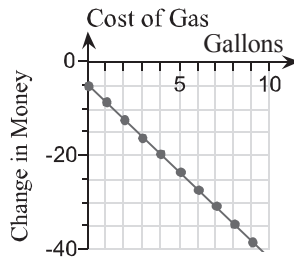
12. An airline company rewards the customers who fly often with a frequent flyer program. The airline will give their customers 550 points for every 2 flights that they take. Which graph models this situation?
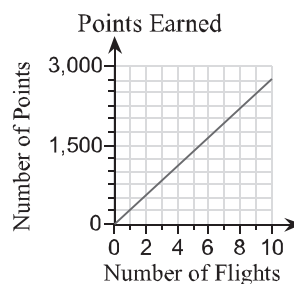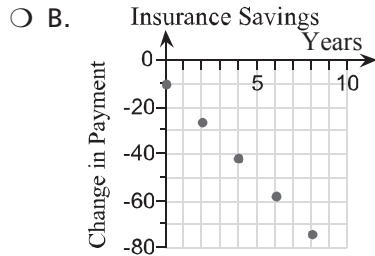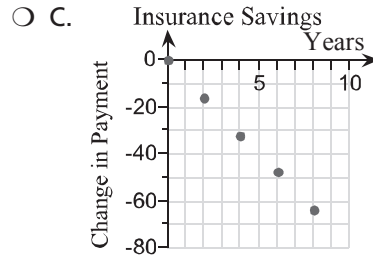
   ○ A.   Points Earned
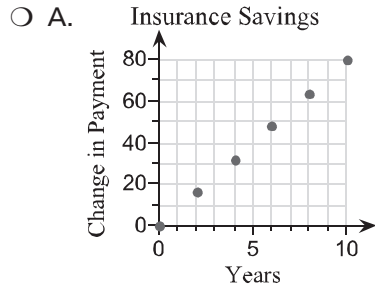

   ○ C.   Points Earned

   ○ B.   Points Earned

13. As an incentive to drive carefully, an insurance company lowers the cost of a driver's insurance by $16 a month every 2 years that the driver does not have an accident or get a speeding ticket.

a) Choose the graph that models the change in the amount of insurance.

○ **A.**

○ **C.**

○ **B.**

b) If the driver is currently paying $86 a month, how many years will it be before the driver is paying $54 a month?

14. Think About the Process A dry cleaning company charges $14 to clean and press 2 jackets.

a) Choose the correct graph of the relation below.

○ **A.**

○ **C.**

○ **B.**
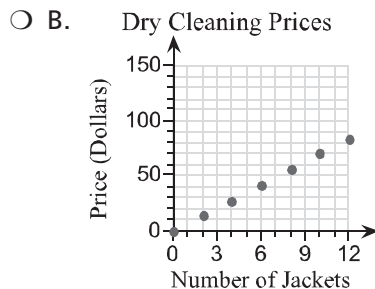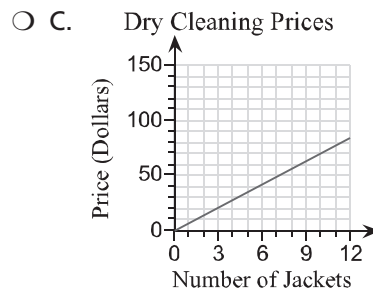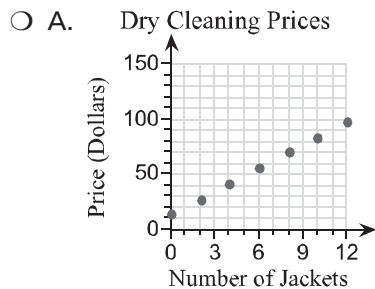
b) How can you find the cost to clean and press 4 jackets using a graph?

  ○ A. Locate 4 on the y-axis then move to the right to find the corresponding x-value.

  ○ B. Locate 4 on the x-axis then move down to find the corresponding y-value.

  ○ C. Locate 4 on the x-axis then move up to find the corresponding y-value.

  ○ D. Locate 4 on the y-axis then move to the left to find the corresponding x-value.
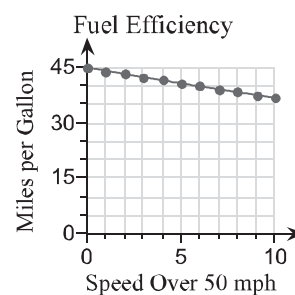
c) Find the cost to clean and press 4 jackets.

15. **Think About the Process** At the speed of 50 miles per hour (mph), a car's fuel efficiency is 45 miles per gallon (mpg) of gasoline. For every mile per hour over 50, the car loses 2% of its fuel efficiency.

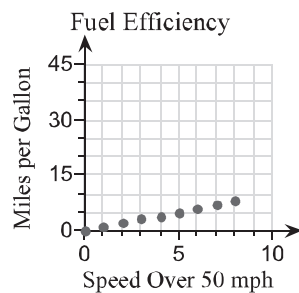**a)** Choose the correct graph of the situation below.

○ A.

Fuel Efficiency

○ C.

Fuel Efficiency

○ B.

Fuel Efficiency
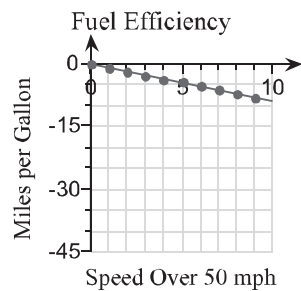
b) What is one way to tell if the graph represents a proportional relationship?

  ○ A. The graph will pass through the origin.

  ○ B. The graph will be a line.

  ○ C. The graph will be a curve not a line.

  ○ D. The graph will be a line that passes through the origin.

c) Is the change in the car's fuel efficiency proportional to the car's speed?

1. B
2. a) D
   b) 3
3. a) A
   b) Yes
4. 20%
5. C
6. a) A
   b) 12 hr
7. a) B
   b) 4 yr
   c) B
8. a) B
   b) 3 wk
9. a) B
   b) No
10. 91%
11. B
12. A
13. a) C
    b) 4
14. a) B
    b) C
    c) $28
15. a) C
    b) D
    c) No