

## Day 7 - Solving Equations

### Strategies

- Plug the numbers from the question into the equation and solve.  
or
- Guess and Check using the possible answers.

### examples

1. Given the formula  $A = 2B + C$ , if  $B = 40$  and  $C = -15$ , then find  $A$
2. Use the above equation to find  $C$  if  $A = 200$  and  $B = 40$ 
  - a. 50
  - b. 70
  - c. 80
  - d. 120
3. Solve for  $x$ :  $3x - 4 = x + 12$

## graphing

- Linear means it makes a straight line
- In a table, linear would increase by the same number.
- The steeper the slope, the faster
- Slope is rise over run

**OGT Preparation #7**

Name \_\_\_\_\_

**AL04 - Solving an Equation & AL07 - Interpreting a Graph or Table**

1. A telephone manufacturing company has determined that the cost of producing a certain type of telephone can be found by using the equation  $y = 42x + 2,000$ , where  $y$  is the production cost and  $x$  is the number of telephones produced. The company accountant calculates an average daily production cost of \$8,426. Approximately how many telephones does the company produce daily?

- A. 153      B. 248      C. 6,426      D. 355,892

2. Which equation is equivalent to  $3(2x - 5) = 4(x + 3)$ ?

- A.  $2x = -27$       B.  $2x = 27$       C.  $10x = -27$       D.  $10x = -3$

3. Pippi calculates her total earnings for the month with the equation  $E = 15m + 5b$ , where  $E$  is the total number of dollars she earns,  $m$  is the number of lawns she mows, and  $b$  is the number of hours she baby-sits. If Pippi mows 6 lawns, how many hours must she baby-sit to earn a total of \$200?

- A. 20      B. 22      C. 40      D. 45

4. Neal is selecting a new health club. The one he likes has monthly dues of \$24 and a start-up fee of \$400. He has determined that the equation  $y = 24x + 400$  can be used to find  $y$ , the total cost of being a member at the club based on the number of months,  $x$ . After how many months will Neal have spent exactly \$1,000 at this health club?

- A. 16      B. 25      C. 41      D. 58

5. A producer has \$2 million budgeted for costs related to filming a movie on location. She estimates the costs to be:  $c = \$108,000n + \$175,000$  where  $c$  = costs in dollars and  $n$  = number of days. What is the greatest number of days she can film on location and remain within the budget?

- A. 11 days      B. 16 days      C. 18 days      D. 20 days

6. Marcy and Troy disagreed about the answer to a problem. Marcy said that the equation they were working on had more than one solution. If Marcy is correct, on which of these equations could they have been working?

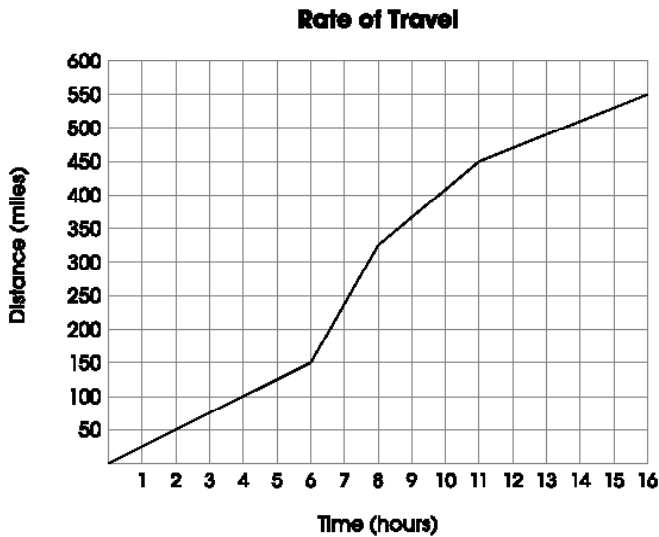
- A.  $2x + 4 = 3x + 4$       B.  $2x + 4 = 3x + 5$   
C.  $2x + 4 = 2(x + 2)$       D.  $2x + 4 = 2(x + 3)$

**PART 2**

7. Which pair of equations represents lines that are parallel and perpendicular, respectively, to the graph of  $y = \frac{-3}{4}x + 4$

- A.  $y = \frac{3}{4}x + 3$  and  $y = \frac{-3}{4}x + 5$       B.  $y = \frac{3}{4}x + 6$  and  $y = \frac{-4}{3}x + 2$   
 C.  $y = \frac{-3}{4}x + 5$  and  $y = \frac{3}{4}x + 4$       D.  $y = \frac{-3}{4}x + 8$  and  $y = \frac{4}{3}x + 1$

8. Travis went on a long trip. The graph below represents the relationship between distance and time.



During what interval was Travis' average rate of travel the fastest?

- A. 0 to 6      B. 6 to 8      C. 8 to 11      D. 11 to 16

9. Sheila collects the following statistics about baseball games played by the local Youth League team:

**Youth League Statistics**

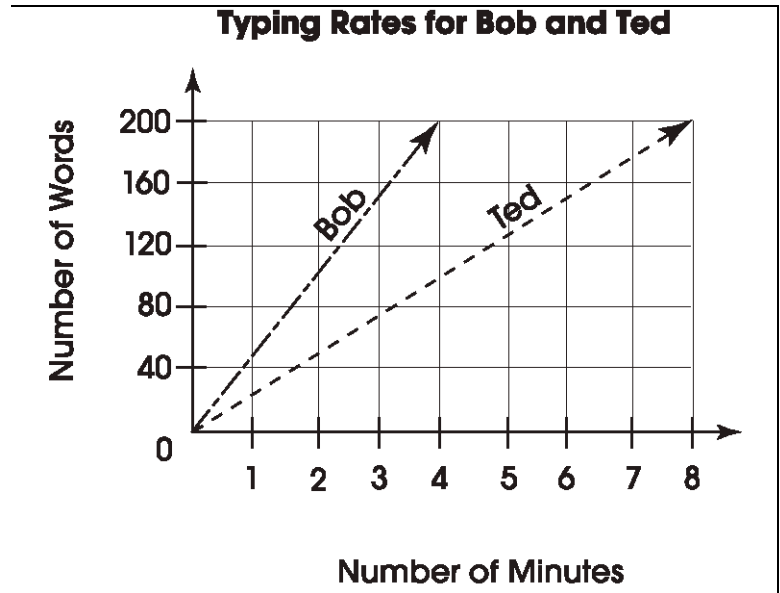
Year	Number of Wins	Average Number of Spectators Per Game	Average Number of Sodas Sold Per Game	Average Number of Hot Dogs Sold Per Game
1997	1	100	50	70
1998	3	160	70	90
1999	5	220	110	110
2000	7	280	180	130

Which statistic shows a non-linear rate of increase over time?

- A. number of wins      B. average number of spectators per game  
 C. average number of sodas sold per game      D. average number of hot dogs sold per game

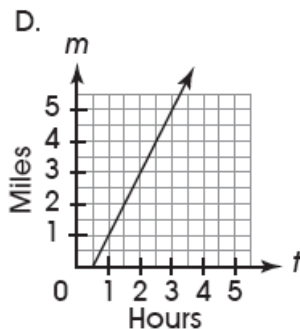
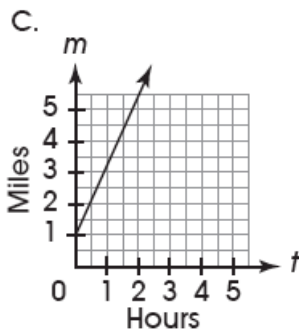
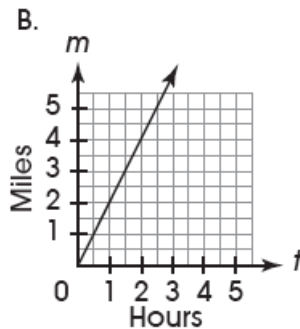
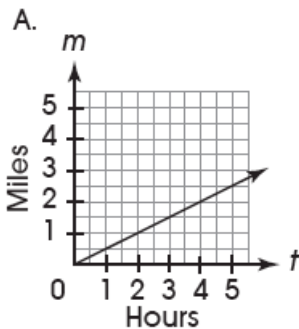
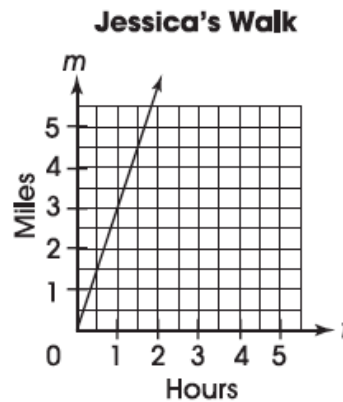
10. Ted and Bob each must type a 1,500-word research paper. The graph below represents their normal typing rates. Based on the information in the graph, which of these is a valid conclusion?

- A. Bob can type his research paper in half the time it takes Ted to type his paper.
- B. Ted can type his research paper in half the time it takes Bob to type his paper.
- C. Ted will take 4 minutes longer than Bob to type his research paper.
- D. Bob will take 4 minutes longer than Ted to type his research paper.

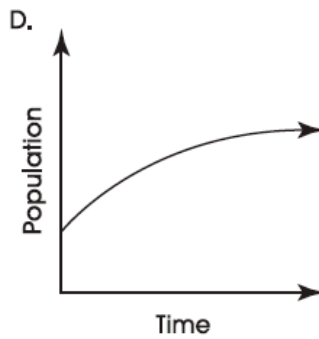
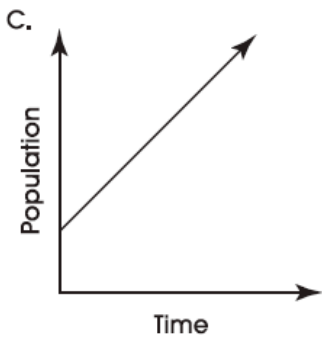
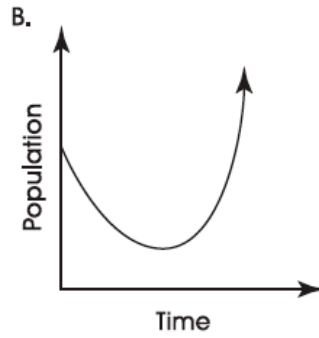
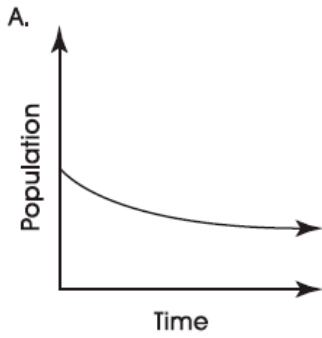


11. Jessica participated in a walk-a-thon to raise money for a local charity. She began walking at a rate of 3 miles per hour. The graph represents her distance walked as a function of time.

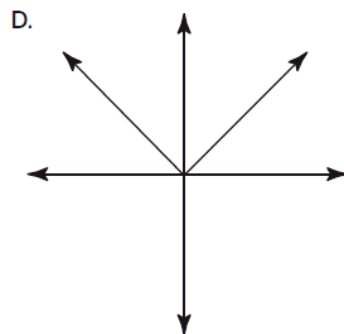
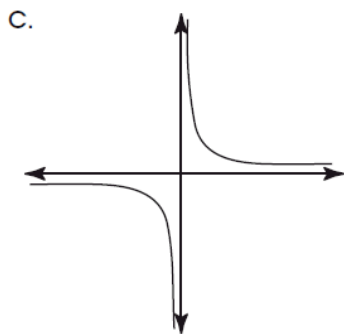
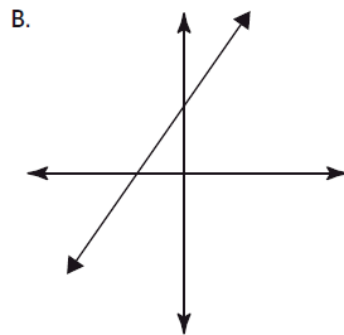
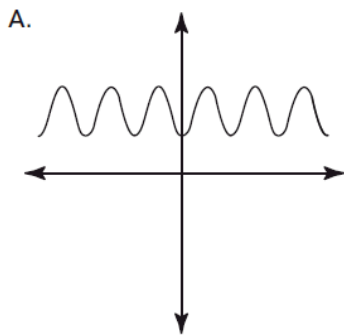
If Jessica had walked at an average rate of 2 miles per hour, which of the following accurately illustrates how this graph would appear, using the same scale?



12. Which graph represents a linear function?



13. Which graph represents a linear function?



1. A telephone manufacturing company has determined that the cost of producing a certain type of telephone can be found by using the equation  $y = 42x + 2,000$ , where  $y$  is the production cost and  $x$  is the number of telephones produced. The company accountant calculates an average daily production cost of \$8,426. Approximately how many telephones does the company produce daily?

- A. 153      B. 248      C. 6,426      D. 355,892

$$\begin{array}{r} 8426 = 42x + 2000 \\ -2000 \phantom{=} \\ \hline 6426 = 42x \end{array}$$

$$\begin{array}{r} 6426 = 42x \\ \underline{42} \phantom{=} \\ 153 = x \end{array}$$

2. Which equation is equivalent to  $3(2x - 5) = 4(x + 3)$ ?

- A.  $2x = -27$       B.  $2x = 27$       C.  $10x = -27$       D.  $10x = -3$

$$\begin{array}{r} 6x - 15 = 4x + 12 \\ -4x \phantom{=} \phantom{=} \\ \hline 2x - 15 = 12 \\ +15 \phantom{=} \\ \hline 2x = 27 \end{array}$$

3. Pippi calculates her total earnings for the month with the equation  $E = 15m + 5b$ , where  $E$  is the total number of dollars she earns,  $m$  is the number of lawns she mows, and  $b$  is the number of hours she baby-sits. If Pippi mows 6 lawns, how many hours must she baby-sit to earn a total of \$200?

- A. 20      B. 22      C. 40      D. 45

$$\begin{array}{r} 200 = 15(6) + 5b \\ 200 = 90 + 5b \\ -90 \phantom{=} \\ \hline 110 = 5b \\ \underline{5} \phantom{=} \\ 22 = b \end{array}$$

4. Neal is selecting a new health club. The one he likes has monthly dues of \$24 and a start-up fee of \$400. He has determined that the equation  $y = 24x + 400$  can be used to find  $y$ , the total cost of being a member at the club based on the number of months,  $x$ . After how many months will Neal have spent exactly \$1,000 at this health club?

- A. 16      B. 25      C. 41      D. 58

$$\begin{array}{r} 1000 = 24x + 400 \\ -400 \phantom{=} \\ \hline 600 = 24x \\ \underline{24} \phantom{=} \\ 25 = x \end{array}$$

5. A producer has \$2 million budgeted for costs related to filming a movie on location. She estimates the costs to be:  $c = \$108,000n + \$175,000$  where  $c$  = costs in dollars and  $n$  = number of days. What is the greatest number of days she can film on location and remain within the budget?

- A. 11 days      B. 16 days      C. 18 days      D. 20 days

$$\begin{array}{r} 2000000 = 108000n + 175000 \\ -175000 \phantom{=} \\ \hline 1825000 = 108000n \\ \underline{108000} \phantom{=} \\ 169 = n \end{array}$$

$$16.9 = n$$

6. Marcy and Troy disagreed about the answer to a problem. Marcy said that the equation they were working on had more than one solution. If Marcy is correct, on which of these equations could they have been working?

- A.  $2x + 4 = 3x + 4$       B.  $2x + 4 = 3x + 5$   
 C.  $2x + 4 = 2(x + 2)$       D.  $2x + 4 = 2(x + 3)$

$$2x + 4 = 2x + 4$$

all x's  
work.

**PART 2**

7. Which pair of equations represents lines that are parallel and perpendicular, respectively, to the graph of  $y = \frac{-3}{4}x + 4$

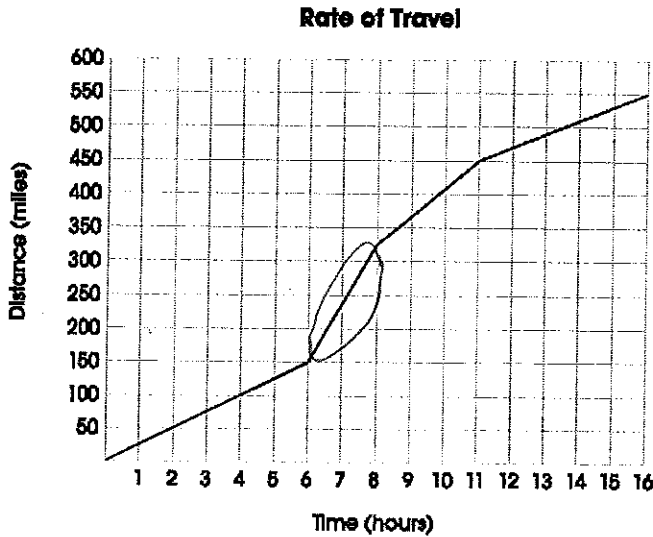
A.  $y = \frac{3}{4}x + 3$  and  $y = \frac{-3}{4}x + 5$

B.  $y = \frac{3}{4}x + 6$  and  $y = \frac{-4}{3}x + 2$

C.  $y = \frac{-3}{4}x + 5$  and  $y = \frac{3}{4}x + 4$

**D.**  $y = \frac{-3}{4}x + 8$  and  $y = \frac{4}{3}x + 1$

8. Travis went on a long trip. The graph below represents the relationship between distance and time.



During what interval was Travis' average rate of travel the fastest?

A. 0 to 6

**B. 6 to 8**

C. 8 to 11

D. 11 to 16

9. Sheila collects the following statistics about baseball games played by the local Youth League team:

**Youth League Statistics**

Year	Number of Wins	Average Number of Spectators Per Game	Average Number of Sodas Sold Per Game	Average Number of Hot Dogs Sold Per Game
1997	1	100	50	70
1998	3	160	70	90
1999	5	220	110	110
2000	7	280	180	130

Which statistic shows a non-linear rate of increase over time?

A. number of wins

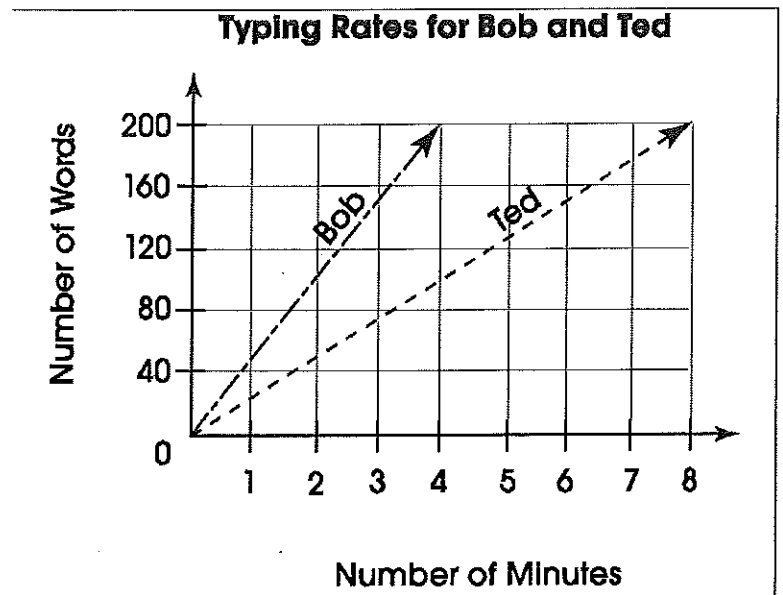
B. average number of spectators per game

**C.** average number of sodas sold per game

D. average number of hot dogs sold per game

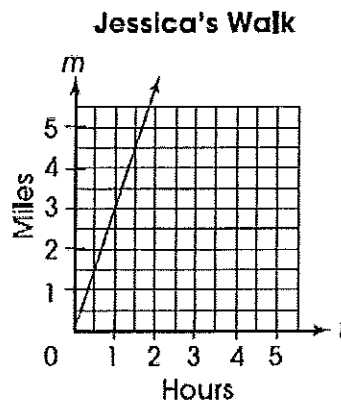
10. Ted and Bob each must type a 1,500-word research paper. The graph below represents their normal typing rates. Based on the information in the graph, which of these is a valid conclusion?

- A. Bob can type his research paper in half the time it takes Ted to type his paper.
- B. Ted can type his research paper in half the time it takes Bob to type his paper.
- C. Ted will take 4 minutes longer than Bob to type his research paper.
- D. Bob will take 4 minutes longer than Ted to type his research paper.



11. Jessica participated in a walk-a-thon to raise money for a local charity. She began walking at a rate of 3 miles per hour. The graph represents her distance walked as a function of time.

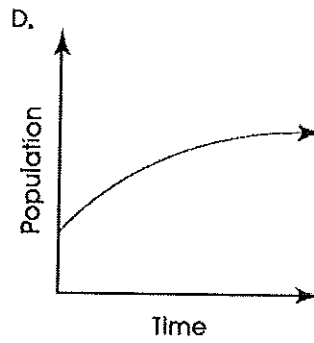
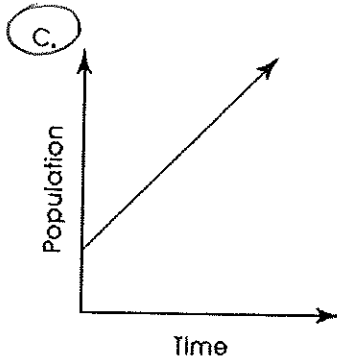
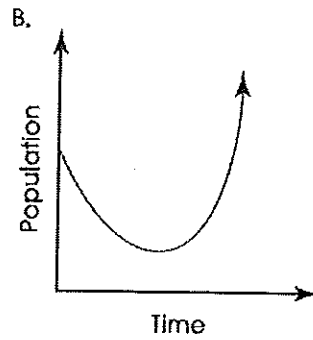
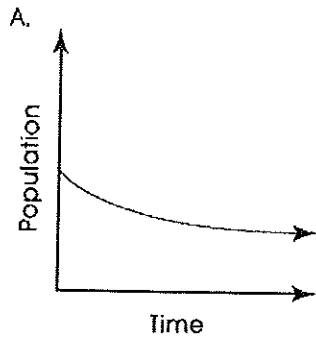
If Jessica had walked at an average rate of 2 miles per hour, which of the following accurately illustrates how this graph would appear, using the same scale?



- A.
- B.**
- C.
- D.



12. Which graph represents a linear function?



13. Which graph represents a linear function?

