Name:_____   Date:_____

8.F.4

_____1. The table below shows the cost of different numbers of goldfish at a pet store. (2014)

COST OF GOLDFISH

Number of Goldfish	Cost
5	$1.50
10	$3.00
15	$4.50
20	$6.00

The cost is a linear function of the number of goldfish. Which statement describes the rate of change of this function?

    A. The cost increases $0.30 each time 1 goldfish is added.

    B. The cost increases $1.50 each time 1 goldfish is added.

    C. The cost increases $3.00 each time 5 goldfish are added.

    D. The cost increases $6.00 each time 5 goldfish are added.

_____2. The cost to rent a paddleboat at the city park includes an initial fee of $7.00, plus $3.50 per hour. Which equation models the relationship between the total cost, y, and the number of hours, x, that the paddleboat is rented?   (2015)

    A. $y = 3.5x + 7$ B. $y = 7x + 3.5$ C. $y = \frac{x}{7} + 3.5$ D. $y = \frac{x}{3.5} + 7$

_____3. A crane is lowering a concrete block from a height of 270 feet above the ground at a constant rate of 2.5 feet per second. Which function can be used to determine h, the height, in feet, above the ground of the concrete block after s seconds?   (2016)

    A. $h = 270s + 2.5$ B. $h = 2.5s + 270$ C. $h = 270 - 2.5s$ D. $h = 2.5s - 270$

_____4. A car traveled 36 miles in 45 minutes. The car traveled at a constant speed. If the car continues to travel at this rate, which equation can be used to determine y, the total number of miles the car will travel, in x hours?   (2017)

    A. $y = 48x$ B. $y = x + 48$ C. $48y = x$ D. $48 + y = x$

_____5. Linear function K passes through points (-3, 7) and (3, 3). What is the rate of change of function K? (2021)
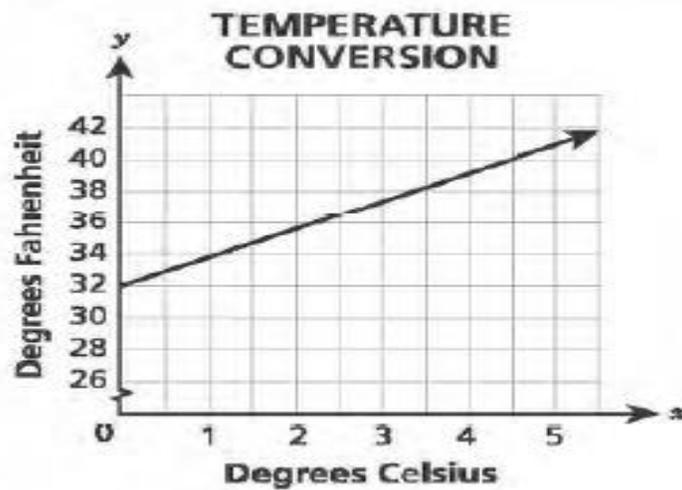
A. $-\dfrac{3}{2}$ B. $-\dfrac{2}{3}$ C. $\dfrac{3}{2}$ D. $\dfrac{2}{3}$

_____6. The relationship between temperature in degrees Fahrenheit and degrees Celsius is shown in the graph below.   (2016)   (no calculator)

TEMPERATURE CONVERSION

What is the meaning of the y-intercept?

A. the change in degrees Fahrenheit for every change of one degree Celsius
B. the change in degrees Celsius for every change of one degree Fahrenheit
C. the temperature in degrees Fahrenheit when the temperature is zero degrees Celsius
D. the temperature in degrees Celsius when the temperature is zero degrees Fahrenheit

_____7. Ms. Gibson made an initial deposit of $500 when opening a bank account. After the initial deposit, she deposited the same amount of money each month. The table below shows the total amount of money, a , she deposited into the account after a certain number of months, t , since opening it.   (2017) no calculator

Number of Months (t)	Total Amount Deposited (a)
4	$1,500
8	$2,500
10	$3,000
13	$3,750

Which equation models the relationship between a and t ?

A. $a = 250t$ B. $a = 500t$ C. $a = 250t + 500$ D. $a = 500t + 250$

_____8. At a factory, the cost of making different numbers of toothbrushes is shown in the
table below.   (2019 and 2021)

COST OF TOOTHBRUSHES

Number of Toothbrushes	3	6	9	12
Cost (dollars)	$4.50	$9.00	$13.50	$18.00

A linear function models the cost based on the number of toothbrushes made. Which
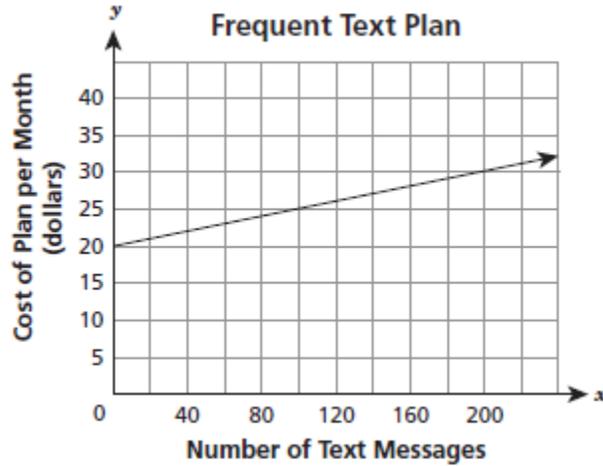statement about the rate of change of this function is true?

A. The cost increases by $1.50 for each additional toothbrush made.
B. The cost increases by $4.50 for each additional toothbrush made.
C. The cost increases by $9.00 for each additional 3 toothbrushes made.
D. The cost increases by $18.00 for each additional 3 toothbrushes made

_____9. Alex opened a savings account with an initial deposit of $50 . Each month, he deposits the
same amount of money. He uses the equation t = 50 + 25m to determine t, the total amount of
money in his savings account in m months. What is the unit rate and what is the meaning of
the unit rate?   (2022)

A. 25 ; the amount of money Alex deposits each month
B. 50 ; the amount of money Alex deposits each month
C. 25 ; the amount of money Alex initially deposited
D. 50 ; the amount of money Alex initially deposited

10. A customer is comparing two different text message plans at Cellular Bargains. He wants to find out which plan allows the most text messages for the same cost. (2015)

The Pay Per Text Plan charges $10 per month and $0.10 for each text message. Write a function that models this plan, stating what your variables represent.

Answer _____

The Frequent Text Plan is modeled by the graph shown below.

Frequent Text Plan

Cost of Plan per Month (dollars)

40
35
30
25
20
15
10
5

0   40   80   120   160   200

Number of Text Messages

How many text messages would result in the same cost per month for the two plans?
Show your work.

Answer _____ text messages

11. Tim is selling tickets to a school sporting event to raise money for his club. He put some extra money in his box before he began. As he sells tickets, he records the number of tickets he has sold and the total amount of money in the box. Some of his data are shown below. (2016)

Total amount of money from ticket sales

Number of tickets sold	Total money in box (dollars)
7	108.75
13	146.25
18	177.50

Assuming all the tickets are the same price, write an equation that represents the situation in the table. Explain how to use your equation to determine the amount of money originally in the box before any tickets were sold and the price of each ticket.

Show your work.

Answer _____

_____

_____

_____

12. The values in the table below lie on the graph of a linear function. (2017)

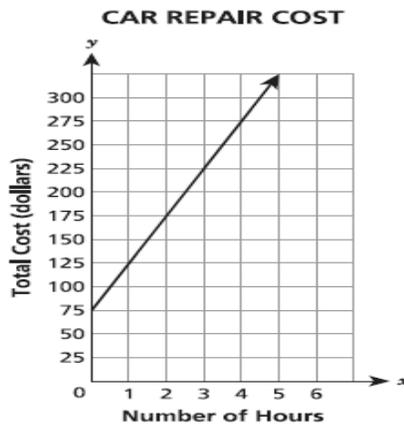What equation represents his linear function?

Show your work

x	y
0.25	1.00
0.50	1.75
0.75	2.50

Answer: _____

13. Line *n* passes through points (-3, -7.5) and (2, -5). Tahlia determined that the equation of the line *n* is y= 0.5x.   Explain the error Tahlia made while determining her equation. Be sure to include the correct equation in your explanation.   (2018)

   Answer

   _____

   _____

   _____

14. A car repair shop charges an hourly rate plus a pickup and delivery fee. The graph below represents the relationship between the total cost of the repair, including pickup and delivery fee, and the number of hours it takes the shop to complete the repairs.   (2019)

   CAR REPAIR COST

   What equation represents this linear function?
   Show your work.

   Equation _____

15. A camper lights an oil lantern at 12 noon and lets it burn continuously. Once the lantern is lit, the lantern burns oil at a constant rate each hour. At 2 p.m., the amount of oil left in the lantern is 63 ounces. At 5 p.m., the amount of oil left in the lantern is $61\frac{1}{2}$ ounces. Based on the average rate of oil burning per hour, how much oil, in ounces, was in the lantern at 12 noon?   (2022)

   Show your work.

   Answer _____ ounces