TEST NAME:**Functions EOG Review**
TEST ID:**2429974**
GRADE:**08 - Eighth Grade**
SUBJECT:**Mathematics**
TEST CATEGORY:**My Classroom**

1. **The following ordered pairs (x, y) define the relation Q. Is Q a function?**

$$\{(-2, 1), (-1, 2), (1, 1), (2, -1)\}$$

   A. Yes, because there is exactly one y-value for every x-value.
   B. Yes, because there is exactly one x-value for every y-value.
   C. No, because there is more than one x-value for some y-values.
   D. No, because there is more than one y-value for every x-value.

2. **In which set of ordered pairs, (x, y), is y NOT a function of x?**

   A. $\{(7, 10), (10, 7)\}$

   B. $\{(7, 10), (5, 10)\}$

   C. $\{(5, 7), (7, 5), (7, 10)\}$

   D. $\{(5, 5), (7, 7), (10, 10)\}$

3. **Which equation BEST represents the relationship between x and y in the table below?**

x	1	2	3	4	5
y	6	9	14	21	30

   A. $y = 2x + 5$

   B. $y = 3x + 3$

   C. $y = x^2 + 5$

   D. $y = 2x^2 - 4$

4. Alice compared the graphs of two functions.

- The first function was $y = 3x + 4$.
- The second function fits the values in the table below.

x	y
2	17
5	32
8	47
11	62

What is the distance between the *y*-intercepts of the two functions?

A. 1

B. 2

C. 3

D. 4

5. Which function has a greater rate of change than the function that passes through the points given in the table below?

x	y
4	2
6	3
8	4
10	5
12	6

A. $3x - 5y = 25$

B. $7y - 3x = 14$

C. $y = 1 + \dfrac{1}{2}x$

D. $y = ^-1 + \dfrac{1}{4}x$

6. Use Function S and Function T to answer the question.

Function S

x	y
−6	−4
−2	2
2	8
6	14

Function T

$y = 4x + 6$

Which statement is true about the Functions S and T?

A. The slope of Function S is equal to the slope of Function T.

B. The slope of Function S is steeper than the slope of Function T.

C. The slope of Function S is not as steep as the slope of Function T.

D. The relationship between the slopes of Functions S and T cannot be determined.

7. Rhoda and James both sell laptops and earn commission based on the number of laptops sold. In one month, Rhoda earns $2000 in commission for selling 10 laptops and has a base salary of $600. The money James earns for selling laptops in the same month is shown in the graph below.

COMMISSION EARNED BY JAMES

Which of these statements is **true** of the money Rhoda and James earn for selling laptops?

A. Rhoda earns $10 more than James for selling 10 laptops during the month.

B. James earns $500 more than Rhoda for selling 10 laptops during the month.

C. James earns $50 more in commission than Rhoda for each laptop sold.

D. Rhoda earns $600 more in commission than James for each laptop sold.

8. **Which equation BEST represents the data in the function table?**

x	y
–3	10
–1	2
0	1
2	5

A. $y = x^2 + 1$

B. $y = x^2 + 2$

C. $y = x^2 - 1$

D. $y = x^2 - 3$

9. **Which graph BEST represents the equation** $y = 10 - 2x?$

A.

B.

C.

D.
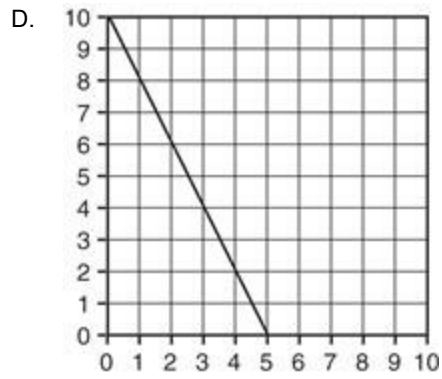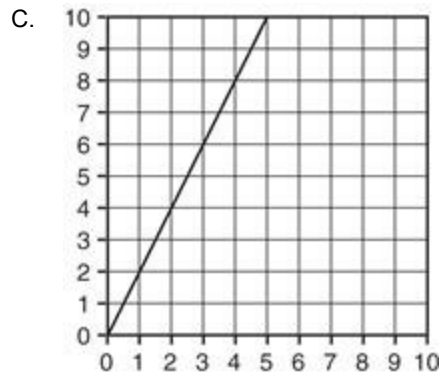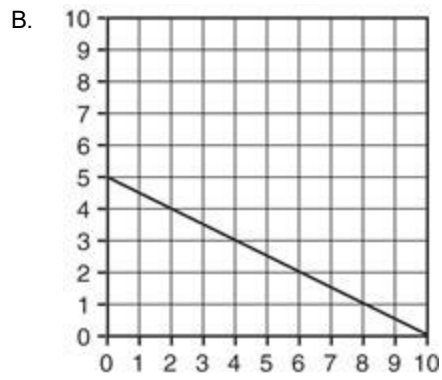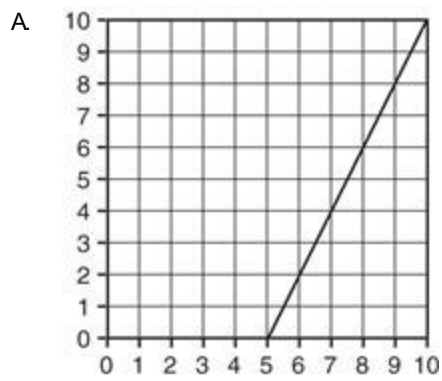
10. Pete's Plumbing charges a flat fee of $28 for a house call and inspection and an additional $35 per hour for any onsite work. Which table represents a cost function with a greater hourly rate than these charges?

A.

Hours Worked	Total Charge (in dollars)
3	109
5	163
7	217

B.

Hours Worked	Total Charge (in dollars)
3	136
5	208
7	280

C.

Hours Worked	Total Charge (in dollars)
6	174
9	261
12	348

D.

Hours Worked	Total Charge (in dollars)
6	209
9	296
12	383

11. Sean and Julie are landscapers. Each person charges a one-time fee plus an hourly fee. Sean uses the equation $y = 20x + 30$ to determine the charge, y, in dollars for working x hours. Julie uses this table to determine the charge, y, for working x hours.

Charges for Julie

Number of Hours Worked	0	1	2	3	4
Total Charge in Dollars	26	48	70	92	114

Which statement is true for these two landscapers?

A. Sean charges a greater one-time fee because the equation shows a greater rate of change than the table.

B. Julie charges a greater one-time fee because the table shows a greater rate of change than the equation.

C. Sean charges a greater one-time fee because the equation shows a greater y-intercept than the table.

D. Julie charges a greater one-time fee because the table shows a greater y-intercept than the equation.

12. **Which function is NOT linear?**

A. $f(x) = -3$

B. $f(x) = \frac{x}{4}$

C. $f(x) = 2x + 1$

D. $f(x) = -\frac{1}{x}$

13. **Which equation represents a linear function?**

A. $y = \frac{1}{x}$

B. $y = 2x - 3$

C. $y = 5x^3 + 8$

D. $y = x^2 + 2x + 1$

14. Use Equations I, II, and III to answer the question.

Equation I | Equation II | Equation III
$$y = 3^2x + 5 \qquad y = 3x^2 + 5 \qquad y = 3x + 5^2$$

Which equation(s) defines a linear function?

A. Equation I only

B. Equation II only

C. Equations I and III

D. Equations II and III
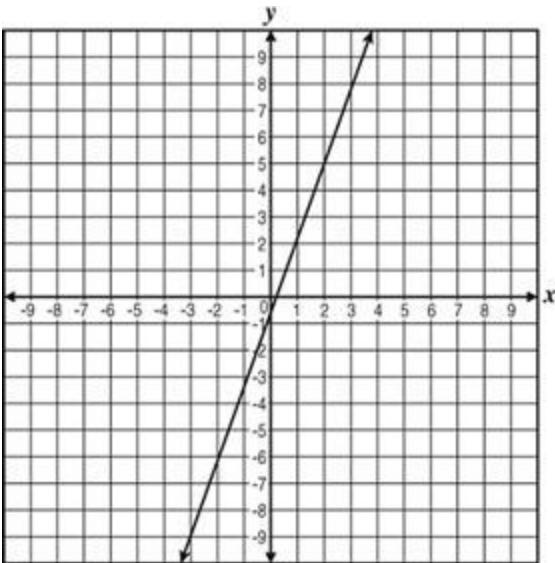
15. **Which equation represents a nonlinear function?**

A. $y = \frac{1}{2}x - 5$

B. $2y = \frac{1}{2}x + 5$

C. $3y = \frac{1}{2}x + 5$

D. $4y = \left(\frac{1}{2}\right)^x - 5$

16. In which choice do all the points lie on the same line?

A. (0, ⁻2), (1, ⁻1), (2, 2), (3, 7)

B. (0, 0), (1, 1), (2, 4), (3, 9)

C. (0, 0), (1, 1), (2, 8), (3, 27)

D. (0, 0), (1, 2), (2, 4), (3, 6)

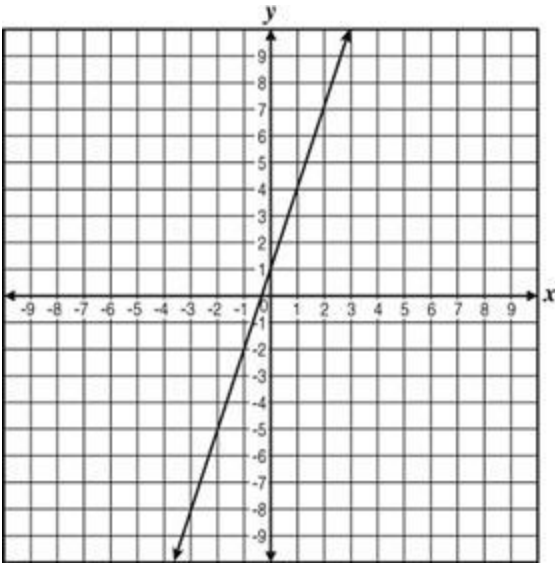**17.** **Which representation corresponds to the equation $y = 3x + 1$?**

A.

B.

x	y
−1	4
0	1
1	−2

C.

D.

x	y
2	−2
3	1
4	4

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18. **The library fine in dollars, *F*, for an overdue book is $0.25 plus $0.10 per day for each day the book is overdue. Which of the following number sentences gives the fine for a book that is *n* days overdue?**

A. $F = 0.25 + 0.10n$

B. $F = 0.25 + 0.10 + n$

C. $F = 0.25n + 0.10$

D. $F = 0.25n + 0.10n$

19. **Allison works as a baby-sitter and makes $4.00 an hour. So far, she has earned $32.00 from her baby-sitting jobs. If she continues to baby-sit, which equation represents the relationship between her total earnings (*y*) and the number of additional hours she baby-sits (*x*)?**

A. $y = 32x + 4$

B. $y = 32 + x + 4$

C. $y = 32 \times 4 \times x$

D. $y = 4x + 32$

20. **Mr. Gilmore sells furniture. He earned $210 for selling 3 sofas. Mr. Gilmore earned $570 for selling 11 sofas. Which of the following equations represents this situation, where *s* represents the number of sofas Mr. Gilmore sold and *e* represents the amount he earned?**

A. $e = 45s$

B. $e = 70s$

C. $e = 45s + 75$

D. $e = 70s + 75$

21. **Line *l* passes through the point $(-4, -3)$ and has a slope of $-\frac{1}{4}$. What is the equation of Line *l* in standard form?**

A. $4x + y = -16$

B. $4x + y = -19$

C. $x + 4y = -16$

D. $x + 4y = -19$

22. In an *xy*-coordinate system, Line *l* has a slope of –3. If the points (2, 16) and (5, *t*) are on Line *l*, what is the value of *t*?

A. 7

B. 15

C. 17

D. 25

23. What is the slope of the line that contains Points $(-3, -5)$ and $(2, 7)$?

A. -2

B. $-\frac{1}{2}$

C. $\frac{5}{12}$

D. $\frac{12}{5}$

24. The table below contains a list of ordered pairs.

x	y
–2	7
–1	4
0	1
1	–2
2	–5

Which equation represents the relationship between *x* and *y*?

A. $y = -3x + 1$

B. $y = -3x - 1$

C. $y = 3x - 1$

D. $y = 3x + 1$

25. Mr. Morales sells memberships to a fitness club. He earned $250 for selling 5 memberships. Mr. Morales earned $425 for selling 10 memberships. Which of the following equations represents this situation, where *m* represents the number of memberships Mr. Morales sold and *e* represents the amount he earned?

A. $e = 50m + 75$

B. $e = 35m + 75$

C. $e = 50m$

D. $e = 35m$

26. **Mr. Shaw sells used cars. He earned \$250 for selling 5 cars. Mr. Shaw earned \$400 for selling 11 cars. Which of the following equations represents this situation, where *c* represents the number of cars Mr. Shaw sold and *e* represents the amount he earned?**

A. $e = 25c$

B. $e = 50c$

C. $e = 25c + 125$

D. $e = 50c + 125$

27. **Water started to flow out of two water tanks at the same time. One water tank originally contained 140 gallons of water and the other tank originally contained 160 gallons of water. The graph below shows that the two tanks had the same amount of water 3 hours after the water loss began.**

Water Tanks
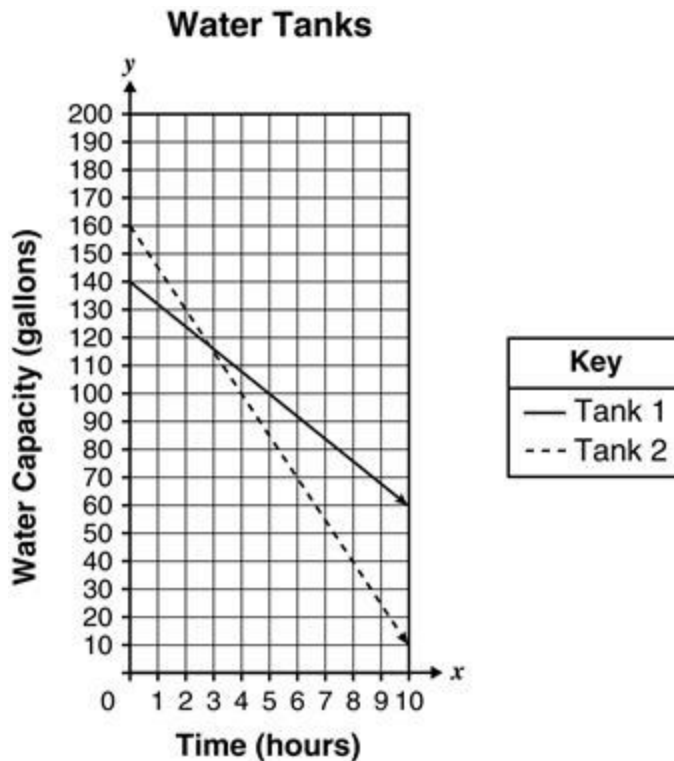
Which statement is true about the slope of the lines on the graph?

A. Tank 1 is losing water at a rate of 8 gallons per hour.

B. Tank 2 is losing water at a rate of 8 gallons per hour.

C. Tank 1 is losing water at a rate of 140 gallons per hour.

D. Tank 2 is losing water at a rate of 160 gallons per hour.

28. **Which equation represents the relationship between *m* and *d* on the chart below?**

m	2	4	6	8
d	$\frac{1}{3}$	$\frac{2}{3}$	1	$1\frac{1}{3}$

A. $d = 0.06m$

B. $d = \frac{1}{6}m$

C. $d = 0.6m$

D. $d = 6m$

29. **Which correctly describes the slope of the graph $x = 3$ in the *xy* plane?**

A. The slope is zero.

B. The slope is positive.

C. The slope is negative.

D. The slope is undefined.

30. **What is the slope of the graph of $x - 2y = 8$?**

A. 0

B. $\frac{1}{2}$

C. 2

D. $-\frac{1}{2}$

31. **Which table of values for x and y satisfies the equation $y = 6x \div 2$?**

A.

x	y
6	3
10	5
12	6

B.

x	y
2	4
4	5
6	6

C.

x	y
3	20
4	26
5	32

D.

x	y
4	12
5	15
7	21

32. **The maker of a new light bulb guarantees it will last longer than a regular light bulb. The table shows the number of hours that three regular and three new light bulbs in three different lamps, A, B, and C will last.**

Lamp	Regular Light Bulb Hours, R	New Light Bulb Hours, N
A	150	240
B	90	144
C	210	336

Which expression represents the number of hours the new light bulb, N, will last compared to the regular bulb, R?

A. $R = \dfrac{1.6}{N}$

B. $N = \dfrac{1.6}{R}$

C. $N = 1.6 \times R$

D. $R = 1.6 \times N$

33. **The table below shows the number of dogs Sonya groomed in one day.**
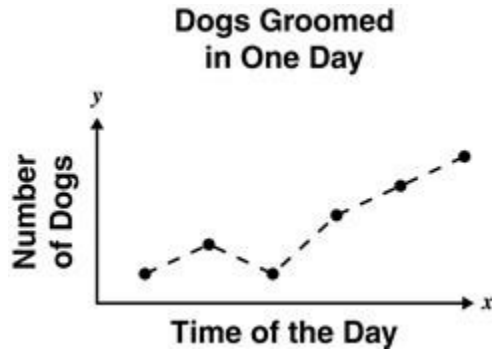
Dogs Groomed in One Day

Time of Day	Dogs Groomed
8:00– 9:00	0
9:00–10:00	1
10:00–11:00	2
11:00–12:00	0
12:00–1:00	0
1:00–2:00	1
2:00–3:00	3
3:00–4:00	4

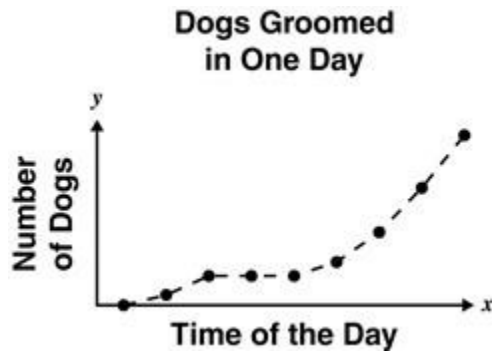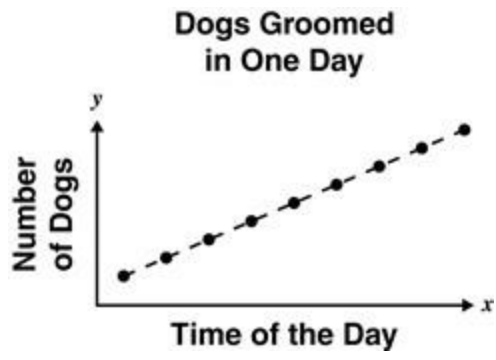**Which graph BEST represents the relationship between these times and the number of dogs groomed?**
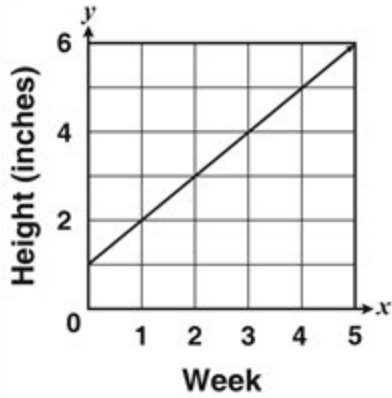
A.

Dogs Groomed in One Day

B.

Dogs Groomed in One Day

C.

Dogs Groomed in One Day

D.

Dogs Groomed in One Day

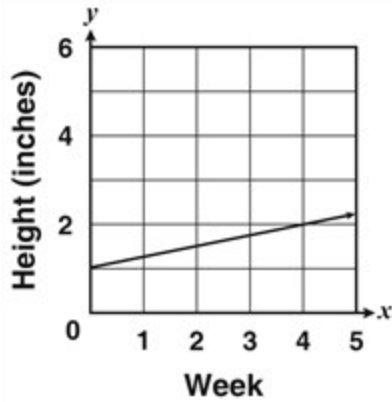Number of Dogs (y-axis)

Time of the Day (x-axis)
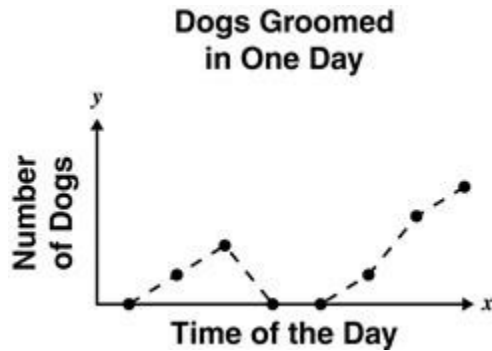
34. **Which of the following graphs BEST represents a 1-inch plant that grows $\frac{1}{4}$-inch taller each week?**
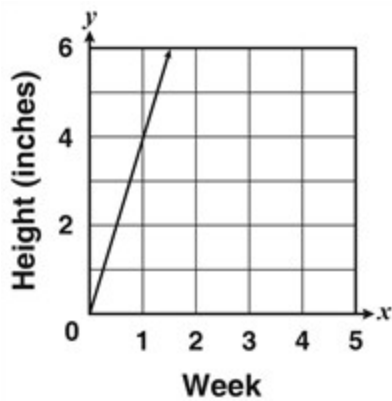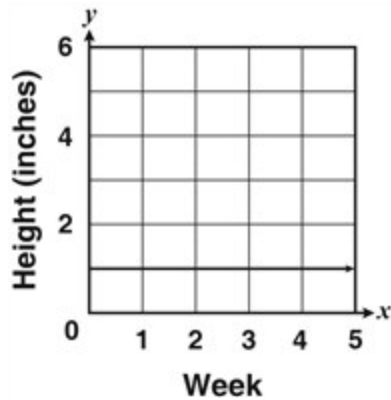
A.

B.

C.

D.

35. **Which represents a linear function?**

A. $y = x^2 - 3$

B. $y = 4x^3$

C. $y = \frac{3}{4}x - 2$

D. $y = 2^x + 1$