Math I – Practice EOC – Version A
Name:
Date:
Class:

1. Which choice is equivalent to $16^{\frac{1}{3}}$?

   A. $\sqrt[3]{16}$
   B. $\sqrt{16^3}$
   C. 16^{-3}
   D. $16^{-\frac{1}{3}}$

2. Which expression is equivalent to $(48x^6y^8z)^{\frac{1}{3}}$?

   A. $2x^2y^2 \cdot \sqrt[3]{6y^2z}$
   B. $8x^2y^2 \cdot \sqrt[3]{6y^2z}$
   C. $16x^2y^2 \cdot \sqrt[3]{y^2z}$
   D. $144x^{18}y^{24}z^3$

3. Jose rode his bike 326 inches in 1 second. **About** how fast was Jose riding his bike? (Note: 1 mile = 5,280 feet)

   A. 0.3 miles per hour
   B. 3.7 miles per hour
   C. 18.5 miles per hour
   D. 27.2 miles per hour

4. In which set of points is y a function of x?

   A. $\{(1, 1), (2, 7), (^-5, 2), (8, 3), (1, 10)\}$
   B. $\{(8, 3), (7, 3), (^-3, 3), (12, 3), (10, 3)\}$
   C. $\{(^-1, 4), (^-1, 6), (^-1, 8), (^-1, 10), (^-1, 12)\}$
   D. $\{(0, 5), (8, ^-4), (6, 14), (^-6, ^-6), (8, 4)\}$

5. What is the value of $g\left(-\frac{1}{3}\right)$ for the function $g(x) = \frac{5x+2}{3}$?
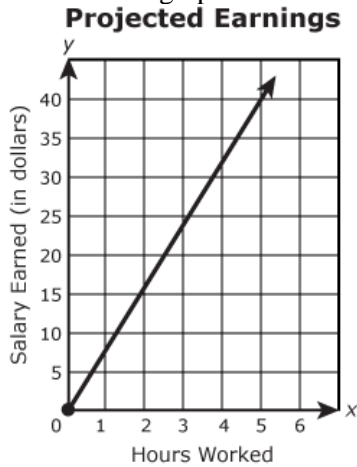
   A. $^{-13}/_3$
   B. $^1/_9$
   C. 1
   D. $^{17}/_3$

6. What is the value of f(-2) for the function f(x) = 2(3)^x?

   A. -12
   B. $^1/_{18}$
   C. $^2/_9$
   D. 18

7. Lee uses the graph of the function f(x) to express his projected earnings at his new job.

Projected Earnings

Hours Worked

Which best describes what f(x) = 40 means in this problem?

    A. the hours Lee will work per week
    B. the hourly rate Lee will be paid at his new job
    C. the amount of money in dollars Lee will earn for working 5 hours
    D. the amount of money in dollars Lee will earn for working 8 hours

8. The graph below shows the relationship between the height of a ball (in meters), y, thrown into the air and the time (in seconds), x.

**Height of a Ball vs. Time**

Time (seconds)
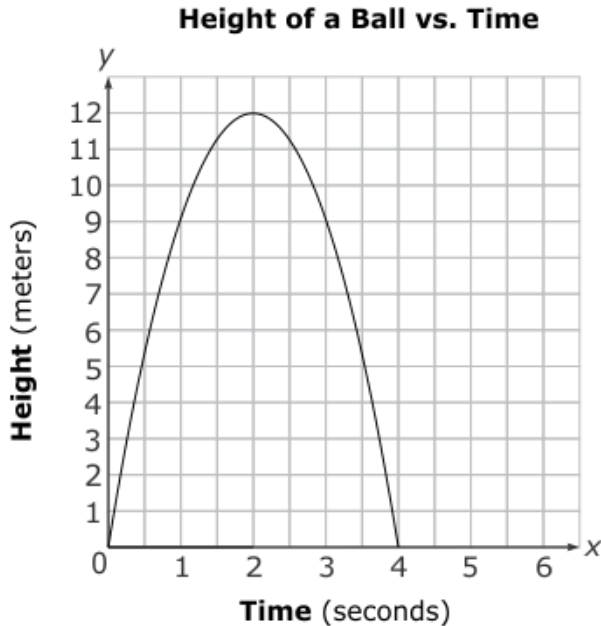
Which statement best describes the height of the ball?
    A. The maximum height is 2 meters.
    B. The maximum height is 4 meters.
    C. The height is increasing for 2 seconds.
    D. The height is increasing for 4 seconds.

9. Molly observed the number of eggs her chickens laid and found that the number of eggs can be modeled by e(c) = $3^{(c-1)}$, where c is the number of chickens Molly owns. Which best describes the domain of the function?

   A. all positive real numbers, representing the number of eggs
   B. all positive real numbers, representing the number of chickens
   C. all positive whole numbers, representing the number of eggs
   D. all positive whole numbers, representing the number of chickens

10. The graph below shows the total number of fish that a fisherman caught over a 5-week time period.
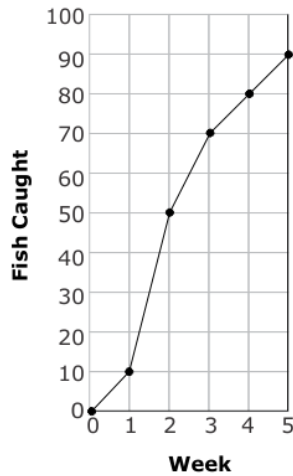
   What was the average rate of change in the number of fish caught per week between weeks 2 and 5?

   A. about 13 fish per week
   B. about 18 fish per week
   C. about 32 fish per week
   D. about 40 fish per week

11. Which function has a minimum at the point ($^-$2, $^-$3)?

   A. y = (x − 2)^2 − 3
   B. y = (x − 2)^2 + 3
   C. y = (x + 2)^2 + 3
   D. y = (x + 2)^2 − 3

12. Which equation when graphed is an exponential decay function with a y-intercept of 3?

   A. f(x) = 3(1.15)^{2x}
   B. f(x) = 3(0.85)^{2x}
   C. f(x) = 2(1.15)^{3x}
   D. f(x) = 2(0.85)^{3x}

13. The function h(x) = $^-$16x^2 + 72x models the height of a football x seconds after it was kicked off the ground. How long does it take for the ball to hit the ground?

   A. 0 seconds
   B. 2.25 seconds
   C. 4.5 seconds
   D. 9 seconds

14. The function $f(x) = 1.69(1.03)^x$ models the value of an investment, in thousands, after x years. What is the yearly interest rate the investment is earning?

  A. 3%   C. 69%
  B. 31%   D. 97%

15. Jenna compared the minimum of the function, $f(x) = x^2 + 2x + 4$ to the minimum of the function graphed below.
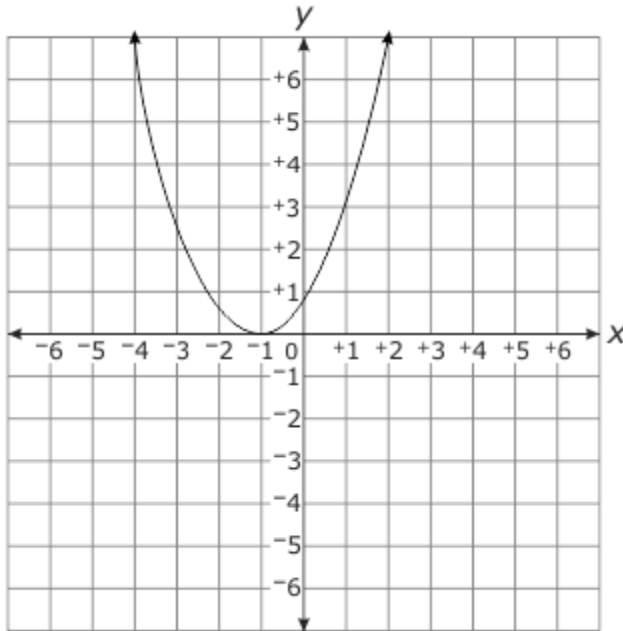
   What is the difference between the minimum values of the two functions?
      A. 2
      B. 3
      C. 4
      D. 5

16. Jill is saving money. She starts with $150. She plans to add $30 to her savings every week. Which recursive formula models the amount of money Jill has saved?

      A. NOW = NEXT + 30, starting at 150
      B. NOW = NEXT + 150, starting at 30
      C. NEXT = NOW + 30, starting at 150
      D. NEXT = NOW + 150, starting at 30

17. The number of bacteria in a science experiment doubles in size every 30 minutes. At 1:30 p.m., there were 2 bacteria in the sample. How many bacteria were in the sample at 4:30 p.m.?

      A. 14 bacteria   C. 128 bacteria
      B. 64 bacteria   D. 256 bacteria

18. Matthew invested $100. The sequence below shows the value of the investment at the end of the first 5 years.

$$\$110.00, \$121.00, \$133.10, \$146.41, \$161.05$$

Which recursive formula could be used to model the sequence?

A. $\text{NEXT} = 1.1 \cdot \text{NOW}$

B. $\text{NEXT} = 0.1 \cdot \text{NOW}$

C. $\text{NEXT} = 100 \cdot (1.10)^{\text{NOW}}$

D. $\text{NEXT} = 110 \cdot (1.10)^{\text{NOW}}$

19. The function $f(x) = 2(3)x$ was replaced with $f(x) + k$, resulting in the function graphed below.
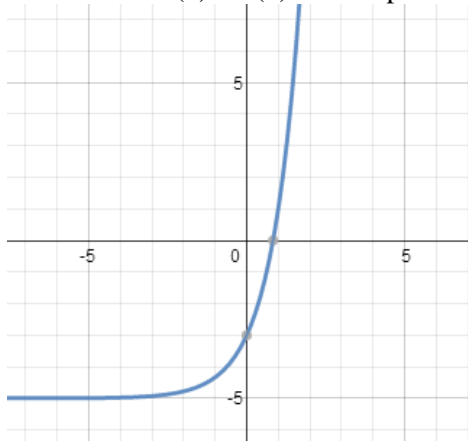
What is the value of k?

A. 1

B. -3

C. -5

D. -2

20. The function $f(x) = 1.5^x + 4$ was translated 2 units to the right and 3 units up resulting in the function $g(x)$. Which function represents $g(x)$?

A. $g(x) = 1.5^{(x + 2)} + 7$

B. $g(x) = 1.5^{(x - 2)} + 7$

C. $g(x) = 1.5^{(x + 3)} + 6$

D. $g(x) = 1.5^{(x + 3)} + 2$

21. A scientist studying a population of birds discovered that the number of birds doubled every year. Which function would *best* represent this situation?

A. linear function with a growth rate of 200% every year

B. linear function with a growth rate of 100% every year

C. exponential function with a growth rate of 200% every year

D. exponential function with a growth rate of 100% every year

22. A cupcake shop had $55,000 in sales in the year 1990. In the year 2000, the shop had $105,000 in sales. Assuming a linear relationship, which function models the amount of sales the shop had x years after 1990?

A. $f(x) = 5{,}000x + 55{,}000$

B. $f(x) = 5{,}000x + 105{,}000$

C. $f(x) = 55{,}000x + 105{,}000$

D. $f(x) = 105{,}000x + 55{,}000$

23. To calculate the charge for a load of bricks, including delivery, the Pine Ridge Brick Company uses the function $c = 0.42b + 25$, where c is the charge and b is the number of bricks. What is the meaning of the coefficient of b?

A. the delivery charge per load   C. the total cost of the bricks
B. the total delivery charge   D. the cost per brick

24. Which expression is equivalent to $2x^2 + 7x - 30$?

     A. $(2x - 5)(x + 6)$ C. $(2x + 5)(x - 6)$
     B. $(2x - 3)(x + 10)$ D. $(2x + 3)(x - 10)$

25. Which expression is equivalent to $y^2 - 25$?

     A. $(y - 5)(y - 5)$ C. $(y - 25)(y - 1)$
     B. $(y - 5)(y + 5)$ D. $(y - 25)(y + 5)$

26. What are the zeros of the function defined by $x^2 - 16$?

     A. $^-16$ and 1   C. $^-4$ and 4
     B. $^-8$ and 2   D. $^-2$ and 8

27. A rectangular flower garden has a length of 2x + 3 and a width of 3x + 8. What is the area of the garden?

     A. $5x^2 + 16x + 11$ C. $5x^2 + 11$
     B. $6x^2 + 25x + 24$ D. $6x^2 + 24$

28. A rectangle has a perimeter of 52 inches. The length of the rectangle is 4 inches more than its width. What is the length of the rectangle?

     A. 11 inches   C. 15 inches
     B. 13 inches   D. 19 inches

29. Wanda is 7 years older than Tom, and Mary is 4 years older than Wanda. The sum of all their ages is greater than 36 years. Which inequality represents Wanda's age, w?

     A. $w > 13$ C. $w > 11$
     B. $w < 13$ D. $w < 11$

30. Sam buys a van that costs $25,200. The value of the van depreciates at a rate of 7% every year. Which equation can be used to calculate the value of the van, V, after x years?

     A. $V = 25,200(1.93)^x$ C. $V = 25,200(0.93)^x$
     B. $V = 25,200(1.07)^x$ D. $V = 25,200(0.70)^x$

31. Trevor is making two types of bracelets.
    - Each Type P bracelet needs 12 inches of leather and 3 inches of string.
    - Each Type Q bracelet needs 4 inches of leather and 18 inches of string.
    - Trevor has 5 yards of leather and 6 yards of string.
    - x equals the number of Type P bracelets Trevor makes.
    - y equals the number of Type Q bracelets Trevor makes.

    Which system of equations models the constraints on the number of bracelets Trevor can make?

A. $12x + 4y \leq 180$
    $3x + 18y \leq 216$
    $x \geq 0$
    $y \geq 0$

B. $12x + 3y \leq 180$
    $4x + 18y \leq 216$
    $x \geq 0$
    $y \geq 0$

C. $12x + 4y \leq 5$
    $3x + 18y \leq 6$
    $x \geq 0$
    $y \geq 0$

D. $12x + 3y \leq 5$
    $4x + 18y \leq 6$
    $x \geq 0$
    $y \geq 0$

32. What is the value of G if $H = \frac{2G}{m} - x$?

A. $G = \frac{m(x-H)}{2}$

B. $G = \frac{m(x-H)}{2}$

C. $G = 2m(x - h)$

D. $G = 2m(x + h)$

33. A book store sells used books.
- Paperback books cost $1.00.
- Hardback books sell for $5.00.
- The store sold 100 books and made $260 from the sale.

How many paperback books did the store sell?

A. 20

B. 40

C. 60

D. 80

34. The sum of two positive numbers is 45. The difference between the numbers is 9. What is the value of the larger number?
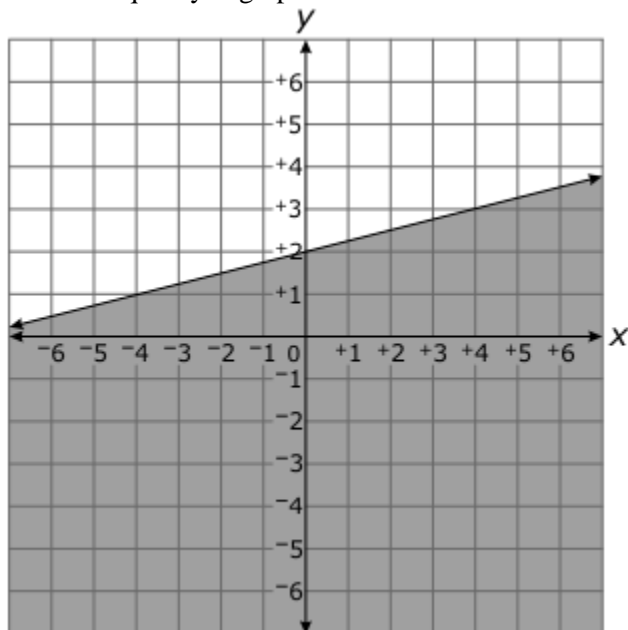
A. 9

B. 18

C. 27

D. 36

35. Which point lies on the graph of $2x - y = {}^-1$?

A. $({}^-4, 7)$

B. $({}^-3, 5)$

C. $(1, 3)$

D. $(2, 1)$

36. Which inequality is graphed below?

A. $4y - x \le {}^-8$

B. $4y + x \le {}^-8$

C. $x + 4y \ge {}^-8$

D. $x - 4y \ge {}^-8$

37. A farmer wants to fill cylinder container halfway with grain. The container has a diameter of 20 feet and a height of 45 feet. What is the *approximate* volume of the grain the farmer wants to put in the container?

A. 7,068 ft^3 C. 28,274 ft^3
B. 14,137 ft^3 D. 56,548 ft^3

38. The vertices of a quadrilateral are located at W(–3, 2), X(3, 2), Y(–5, –1), and Z(2, –1). Which is true about the quadrilateral?

A. WX = YZ   C. WX // YZ
B. WY = XZ   D. WY // XZ

39. Michelle has graphed line M with the equation 5x – 3y = –9. She wants to graph line N so that it passes through (–1, 6) and is parallel to line M. Which is a correct equation for line N?

A. 5x – 3y = -23   C. 3x + 5y = 27
B. 3x + 5y = 13   D. 5x – 3y = 33

40. A map is drawn on a coordinate grid. The post office is located at (–1, 4) and a school is located at (–5, 6). A bus stop is located halfway between the post office and the school. Where is the bus stop located on the map?

A. (-1.5, 0.5)   C. (-3, 5)
B. (-2, 1)   D. (-6, 10)

41. John and Audrey recorded how many texts they sent each day for 10 days in the table below.
Number of Texts

John	23	34	21	17	12	54	38	75	44	46
Audrey	42	23	33	28	48	49	45	65	24	38

Which statement is true?
A. John's data has a greater interquartile range than Audrey's data.
B. Audrey's data has a greater interquartile range than John's data.
C. John's data has a greater median than Audrey's data.
D. The median is the same for both sets of data.

42. Carter played a video game. His scores were 113, 117, 101, 97, 104, and 110. The next time he played the game, Carter had a score of 198. How does Carter's last score affect the display of the data?
A. It causes the display to become skewed left.
B. It causes the display to become skewed right.
C. It causes the display to become more peaked at the center.
D. It does not change the display of the data.

43. Mrs. Moore's class researched the relationship between grade level and support for school uniforms. The results are shown in the frequency table below.

	For Uniforms	Against Uniforms	No Opinion
9th Grade	24	21	15
10th Grade	13	30	7
11th Grade	14	9	8
12th Grade	19	22	19

Which grade level has the highest percentage of students for uniforms?
   A. 9th grade
   B. 10th grade
   C. 11th grade
   D. 12th grade

44. The relative frequency table below shows the results of a survey that explored college plans of 150 high school seniors who had committed to a college.

	2-Year College	4-Year College
Males	0.24	0.26
Females	0.12	0.38

How many more males than females were committed to a 2-year college?
   A. 12
   B. 18
   C. 24
   D. 36

45. A set of data is shown in the table below.

x	y
1	12.6
2	15.4
3	18.5
5	24.2
6	27.4

Assuming a linear relationship, what is the predicted value of y when x = 4?
   A. 19.4
   B. 20.4
   C. 21.4
   D. 22.4

46. A scientist recorded the amount of rainfall during a storm. The scientist used the equation $y = -0.97x + 11.20$ to model the relationship between y, the amount of rainfall in millimeters, and x, the amount of time, in minutes, after the storm started. The actual amount of rainfall after 7 minutes was 5.20 millimeters. How does that data point compare with the amount of rainfall that the model predicts?

   A. The actual rainfall after 7 minutes was 4.41 millimeters less than the amount of rainfall that the model predicts.
   B. The actual rainfall after 7 minutes was 0.79 millimeters less than the amount of rainfall that the model predicts.
   C. The actual rainfall after 7 minutes was 0.79 millimeters more than the amount of rainfall that the model predicts.
   D. The actual rainfall after 7 minutes was 4.41 millimeters more than the amount of rainfall that the model predicts.

47. The table below shows the number of residents in a neighborhood who received new water meters over several weeks.

Weeks (w)	0	1	2	3	4
Number of Residents (R)	8	15	29	54	102

What is the meaning of the y-intercept of a linear model for the data?
   A. the initial number of residents with meters
   B. the initial rate at which residents received meters
   C. the maximum number of residents that received meters
   D. the rate of change in the number of residents that received meters

48. The table below shows the number of calories burned per hour by a person running at different speeds.

Speed (mph)	2	3	4	5	6
Calories Burned	213	345	460	510	675

Using a line of best fit, what does the slope represent?
   A. the average number of calories burned per hour as the speed increases by 1 mph
   B. the average number of calories burned per hour as the speed decreases by 1 mph
   C. the average number of calories burned per hour as the speed remains constant
   D. the average number of calories burned per hour if no exercise takes place

49. The table below shows the number of songs Jennifer owned at different amounts of time after she purchased a music player.

Month (x)	Total Songs Owned (y)
1	7
2	16
3	17
4	27
5	29
6	34

Based on a line of best fit, what is the **approximate** correlation coefficient of the data?
   A. 0.98   C. -0.96
   B. 0.96   D. -0.98

50. Which **best** describes the linear correlation between the x and y values displayed in the table below?

x	y
⁻12	19
⁻10	⁻15
⁻8	12
9	⁻6
15	⁻8
35	5

   A. Strong and positive   C. Strong and negative
   B. Weak and positive   D. Weak and negative