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

1. Which expression is equivalent to $36\frac{1}{2}$?

A.
$$6^2$$

B. $36 \cdot \frac{1}{2}$
C. $\sqrt{36}$
D. $\sqrt{6}$

- 2. Which expression is equivalent to $(48x^5y^4)^{\frac{1}{3}}$?
 - A. $\sqrt[3]{48x^5y^4}$ B. $2xy\sqrt[3]{6x^2y}$ C. $16xy\sqrt[3]{x^2y}$ D. $45x^2y$
- 3. Cameron rode his bike at an average speed of 6 feet per second. What was Cameron's **approximate** average speed in miles per hour? (Note: 1 mile = 5,280 feet)

A.	8.8 mph	С.	4.1 mph
B.	4.9 mph	D.	3.7 mph

- 4. In which choice is *y* **not** a function of *x*?
 - A. (2, -3), (-2, 3), (3, -2), (-3, 2) B. (-2, 3), (-3, 4), (-4, 5), (-5, 6) C. (3, -2), (-3, 2), (3, -3), (2, -2) D. (1, -1), (-1, 2), (2, -3), (-3, 4)

5. What is the value of
$$f\left(\frac{2}{3}\right)$$
 for the function $f(x) = \frac{2x-5}{3}$?

A. ${}^{19}/_{9}$ C. ${}^{-2}/_{3}$ B. ${}^{-1}/_{3}$ D. ${}^{-11}/_{9}$

6. When
$$f(x) = -4\left(\frac{1}{2}\right)^{-x}$$
, what is f(2)?
A. -64
B. -16
C. -4
D. -1

7. A function f(x) is graphed below.



When is f(x) < 0?

A.
$$x < 0$$

B. $x < 0$ or $x > 2$

C.
$$x < -2$$
 or $x > 2$
D. $-2 < x < 2$

8. What is the minimum value of the function graphed below?



A.	5	С.	1
B.	3	D.	-4

9. The function $f(x) = 5,500(0.65)^x$ models the value of a car x years after the car was purchased. What is the appropriate domain for this function?

A.	x > 0	C. $x < 0$
B.	$x \ge 0$	D. $x \leq 0$

10. Which expression is equivalent to the average rate of change of the function f(x) over the interval [4, 9]?

A.
$$\frac{f(4) - f(9)}{4 - 9}$$

B. $\frac{4 - 9}{f(4) - f(9)}$
C. $\frac{4 + 9}{f(4) + f(9)}$
D. $\frac{f(4) + f(9)}{4 + 9}$

- 11. What is the y-intercept of the graph of $y = 100(2)^{x} 5$?
 - A. (0, -5)C. (0, 95)B. (0, 45)D. (0, 195)
- 12. The function $h(t) = -16t^2 + 64t$ models the height, in feet, of a ball *t* seconds after it was kicked into the air. Which statement is true?
 - A. The ball reaches its maximum height 4 seconds after it was kicked.
 - B. The ball reaches its maximum height 8 seconds after it was kicked.
 - C. The ball takes 2 seconds to hit the ground.
 - D. The ball takes 4 seconds to hit the ground.
- 13. The function $f(t) = 24,500(0.84)^t$ models the population of a town *t* years after 2008. What rate is the population of the town decreasing each year?

A.	16%	C.	75.5%
B.	24.5%	D.	84%

- 14. The function $f(x) = 220,567(0.78)^x$ models the population of Parkersville *x* years after 1990. Which *best* describes the population of Parkersville?
 - A. The population is increasing by 22% each year.
 - B. The population is increasing by 78% each year.
 - C. The population is decreasing by 22% each year.
 - D. The population is decreasing by 78% each year.

15. Jason compared the function $f(x) = 20(1.2)^x$ to the function that fits the values in the table below.

х	1	2	3	4	5	
g(x)	12	24	48	96	192	

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

A.	14	С.	6
B.	8	D.	4

16. Shelly compared the maximum value of the function $f(x) = -2x^2 + 8x + 2$ to the maximum value of g(x) graphed below.



What is the value of the larger maximum?

A.	2	C.	9
B.	3	D.	10

17. Which context *best* matches the recursive equation NEXT = NOW + 5?

- A. the population of sea bass in 5 year's time
- B. the speed of a bike traveling at 5 miles per hour
- C. the number of students at a basketball game, increasing by 5 students every minute
- D. the time it takes a person to run a marathon, decreasing by 5 minutes each marathon
- 18. A population of rabbits doubles in size every 6 months. There were initially 5 rabbits in the population. How many rabbits will be in the population after 4 years?

A.	400 rabbits	С.	2,540 rabbits
B.	1,280 rabbits	D.	5,000 rabbits

19. The recursive formula NEXT = 3 • NOW models the number of goldfish in a pond each year. If there are 36 goldfish in the pond after 3 years, how many goldfish will be in the pond after 6 years?

A.	324	C.	972
B.	936	D.	2,916

20. The function $f(x) = 3^x$ underwent a translation resulting in the function $g(x) = 3^{(x+2)}$. Which describes the translation that resulted in g(x)?

A.	a shift up 2 units	C.	a shift left 2 units
B.	a shift down 2 units	D.	a shift right 2 units

21. The graph of f(x) = (1/5)x - 3 was translated up 5 units resulting in the graph of g(x) = (1/5)x + k.. What is the value of *k*?

A.	5	C.	2
B.	-3	D.	5

- 22. Aaron is studying a population of insects to see how they are increasing over time. He finds that there are two more insects each day. Assuming this pattern continues, what type of function will represent the total population after t weeks?
 - A. linear function with a positive slope
 - B. linear function with a negative slope
 - C. exponential growth function
 - D. exponential decay function
- 23. A car company uses the equation $V = 22,500(0.76)^t$ to predict the value of a car after *t* years. What does 0.76 represent in the equation?
 - A. The value of the car is decreasing by 76% each year.
 - B. The value of the car is decreasing by 24% each year.
 - C. The value of the car is increasing by 76% each year.
 - D. The value of the car is increasing by 24% each year.
- 24. Which expression is equivalent to $3x^2 + 4x 15$?

A.	(3x-5)(x+3)	С.	(3x-1)(x+15)
B.	(3x+5)(x-3)	D.	(3x+1)(x-15)

25. Which expression is equivalent to $16x^2 - 9y^2$?

A.	$(4x - 3y)^2$	C.	(4x+3y)(4x-3y)
B.	$(4x + 3y)^2$	D.	$(16-9)(x-y)^2$

26. What are the zeros of the function defined by $f(x) = x^2 + 8x$?

A.	8,0	C.	1,8
B.	2,4	D.	0, -8

27. The expression 2h + 3k represents the side length of a square. Which expression represents the area of the square?

A.	$2h^2 + 3k^2$	C.	$4h^2 + 6hk + 9k^2$
B.	$4h^2 + 9k^2$	D.	$4h^2 + 12hk + 9k^2$

28. A truck rental company charges \$35.00 per day to rent a truck, plus an additional \$0.35 per mile driven. Gerald rented a truck for three days. The total cost was \$191.10. How many miles did Gerald drive the truck?

A.	55	С.	446
B.	246	D.	511

- 29. Philip is assigned to read a book for his literature class that is 250 pages long. He reads at a rate of 30 pages per hour. If he can only read for 2 hours per day, how many days will it take him to finish the book?
 - A. 4 days
 C. 8 days

 B. 5 days
 D. 9 days
- 30. Josh is making a rectangular-shaped picture frame. The length of the frame is to be 5 inches more than twice the width. Which equation models the area, *A*, of the frame in terms of the width, *w*?
 - A. $A = 4w^2 + 10w$ C. $A = 2w^2 + 5$ B. $A = 2w^2 + 10w$ D. $A = 2w^2 + 5w$
- 31. A movie theater has a total of 112 seats. On a particular day, 60 seats are reserved for a school group. The theater requires that for every 4 children in attendance there must be at least 1 adult. Which is *not* a viable option for the remaining number of seats available?
 - A. 50 adults and 2 childrenC. 10 adults and 42 childrenB. 39 adults and 13 childrenD. 4 adults and 38 children
- 32. The time, *t*, it takes an object to fall a distance, *d*, can be found using the equation $t^2 = \frac{2d}{g}$. Which equation is equivalent?
 - A. $d = \frac{t^2}{g}$ B. $d = \frac{(gt)^2}{2}$ C. $d = \frac{gt}{2}$ D. $d = \frac{gt^2}{2}$
- 33. Jacob purchased 2 sweatshirts and 4 pairs of pants for \$145.94. David purchased 5 of the same brand of sweatshirts and 3 pairs of the same brand of pants for \$175.92. How much does each sweatshirt cost?

A.	\$13.01	C.	\$26.99
B.	\$18.99	D.	\$42.99

34. The sum of two numbers is 59. The difference between the two numbers is 11. Which is the smaller of the two numbers?

A.	20	С.	24
B.	22	D.	26

35. Which coordinate is on the graph of the equation 4x = 12 - 2y?

A.	(-3, 12	C.	(3, -12)
B.	(-2, -2)	D.	(5, 4)

36. Which point **approximately** lies on the graph of the exponential equation with an initial value of 15 and a growth rate of 2.75%?

A.	(1, 0.4125)	C.	(5, 50.5)
В.	(3, 31.09)	D.	(14, 21.93)

37. A system of inequalities is shown below.

 $2x + y \ge 4$

 $3x + 4y \le 5$

Which graph shows the solution set of the system?



38. The volume of an ice cream cone is 500 cm³. The height of the cone is 16 cm. What is the approximate diameter of the base of the cone? (Note: Use Volume of a cone $=\frac{1}{3}\pi r^2 h$ where r is the radius and h is the height.)

A.	6 cm	C.	15 cm
B.	11 cm	D.	30 cm

39. A triangle has vertices G(2, 3), H(0, 8), and I(-3, 1). Which statement is true?

- A. Angle G is a right angle C. Angle I is a right angle. B. Angle H is a right angle.

- D. None of the angles are right angles.
- 40. The endpoints of a line segment are located at (1, 9) and (7, 1). What is the midpoint of the line segment?
 - A. (3, 4) C. (4, 5) B. (4, 3) D. (5,4)
- 41. An elevator can hold a maximum of 1,500 pounds. Eight people need to use the elevator. Bill had some measures from the data set of how much each person weighed. Which measure would be most useful to determine if the people can safely use the elevator?
 - C. mode A. mean B. median D. interquartile range
- 42. Students were asked how many books they read over the summer. Their responses are shown below.

10, 20, 25, 25, 40, 45, 45, 50, 50, 60

The teacher said that he read 100 books. Which measure is *most affected* when the teacher's data is included in the data?

- A. mean B. median
- C. mode D. interquartile range
- 43

3.	The num	ber of	stud	lents v	who	attend	led	a sc	hool	da	ance	are	sho	wn	in t	he	tabl	e t	pelo	ow.

	9th Grade	10th Grade	11th Grade	12th Grade
Males	43	67	79	86
Females	51	75	71	84

Approximately what percent of the female students who attended the dance were in the 12th grade?

A.	15%	C.	43%
В.	30%	D.	49%

44. The frequency table below shows the number of flights in a day out of two cities made by different airplane companies.

	Company X	Company Y	Company Z
City 1	78	91	56
City 2	80	65	89

What is the approximate difference between the percent of Company X flights out of City 1 and the percent of City 1 flights from Company X?

A.	0%	C.	17%
В.	15%	D.	45%

45. The table below shows the relationship between calories and fat grams contained in large orders of french fries from various restaurants.

Calories	570	500	540	344	610
Fat Grams	34	28	30	19	36

Assuming the data follows a linear trend, approximately how many calories would be expected from an order with 24 grams of fat?

A.	420	calc	ories

B. 428 calories

C. 456 calories D. 472 calories

46. The table below shows the number of hours 4 waiters at a restaurant worked during a week and the amount in tips each waiter earned.

Name	Hours Worked	Tips Earned
Paul	24	\$ 190
Victor	28	\$ 224
Colin	29	\$ 230
Zachary	26	\$ 204

Which waiter earned tips closest to the amount predicted by the line of best fit for the data?

A.	Paul	C.	Colin
В.	Victor	D.	Zachary

47. Anna is studying body proportions for a science project. She measured the height and head circumference of 10 people in her class. The results are shown in the table below.

Height	Head Circumference
(inches)	(inches)
60	8.5
67	9.5
68	9.5
62	9.0
71	10.5
70	10.0
61	8.5
70	10.0
65	9.0
66	9.5

What is the meaning of the slope of the line of best fit for the data?

- A. For every 1 inch increase in height, there is about a 6 inch increase in head circumference.
- B. For every 1 inch increase in head circumference, there is about a 6 inch increase in height.
- C. For every 1 inch increase in head circumference, there is about a 1 inch increase in height.
- D. For every ¹/₆ inch increase in height, there is about a 6 inch increase in head circumference.

48. The table below shows the number of hours 6 different students studied and the students' grades on a midterm exam.

Hours Studied (x)	0.5	2	4	1.5	3	5
Midterm Grade (y)	64	79	92	82	85	95

This data can be best represented by a linear model. What does the y-intercept of this equation represent?

- A. The grade of a student who did not study.
- B. The grade of a student who studied for one hour.
- C. The rate at which a student's grade improved for every half hour studied.
- D. The rate at which a student's grade improved for every hour studied.
- 49. The school football team collected donations last season to help raise money to buy new uniforms. The table below shows the number of people who made donations at each game and the total amount of money they donated.

Number of Donations	12	21	25	23	26	32
Total Money Collected	\$43	\$54	\$67	\$25	\$80	\$97

What is the *approximate* value of the correlation coefficient when the data is modeled by a linear best-fit equation?

A.	0.5738	С.	0.6515
B.	0.5786	D.	0.7053

50. The table below shows the number of hours a student watches television and the student's grade in math.

Hours of Television	5	7	10	8	7.5	4	5	8	9	11
Math Grade	92	87	61	75	84	93	91	87	84	67

Which best describes the correlation between hours of television and math grade?

- A. Strong positive
- B. Strong negative

- C. Weak positive
- D. Weak negative