Name______________________________   ID: _________________________

Email______________________________   Date _________________________

This is my 1st, 2nd, or 3rd time taking the exam (circle one); or Other__________

Please write your answer to each question below:

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No calculator is allowed. Write the letter of the answer you choose on the provided answer form.

1. A frog is at the bottom of a 10-meter well. Each day he climbs up 3 meters. Each night he slides down 1 meter. On what day will he reach the top of the well and escape?
   Which of the following problem-solving strategies would be the most appropriate to use to solve this problem?
   A. Work backwards   B. Draw a diagram (picture)   C. Set up an equation   D. Identify a sub-goal

2. Enrique had some marbles. He divided them equally into two piles and gave one pile to Frederico. Frederico divided his pile equally into two piles and gave one pile to Georgio. Georgio had 4 marbles. How many marbles did Enrique have to begin with?
   Which of the following problem-solving strategies would be most appropriate to use to solve this problem?
   A. Set up an equation   B. Make comparative lists C. Work backwards D. Use a manipulative

3. Which equation below shows correct use of the distributive property?
   A. 2(3 + 5) = (2 + 3) x (2 + 5)                       B. 2(3 + 5) = (2 x 3) + 5
   C. 2(3 + 5) = 2(5 + 3)                                    D. 2(3 + 5) = (2 x 3) + (2 x 5)

4. Oscar got out all of his yellow blocks. He mixed them together with his 13 green blocks and counted 79 blocks in all. Which equation, when solved, will show how many yellow blocks Oscar has?
   A. \( y - 13 = 79 \)    B. \( y + 13 = 79 \)    C. \( 79 + y = 13 \)    D. \( 79 + 13 = y \)

5. Vito uses 6 liters of water to water 16 flower pots. He is wondering how many liters of water (w) it would take to water 24 flower pots. He assumes he'll use the same amount of water on each pot.
   A. 6                     B. 9                           C. 12                   D. 24

6. Use the diagram below to answer the question that follows

   A teacher places a set of blocks on a table and asks a child how many blocks there are. The child points to each block while saying the numbers in the proper sequence from one through five. When asked again how many blocks there are, the child responds by counting the number of blocks again. Given this evidence, which question could the teacher ask to help the child connect counting to cardinality?
   A. How many cones, boxes, and balls are there?
   B. How is the last number name you said related to the number of blocks?
   C. How many different types of shapes are there?
D. How is the first block counted similar to the last block counted?

7. At Rattlesnake School the teacher-student ratio is 1:30. If the school has 1,200 students, how many additional teachers must be hired to reduce the ratio to 1:20?
   A. 60       B. 40       C. 30       D. 20

8. A box is filled with candies in different colors. We have 40 white candies, 24 green ones, 12 red ones, 24 yellow ones and 20 blue ones. If we have selected one candy from the box without peeking into it, find the probability of getting a green or red candy.
   A. $\frac{12}{120}$        B. $\frac{24}{120}$        C. $\frac{36}{120}$        D. $\frac{84}{120}$

9. Which is NOT a property of rectangles?
   A. The sum of its angles is 360°        B. It is a quadrilateral.
   C. All its sides are congruent        D. Its diagonals are equal

10. Use the diagram below to answer the question that follows.

The volume of this cube is 64 cubic units. What is its surface area?
   A. 16 square units        B. 96 square units
   C. 64 square units        D. 128 square units

11. Sophia just bought two New York State lottery tickets. The prize this week is 1.5 million dollars more than last week. Last week’s prize was $20,500,000. What is the price for this week?
   A. $20 million        B. $22,000,000
   C. $21 million        D. $20,550,000

12. In the diagram, BC $\parallel$ DE, what is the length of BD?
   A. 8        B. 10        C. 16        D. 20

13. A lollipop factory used 654.3 kilograms of sugar to make 9 batches of lollipops. How much sugar did the factory put in each batch?
   A. 7.27        B. 72.7        C. 72.07        D. 73.07
14. The Richie Rip-Off Cement Company charges $5 per cubic foot for its high quality cement. How much would it cost to fill this box with cement?

A. $120             B. $360                   C. $600                D. $900

![Box Diagram]

15. Jim has four test scores of 87, 90, 91, and 95. There is one more test during the semester. He wants to make an A in the class, which means he needs his average to be 90. All five tests count the same in determining the class grade. What grade does Jim need to make on the fifth test to make an A in the class?

A. 90            B. 91             C. 87                     D. 88

16. Bradley’s T.V. screen is 15 feet by 20 feet. He wants to put new cover on the T.V. screen that costs $2.5 per square foot. How much will it cost Bradley to cover his T.V. screen?

A. $75                    B. $750          C. $175       D. $17.5

17. Which statement is correct about the number line?

I. Point A is about .49 II. Point B is about \(\frac{3}{4}\) III. Point C is about 1.4

A. Only I  B. Only I and II C. Only I and III D. Only II and III

18. Sketch a graph for \(2x + y = 10\) (use the grid in below). Which characteristics does the graph have?

A. a straight line that goes through the origin;   B. a hyperbola
   C. a straight line that has intersects both at the x-axis and y-axis
   D. a vertical line that parallels y-axis and goes through (0, 5)
19. Using an area model for \((10+a) \times (20+b)\) as shown in below, what is the value for the unknown (with the “?” mark) area?

A. 10b  B. 20a  C. ab  D. 200ab

\[
\begin{array}{|c|c|}
\hline
10 & 20 \\
\hline
a & b \\
\hline
\end{array}
\]

\[
\begin{array}{|c|}
\hline
200 \\
\hline
\end{array}
\]

20. A wall with a height of 4ft casts a shadow 6ft long on the ground. What is the height of the tree that casts a shadow which is 24ft long at the same time?

A. 16 feet  B. 22 feet  C. 24 feet  D. 36 feet

21. The table shows how OUT values are related to IN numbers. Which rule tells how to find the OUT number for any IN number, X?

<table>
<thead>
<tr>
<th>IN</th>
<th>2</th>
<th>3</th>
<th>10</th>
<th>8</th>
<th>20</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUT</td>
<td>5</td>
<td>7</td>
<td>21</td>
<td>17</td>
<td>101</td>
<td></td>
</tr>
</tbody>
</table>

A. \(X + 1\)  B. \(X + 3\)  C. \(2(X+1)\)  D. \(2X + 1\)

22. Prof Reid is buying a new fuel efficient Honda Prius as his family car. Rounded to the nearest thousand, it costs $23,000. How many amounts of money in the box could be the price of his new car?

<table>
<thead>
<tr>
<th></th>
<th>$23,099</th>
<th>$22,410</th>
<th>$22,810</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$24,199</td>
<td>$23,256</td>
<td>$22,099</td>
</tr>
</tbody>
</table>

A. none  B. one  C. two  D. three  E. four
23. \( \frac{X}{10} \) is between \( \frac{1}{5} \) and 0.6. What could the value of \( X \) be?

A. 1  B. 5  C. 2  D. 8

24. How many lines of symmetry does a regular hexagon have?

A. 3  B. 4  C. 5  D. 6

25. Two pie pans of the same size remain on the counter. One pan has \( \frac{1}{2} \) of a pie, and the other has \( \frac{1}{3} \) of a pie left in it. Mom wishes to equally divide all the pie left in the two pans into five plates. How much of the pie will each plate have?

A. \( \frac{1}{5} \)  B. \( \frac{1}{6} \)  C. \( \frac{1}{4} \)  D. \( \frac{3}{40} \)

26. A seed on a dandelion flower weighs \( 10^{-3} \) grams. A dandelion itself can weigh up to \( 10^3 \) grams. How many times heavier is a dandelion than its seeds?

A. 6  B. 9  C. \( 10^{-1} \)  D. \( 10^6 \)

27. A community center organized a racial harmony fair through which it collected a sum of $5880. The pie chart below shows the amount of money collected by the various stalls.

How much money was collected by the games?

A. Cannot be answered  B. $1470  C. $2646  D. $2500
28. Which statement is correct about this shape?
   I. It has two obtuse angles
   II. Its two diagonals will be equal in length
   III. It is a prism

   A. Only I  B. Only II  C. Only III  D. Only I and II  E. I, II, and III

29. Which of the following is the simplified form for \( \frac{36}{120} \)?
   A. 3/20  B. 6/20  C. 3/10  D. 1/5

30. Alma brought balls of green and blue color. Twenty five percent of balls are blue. If she brought total of 50 blue balls, how many green balls she had?
   A. 100  B. 150  C. 200  D. 250

31. Side CA of the right triangle CAT is 3cm long. The hypotenuse is 5cm long. How many square centimeters is the area of CAT?
   A. 4  B. 6  C. 7 ½  D. 12  E. 60

32. Which is NOT a property of a prism?
   A. it has 6 faces  B. it has 6 corners  C. it has 12 edges  D. it has 8 vertices

33. Demonstrated below is an example of box plot and how to read it. Base on the graph, which statement is NOT right?
A. The minimum value of the measurement is about 9
B. The range between the minimum and maximum value (excluding outliers) is about 35
C. The median value of the measurement is around 20
D. The two outliers fall within the 75th percentile

34. Estimate this quotient: \[ \frac{297}{1199} \]
   A. 4       B. 40       C. 3       D. 30

35. The graph below shows an example of a transformation. Which transformation is shown?
   A. Translation       B. Reflection in origin       C. Rotation       D. Dilation

Note. You need to answer 28 questions correctly to pass the exam.