No calculator is allowed. Write the letter of the answer you choose on the provided answer form. Note that, all the questions are single-choice questions.

1. Brett build a tower using four different colored milk cartons. The red carton was below the green carton. The blue carton was above the yellow carton which was above the green carton. Which carton is On top?

Which of the following problem-solving strategies would be most appropriate to use to solve this problem?

A. Work backwards
B. Draw a diagram
C. Set up an equation
D. Find a pattern

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. Find a pattern
B. Make comparative lists
C. Work backwards
D. Set up an equation

3. Which equation below shows the distributive property of multiplication over addition?

A. ax (b- c) = ab - ac  
B. 191+18+9 = (191+9)+18  
C. 15 x (3+5) = 15 x 3 +15 x 5  
D. 11+17+9+13= (11+9)+(17+13)

4. Barack buys ten pieces of fruit. He buys A many apples, B many bananas, and P many pears. Apples cost 25 cents each, bananas cost 20 cents each, and pears cost 30 cents each. Barack has $5 to spend.

What expression shows how much Barack will spend on fruit?

A. 5 – (A + B+ C)  
B. A + B + C  
C. 0.25A+.20B+.30C  
D. 5 – (0.25A + .20B + .30C)
5. There are 600 pupils in a school. The ratio of boys to girls in this school is 3:5. How many girls are in this school?

A. 375  B. 225  C. 300  D. 200

6. The diagram below (resource from NY multiple-subject sample question) could be used to model which of the following?

A. A function machine
B. The associative property
C. Prime factorization
D. Conditional probability

7. ABCD is a rectangle in the coordinate plane. If the coordinates of point A are (2, 3) and the coordinates of point C are (6, -1), which of the following are possible coordinates of point B and D?

A. (-3, 2) and (1,6)  
B. (6,3) and (-2, -1)  
C. (2,-1) and (6,-1)  
D. (2, -1) and (6,3)

8. Betina’s daughter, Anna, wants balloons for her 4th birthday party. Betina orders two dozen large balloons. ¼ of the balloons are red, 14 are white, and the rest are blue. Anna pops one of the balloons. What is the probability that the balloon is blue, the color of her eyes?

A. 8 out of 24  B. 4 out of 12  C. 4 out of 20  D. 4 out of 24

9. Which is NOT a property of rectangles?

A. The sum of its angles is 360°  B. All its sides are congruent
C. It is a quadrilateral.  D. It has opposites sides that are parallel
10. What is the sum of the two missing fractions in this pattern?

\[
\begin{align*}
\frac{1}{2}, & \quad \frac{2}{3}, & \quad ? , & \quad \frac{4}{5}, & \quad ? \\
\end{align*}
\]

A. \( \frac{19}{12} \)  
B. \( \frac{15}{24} \)  
C. \( \frac{3}{8} \)  
D. \( \frac{8}{10} \)

11. Sophia just decided to buy 2 lottery tickets because the jackpot has risen to $30 million. This is twenty and one-half million dollars more than last week’s prize. What was the prize for last week?

A. $51.5 million  
B. $32,000,000  
C. $10,550,000  
D. $9.5 million

12. A 6-ft tall woman is standing by a tree. She looks down and notices her shadow is 3 feet long. If the tree casts a 20-foot shadow, how tall is the tree?

A. 40 feet  
B. 10 feet  
C. 60 feet  
D. 30 feet

13. How many decimals in the box have a digit “3” in the tenths place and are less than 2?

A. one  
B. two  
C. three  
D. four  
E. none

14. The Richie Rip-Off Cement Company charges $2 per cubic foot for its high quality cement. How much would it cost to fill this box with cement?

A. $120  
B. $80  
C. $60  
D. $240

15. Joey loves to bowl. His average for four games was 180. He bowled 200 in the first game and 10 points higher in the second game. He then had a bad luck and bowled 160 in the third game. What did Joey bowl in the last game?

A. 150  
B. 240  
C. 180  
D. 210
16. At her country house, Rosa has a square flower garden. She puts 200 feet of new fence all the way around the garden to keep her granddaughter, Mia, out of the garden. How many square feet of space does her garden have?

A. 200  
B. 1,000  
C. 250  
D. 2,500

17. Which statement is correct about the number line?

\[ \begin{array}{cccc}
0 & A & B & C \\
\end{array} \]

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. Use the information below to choose the correct answer (question from NY LAST sample).

A small stream of water is poured at a constant rate into the flask shown above, until the flask is full. Which of the following graphs best represents the way in which the height of the water in the flask changes in relation to the length of time the water is poured?

A.  

B.  

C.  

D.
19. Using an area model for \((a+2) \times (a+b)\) as shown below, what is the value for the unknown area?

A. \(b\)  
B. \(ab\)  
C. \(b^2\)  
D. \(2b\)

\[
\begin{array}{c|c|c}
\text{a} & \text{2} \\
\hline
\text{a} & \text{a}^2 & 2a \\
\hline
\text{b} & ? & 2b
\end{array}
\]

20. The formula for body mass index is \(\text{BMI} = \frac{W}{H}\) where \(W\) is Weight (Kilograms) and \(H\) is height (meters). If Lebron’s BMI is 100 and he weighs 180 kilograms, how tall is he?

A. 1 m  
B. 1.9 m  
C. 1.8 m  
D. 1.7 m

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, \(X\)?

A. \(X + 5\)  
B. \(2(X + 1)\)  
C. \((X+1) + X\)  
D. \(2(X -1)\)

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?

A. none  
B. one  
C. two  
D. three

23. \(\frac{X}{10}\) is between \(\frac{1}{5}\) and .6. What could the value of \(X\) be?

A. 1  
B. 5  
C. 2  
D. 8
24. How many lines of symmetry does the following hexagon have?

![Hexagon Image]

A. 6    B. 3    C. 9    D. 12


26. $2^6 \div 2^{-2} =$

A. $2^{-8}$    B. $2^4$    C. $2^{-3}$    D. $2^8$

27. About how much of the day is Karen’s cat awake?

A. 50%    B. 30%    C. 66%    D. 74%

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. June is buying metallic red tile for her film studio. Tile costs $5 per square foot. How much must June spend to tile her film studio?

A. $80    B. $220    C. $140    D. $100
30. Barbara buys a new computer at PCWorld in New Jersey. It was on sale for 30% off. She also got an additional $50 off because she was a teacher. How much did she pay for the computer, including the 7% sales tax?

A. $700.00  B. $735.00  C. $605.50  D. $695.50

31. Side AT 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 cube?

A. it has 6 faces  B. it has 6 corners  C. it has 12 edges  D. it has 8 vertices

33. Do you spend money on Valentine’s day? Based on the graph, which statement is NOT correct?

A. Spending increased from 2006 to 2007.
B. Spending in 2005 was less than spending in the year before that.
C. Spending in 2007 was about $120 per person.
D. Spending decreased by almost $50 from 2008 to 2009.
E. Spending in 2009 was about the same as spending in 2004.

34. Estimate this quotient: A. 800  B. 40  C. 4  D. 2

35. Lucy rearranges 3 cutout letters C, A, T to make different 3-letter “words” like “ATC”. Using each letter once in a “word” how many different 3-letter “words” can she make?

A. 3  B. 6  C. 9  D. 12
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