6th Grade Exam

Scoring Format: 3 points per correct response

-1 each wrong response

0 for blank answers

Directions:

For each problem there are 5 possible answers listed. You are to work the problems, determine the correct answer, and indicate your choice on the separate answer sheet provided.

Please use only capital letters on the answer sheet (A, B, C, D, E) and print neatly. This will enable us to correctly grade your paper. If there is any question as to what letter an answer is, it will be marked wrong.

If you change your mind about your answer, be sure to erase completely. Avoid wild guessing, as wrong answers count against you. Do not mark more than one answer for any problem. Make no stray marks of any kind on your answer sheet. Additional room for you to work out problems will be provided on blank scrap paper.

When told to do so, open your test booklet and begin. When you have finished one page, go on to the next. There are 43 questions in all. The working time for the entire test is 60 minutes, so you should work quickly.
1. Collin needs three wooden boards to repair his porch. The lengths he needs are 2.2 meters, 2.82 meters, and 4.25 meters. He purchases a board that is 10 meters long and cuts it into three sections. How much of the board that Collin purchased will be left?

   A. 1.43 meters
   B. .37 meters
   C. .98 meters
   D. .73 meters
   E. .83 meters

2. An airport offers two shuttles that run on different schedules. Shuttle A runs every 6 minutes. Shuttle B runs every 9 minutes. If both shuttles leave the airport at 4:00 P.M., at what time will they next leave the airport together?

   A. 4:09 P.M.
   B. 4:18 P.M.
   C. 4:27 P.M.
   D. 4:06 P.M.
   E. 4:32 P.M.

3. Albert used \(\frac{3}{8}\) of a half-gallon of paint. What fraction of a gallon of paint did he use?

   A. \(\frac{2}{5}\)
   B. \(\frac{3}{4}\)
   C. \(1\frac{1}{3}\)
   D. \(\frac{3}{16}\)
   E. \(\frac{1}{2}\)

4. What is the area of a square that has a side length of 3x?

   A. 9x
   B. 9x^2
   C. 12x
   D. 6x
   E. 6x^2
5. A baker is making an oversized sheet cake for school. The recipe calls for 2 cups of sugar for every 3 cups of flour. How many cups of flour are needed, if the baker uses 18 cups of sugar?

A. 6 cups  
B. 32 cups  
C. 18 cups  
D. 12 cups  
E. 27 cups

6. A class of 26 students order the items shown

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Item</th>
<th>Unit Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>Doughnut</td>
<td>1.25</td>
</tr>
<tr>
<td>5</td>
<td>Gallon of Juice</td>
<td>1.99</td>
</tr>
<tr>
<td>1</td>
<td>Pack of Napkins</td>
<td>1.25</td>
</tr>
</tbody>
</table>

If the class of 26 students agreed to split the cost evenly, and assuming there is no tax, which equation can be used to find $t$, the amount each student should pay?

A. $t = \frac{(27 \times 1.99 + 5 \times 1.25 + 1.25)}{26}$  
B. $t = 27(1.25) + 5 (1.99) + 1.25$  
C. $t = \frac{(27 \times 1.25 + 5 \times 1.99 + 1.25)}{26}$  
D. $t = \frac{26 \times 1.25 + 5 \times 1.99 + 1.25}{26}$  
E. $t = \frac{(27 \times 1.25 + 5 \times 1.99 + 1.25)}{27}$

7. Which expression is equivalent to $5 + 4^2 \times 2$?

A. $21 \times 2$  
B. $5 + 8^2$  
C. $9^2 \times 2$  
D. $5 + 32$  
E. $10 + 4^2$

8. The cost of renting roller blades is $4 plus $3.50 for each hour that the roller blades are rented. Which expression can be used to find the cost in dollars of renting roller blades for $h$ hours?

A. $4h + 3.5$  
B. $3.5(h + 4)$  
C. $3.5 - 4h$  
D. $4(3.5 + h)$  
E. $3.5h + 4$
9. Craig planted \( \frac{3}{4} \) acre with vegetables. He then splits the vegetable garden into sections that are \( \frac{1}{6} \) of an acre. How many different \( \frac{1}{6} \) acre sections will Craig have in his vegetable garden?

A. 4 \( \frac{1}{2} \)
B. 2 \( \frac{1}{2} \)
C. \( \frac{2}{9} \)
D. 3 \( \frac{1}{2} \)
E. \( \frac{1}{8} \)

10. What is the total number of outcomes if you can choose from 8 different cell phone styles that come in 4 different colors?

A. 12
B. 24
C. 26
D. 32
E. 36

11. A simple recipe for a loaf of bread calls for mixing \( 1 \frac{1}{2} \) pints of cream with \( 1 \frac{2}{3} \) cups of self-rising flour, and baking the mixture. If someone has 8 pints of cream and 6 cups of self-rising flour, what is the maximum number of loaves of bread that can be made without buying extra ingredients if the recipe is followed? An entire loaf of bread must be made (no partial loaves).

A. 2
B. 3
C. 4
D. 5
E. 6

12. If account codes for a certain company are assigned as follows: two letters and then three one digit numbers, how many different account codes can be made? Assume that letters and digits cannot be repeated.

A. 1,757,600
B. 468,000
C. 18,720
D. 676,000
E. 260
13. Let \(a\) and \(b\) be integers and define the operation \(\oplus\) as follows:

\[ a \oplus b = ab(a + b) \]

Does there exist an integer which is an identity element for \(\oplus\)?

A. Yes and it is 1  
B. Yes and it is 0.  
C. Yes and it is -1.  
D. Yes and it is \(\frac{1}{2}\).  
E. There is not exist an identity element for \(\oplus\)

14. By observing patterns in the following, find the sum \(1 + 3 + 5 + 7 + 9 + \ldots + 99\).

\[
\begin{align*}
1 + 3 &= 4 \\
1 + 3 + 5 &= 9 \\
1 + 3 + 5 + 7 &= 16 \\
1 + 3 + 5 + 7 + 9 &= 25 \\
\end{align*}
\]

A. 2400  
B. 2401  
C. 2500  
D. 2601  
E. 9801

15. A recipe requires \(\frac{2}{3}\) of a cup of yogurt. Rachel has \(\frac{1}{2}\) cup of yogurt. How much of the recipe can she make?

A. \(\frac{1}{6}\)  
B. 1  
C. \(\frac{1}{2}\)  
D. \(\frac{1}{3}\)  
E. \(\frac{3}{4}\)
16. Following is data for number of books read in a six-week period by sixteen students in a sixth grade class.

Which is true?

A. The mean number of books read and the median number of books read are the same.
B. The mean is larger than the median.
C. The median is larger than the mean.
D. The mode is 5.
E. Two of the above four statements are true.

17. Andre and his friends were hungry after coming home from school. They headed immediately for the cookie jar. Andre ate half of the cookies. Jamon ate one-third of what remained. Simon ate one half of the rest. Dionne ate one cookie which was one-fourth of what remained. How many cookies were in the jar?

A. 12
B. 18
C. 24
D. 36
E. There is not enough information to determine the answer
18. Mrs. Random gives tests randomly. The odds of her giving a test to not giving a test on any given day in her first period class are 1 to 4. During her 30 year teaching career she has taught 5,400 first period classes. Approximately how many tests has she given in first period?

A. 1080
B. 1350
C. 1800
D. 4320
E. 4720

19. In the figure above, angle C is a right angle. The figure is not necessarily drawn to scale. CD = DE = EB = 1 unit. Let $A_1$ be the area of triangle ACD. Let $A_2$ be the area of triangle ADE and let $A_3$ be the area of triangle AEB.

What are the ratios $A_1 : A_2 : A_3$?

A. 1: 1: 1
B. 1: 2: 3
C. 1: 1.1: 1.2
D. 1: 1: 1.2
E. there is not enough information to determine the ratios

20. Tiffany starts with a $100 gift from her grandparents and for an indefinite period of time saves $8.25 per month from her allowance. Mitchell starts with a $80 gift from his grandparents and saves $9.75 per month from his allowance. How many months will it take for Mitchell to have more money than Tiffany?

A. 12 months
B. 13 months
C. 14 months
D. 15 months
E. Mitchell will never have as much money as Tiffany.
21. James has 10 pounds of bird seed. He pours it into containers which hold $\frac{3}{4}$ of a pound of bird seed. How many pounds of bird seed will he have left over?

A. $\frac{1}{3}$ pound
B. $\frac{2}{3}$ pound
C. $\frac{1}{4}$ pound
D. $\frac{1}{2}$ pound
E. $\frac{3}{8}$ pound

22. A car got 33 miles per gallon using gasoline that cost $2.95 per gallon. Approximately what was the cost, in dollars, of the gasoline used in driving the car 350 miles?

A. $10$
B. $20$
C. $30$
D. $40$
E. $50$

23. Li has a 4ft x 3ft bulletin board that he wishes to cover with 4in x 6in notecards. How many notecards will he need?

A. 84
B. 24
C. 12
D. 1/2
E. 72

24. Which of the following numbers is farthest from the number 1 on the number line?

A. $-\frac{19}{6}$
B. $-5$
C. 0
D. 6
E. $\frac{10}{3}$
ANNUAL PERCENT CHANGE IN DOLLAR AMOUNT OF SALES
AT A RETAIL STORE FROM 2010 TO 2012

<table>
<thead>
<tr>
<th>Store</th>
<th>Percent Change from 2010 to 2011</th>
<th>Percent Change from 2011 to 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>10</td>
<td>-10</td>
</tr>
</tbody>
</table>

25. If the dollar amount of sales at Store P was $800,000 for 2010, what was the dollar amount of sales at that store for 2012?

A. $727,200  
B. $792,000  
C. $800,000  
D. $880,000  
E. $968,000

26. If 25 students in one class had an average of 93% and 20 students from another class had an average of 98%, approximately what is the average in percent of all 45 students?

A. 94  
B. 97  
C. 95.5  
D. 95.2  
E. 93

27. A right rectangular prism has a length of $1\frac{3}{4}$ inches, a width of 2 inches, and a height of $3\frac{1}{4}$ inches. How many cubes with a side length of $\frac{1}{4}$ of an inch would fit in the prism?

A. 7  
B. $11\frac{3}{8}$  
C. 728  
D. 846  
E. 56
28. What is the surface area of the square-based pyramid below? Assume that all triangular faces are congruent.

![Pyramid Diagram](image)

A. 139 cubic cm  
B. 324 square cm  
C. 36 square cm  
D. 180 square cm  
E. 432 cubic cm

29. Being a conscientious driver, Suzy stayed at or below the speed limit while traveling down the interstate. Overall, she went an average rate of 65 mph and it took her 10 hours to complete her journey. If she traveled for 6 of her 10 hours at 70 mph, what constant speed did she go for the remaining 4 hours to obtain the overall 65 mph average?

A. 65 mph  
B. 60 mph  
C. 57.5 mph  
D. 59.5 mph  
E. 62.5 mph
30. Find the area on the graph above enclosed by quadrilateral ABCD.

A. 36 $u^2$  
B. 30 $u^2$  
C. 42 $u^2$  
D. 72 $u^2$  
E. 84 $u^2$

31. A coach spent $201 on baseball bats and gloves. Let $b$ represent the number of bats and $g$ represent the number of gloves. Which expression represents the number of items she bought?

A. $b + g$  
B. $b \times g$  
C. $2b + 3g$  
D. $3b+2g$  
E. $2g \times b$

32. A recipe for party mix calls for 4 ¾ cups of cereal. The amount of peanuts needed is $1\frac{2}{3}$ cups less than the amount of cereal needed. How many cups of peanuts and cereal combined are needed?

A. $3\frac{1}{12}$ cups  
B. $6\frac{1}{2}$ cups  
C. $7\frac{5}{6}$ cups  
D. $8\frac{1}{2}$ cups  
E. $5\frac{5}{7}$ cups
33. Brett has $\frac{5}{6}$ of his weekly allowance left to spend. He has budgeted $\frac{1}{8}$ of his weekly allowance to save for a new video game. What portion of his weekly allowance will he have left after putting the savings away?

A. $\frac{4}{7}$  
B. $\frac{3}{8}$  
C. $\frac{7}{12}$  
D. $\frac{17}{24}$  
E. $\frac{2}{3}$

34. Which of the following fractions is closest to 0 on a number line?

A. $-\frac{3}{4}$  
B. $-\frac{2}{3}$  
C. $\frac{7}{12}$  
D. $\frac{5}{8}$  
E. $\frac{1}{3}$

35. Josh is choosing from two prize bags that each contain 5 packs of baseball cards, 11 packages of putty, and 9 hats. What is the probability that Josh randomly picks a hat from the first bag and a pack of baseball cards from the second bag?

A. $\frac{9}{25}$  
B. $\frac{14}{25}$  
C. $\frac{1}{2}$  
D. $\frac{9}{125}$  
E. $\frac{1}{5}$
36. Douglas paid $21 for a pair of jeans at the mall. They were on sale for 20% off. What was the original price before the discount?

A. $32.50
B. $29.75
C. $23.00
D. $26.25
E. $105.00

37. Sierra has 11.5 yards of fabric. She will use 20% of the fabric to make a flag. How many yards of fabric will she use?

A. 8.6 yd
B. 4.5 yd
C. 9.2 yd
D. 6.8 yd
E. 2.3 yd

38. Line j and line k below are parallel. The measure of angle ABF is 120°. The measure of angle BFC is 61°. Find the measure of angle CFG.

A. 59°
B. 120°
C. 61°
D. 119°
E. 29°
39. Mary’s garden contains 108 flowers that are lilies, daisies, or sunflowers. There are half as many lilies as there are daisies. There are one third as many daisies as there are sunflowers. How many daisies are in the garden?

A. 9  
B. 27  
C. 45  
D. 24  
E. 16

40. The surface area of a certain cube is 1536 square centimeters. What is the volume of that same cube?

A. 65,536 cm³  
B. 4096 cm²  
C. 36 cm²  
D. 256 cm³  
E. 4096 cm³

Three Final Short Answer questions:

41. At how many minutes after noon do the hour hand and the minute hand of an analog clock first meet again? Express your answer to the nearest whole number.

42. The denominator of a positive common fraction is 3 more than its numerator. If 5/28 is added to this fraction, the result is the same as the positive difference between the reciprocal of the original fraction and 1. What is this common fraction?

43. A man who initially weighed 220 pounds completed a diet-and-exercise program. After the 12-week program, his body fat percentage had dropped from 30% to 20%, and his weight had dropped to 200 pounds. If every part of his body that is not fat or muscle has a constant weight of 120 pounds, how many pounds of muscle did he gain during the program?