# Penny Sikes 5th and 6th Grade Mathematics Tournament

Sponsored by Morris Bank

## 2023 5th Grade Individual Test

1) Make sure your name and your grade are correct on the answer sheet.

2) NO CALCULATORS!

3) DO NOT OPEN THIS TEST BOOKLET UNTIL INSTRUCTED TO DO SO BY THE TEST MONITOR.

4) If you must leave to go to the restroom, raise your hand and a monitor will escort you to the nearest restroom. Remember you have a time limit.

5) Read each problem carefully and mark each answer on your answer sheet.

6) Each correct answer on the test will be counted as one point on your individual score.

7) If individuals have the same written test score, ties will be broken by determining which student gave correct answers to the most difficult item(s) on the test.

8) When the individual testing is over, please make sure you turn in your pencil and scantron. You make take your test and scratch work with you.

1. Evaluate the expression.

$$23 \times 17 + 96 \div 6$$

(a) 81 (b) 387 (c) 407 (d) 759

2. Which of the equations correctly multiplies by a power of 10?

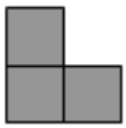
(a) $4.7 \times 10^4 = 470,000$

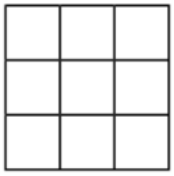
(b) $87.31 \times 10^3 = 8,731$

(c) $296.3 \times 10^2 = 2.963$

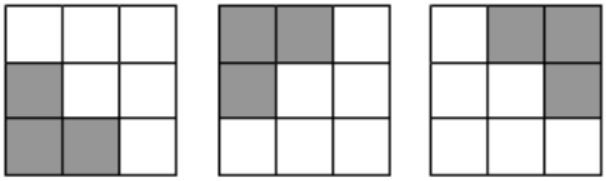
(d) $4.186 \times 10^5 = 418,600$

3. The first play of a game is to place this L-shape onto a 3x3 grid so that exactly 3 squares are covered. How many different first plays are possible?





Note: The following three first plays are considered <u>different:</u>



(a) 10 (b) 12 (c) 14 (d) 16

4. What letter shape do you get when you plot and join (in order) the following points?

$$(1, 11) \quad (3, 11) \quad (5, 6) \quad (7, 11) \quad (9, 11) \quad (5, 1) \quad and \quad (1, 11)$$

(a) U (b) W (c) V (d) N

5. In an online math practice test, Jordan attempts exactly $\frac{3}{4}$ of the problems and answers $\frac{5}{8}$ of those problems correctly. When he submits the test, he finds that he answered 105 problems correctly. How many math problems are on this test?

(a) 220 (b) 224 (c) 243 (d) 248

6. Mr. Petra plans to make two picture frames. One frame will be 8 inches wide and 9 inches long. The second frame will be the same length as the first, but its width will be half the width of the first frame. Which statement below is true?

(a) The area of the first picture frame will be equal to the area of the second picture frame.

(b) The area of the second picture frame will be twice the area of the first picture frame.

(c) The area of the first picture frame will be half the area of the second picture frame.

(d) The area of the second picture frame will be half the area of the first picture frame.

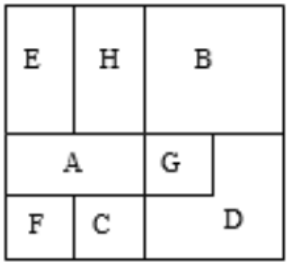
7. Look at the equation below:

$$120\ x\ n\ =\ 840$$

All of the following equations has the same value for $n$ as the one shown, except for which of the following?

(a) $n \times 50 = 350$ (b) $60 \times n = 420$ (c) $62 \times n = 434$ (d) $35 \, x \, n = 5$

8. Eight <u>identical</u> sheets of paper were placed, one at a time, overlapping as shown in the diagram.
Which sheet(s) of paper could have been the fifth one placed?




(a) Only A or G (b) Only A (c) Only E (d) Only D or G

9. Four students solved the problem $\frac{1}{5} \div 4$. The work of each student is shown on the table below.

| Wyatt | Caden | Emily | Sarah |
|---|---|---|---|
| $\frac{5}{1} \times \frac{4}{1} = \frac{20}{1}$ | $\frac{1}{5} \times \frac{1}{4} = \frac{1}{20}$ | $\frac{1}{5} \times \frac{4}{1} = \frac{4}{5}$ | $\frac{5}{1} \times \frac{1}{4} = \frac{5}{4}$ |

Who solved the problem correctly and why?

(a) Wyatt, because he multiplied by the reciprocal of the first number.

(b) Caden, because he multiplied by the reciprocal of the second number.

(c) Emily, because she multiplied both numerators and both denominators.

(d) Sarah, because she multiplied by the reciprocals of both numbers.

10. Amber is 67 inches tall, and her brother, Paul is 6 feet 2 inches tall. Who is taller and by how much?

(a) Amber is taller by 5 inches

(b) Amber is taller by 7 inches

(c) Paul is taller by 5 inches

(d) Paul is taller by 7 inches

11. A month with 30 days had 5 Saturdays and 5 Sundays. The first day of that month had to fall on a

(a) Friday (b) Saturday (c) Sunday (d) Monday

12. Wanda got either a 90 or 100 on each of her 5 math tests. The average of all her math tests is 98. How many 90s did she get?

(a) 1 (b) 2 (c) 3 (d) 4

13. If $y = 12$, then what is the value of $\frac{2}{3}y - 6$?

(a) 2

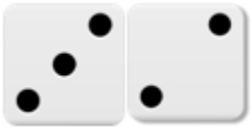
(b) 0

(c) 4

(d) 8

14. Two dice are rolled, and their numbers are multiplied. How many cases are there in which the product is prime?

Note: The following examples represent different outcomes.



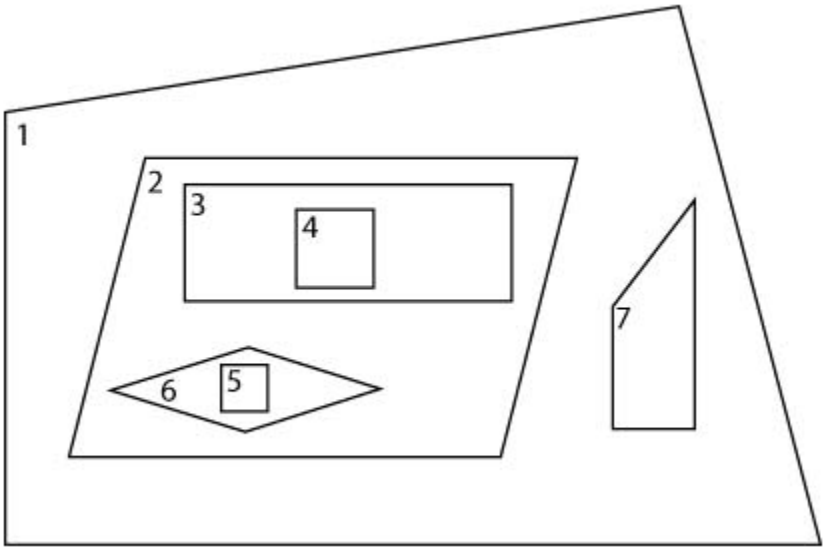
(a) 3

(b) 4

(c) 5

(d) 6

15. This diagram shows the relationship between 7 four-sided figures. Each figure has all of the properties of any other figure or figures it is drawn inside of. Why is figure 7 outside of figure 2?




(a) Figure 7 does not have the same dimensions as the other figures.

(b) Figure 7 has two angles with the same measure.

(c) Figure 7 has a height that is larger than its width.

(d) Figure 7 has only one pair of parallel sides.

16. The product of two numbers is A and their sum is B. If A – B is 17, what are the two numbers?

(a) 4 and 7

(b) 5 and 6

(c) 7 and 10

(d) 8 and 9

17. Which of the following statements is true?

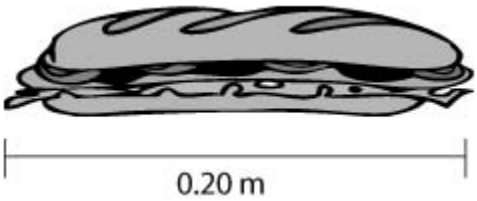
(a) $W \times \frac{12}{11} = W$

(b) $S \times \frac{12}{11} > S$

(c) $T \times \frac{11}{12} > T$

(d) $U \times \frac{11}{12} = U$

18. Gabby made a sandwich that is 0.20 meters long. The first three bites she took had lengths of 0.02 meters, the next two bites she took had lengths of 0.03 meters.



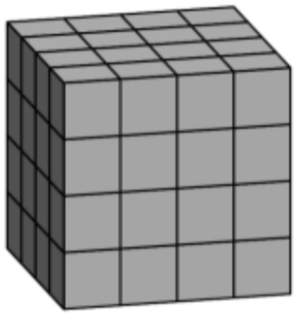
What is the length of the sandwich that remains after Gabby takes 5 bites?

(a) 0.11 meters (b) 0.08 meters (c) 0.29 meters (d) 0.12 meters

19. Any of the ten digits between 0 through 9 may be used in a 6-digit code, but no digit may be used more than once. If the first two digits are 1 and 7, what is the largest possible average of all 6 digits?

(a) 4 (b) 6 (c) 8 (d) 10

20. Akash's birthday cake is in the form of a 4 x 4 x 4 inch cube. The cake has icing on the top and the four side faces, and no icing on the bottom. Suppose the cake is cut into 64 smaller cubes, each measuring 1 x 1 x 1 inch, as shown in the image. Select the statement that is true.



(a) 14 small pieces have no icing on them at all.

(b) 28 small pieces have icing on exactly 1 side.

(c) 12 small pieces have icing on exactly 2 sides.

(d) 8 small pieces have icing on exactly 3 sides.

21. In the number below, the digit 2 appears three times.

325, 012. 782

Which of the following are the correct places in which the digit 2 appears?

(a) The ten thousands, tens and thousandths places

(b) The thousands, tens and hundredths places

(c) The ten thousands, ones and thousandths place

(d) The thousands, ones and thousandths place

22. A board has alternating dark and light squares, just like a checkerboard, except that there are 9 squares on each side, instead of 8. At most, how many of the squares on this 9 x 9 board are dark?

(a) 38 (b) 39 (c) 40 (d) 41

23. Every birthday of my life, I put as many pennies in a jar as my age in years. I now have $1.20 in the jar. How old am I?

(a) 10 (b) 12 (c) 15 (d) 20

24. An astronaut spent 3,744 hours in space. For how many weeks was the astronaut in space?

(a) 156 weeks

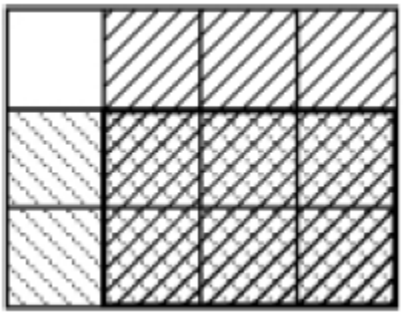
(c) 22 Weeks

(b) $20\ \frac{6}{7}$ weeks

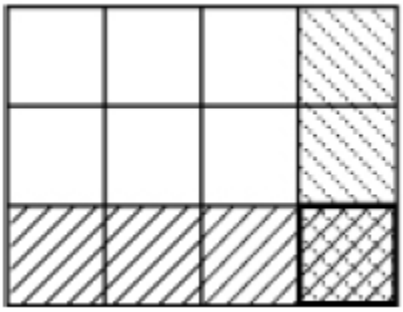
(d) $22\ \frac{2}{7}$ weeks

25. Which model represents $\frac{2}{3} \times \frac{3}{4}$?

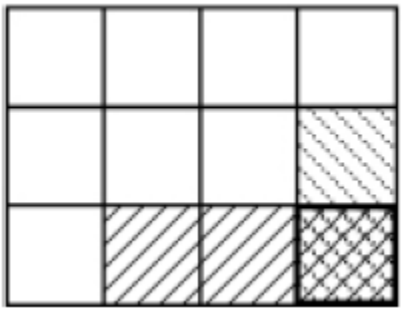
(a)



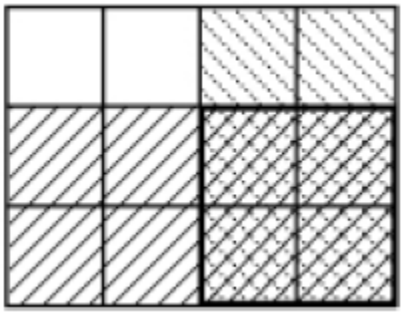
(c)



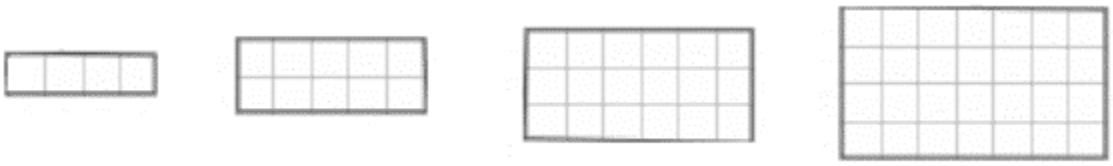
(b)



(d)



27. The diagram below shows the first three steps in a pattern of rectangles. What is the SUM of the perimeter and area of the next rectangle in the pattern?



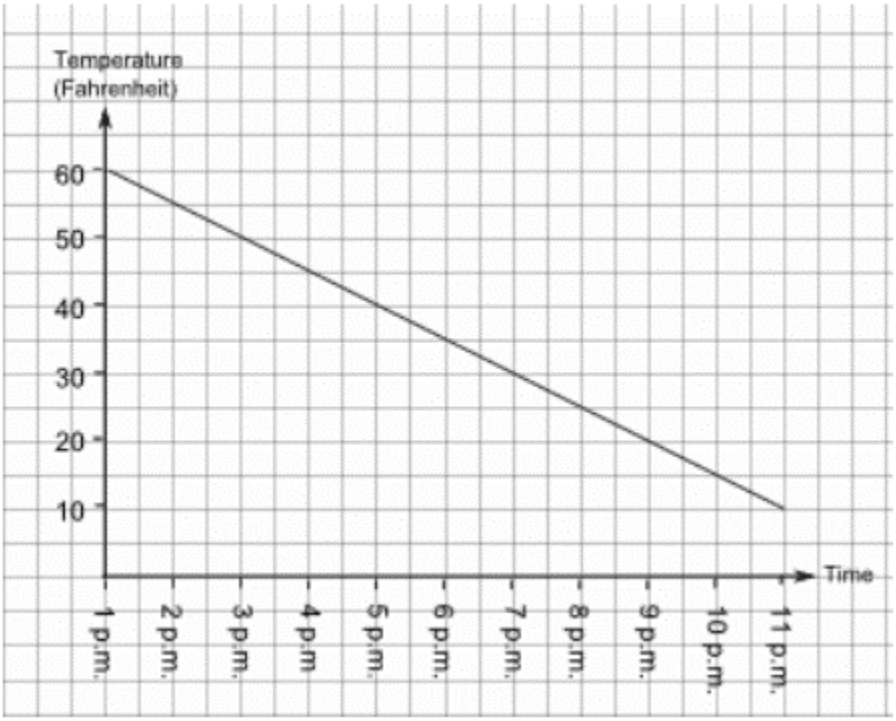
(a) 66

(c) 53

(b) 40

(d) 76

26.




The line graph shows how the temperature changed between 1PM and 11PM. The temperature continued to fall at the same rate. What was the temperature at midnight?

(a) 0°F

(b) 2. 5°F

(c) 5°F

(d) 7. 5°F

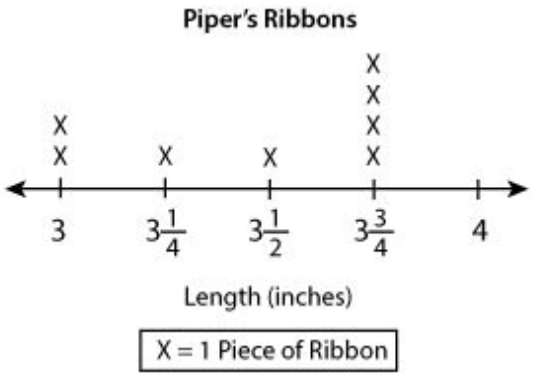
28. A fifth-grade class is going on a field trip to the Atlanta Aquarium. $\frac{1}{3}$ of the students want turkey sandwiches for their lunch. Of those students, $\frac{1}{4}$ want mayonnaise on their sandwich. What fraction of the class wants a turkey sandwich without mayonnaise?

(a) $\frac{1}{12}$ (b) $\frac{1}{7}$ (c) $\frac{7}{12}$ (d) $\frac{1}{4}$

29. What time is it 1111 minutes after 11:11 A.M.?

(a) 5:11 A.M. (b) 5:40 A.M. (c) 5:42 A.M. (d) 6:01 A.M.

30. Piper cut a roll of ribbon into 8 pieces for her art project. She created the line plot below to show the length of each ribbon.




How long was the ribbon in inches before she cut it into 8 pieces?

(a) $24\frac{1}{2}$ (b) $24\frac{3}{4}$ (c) $27\frac{1}{2}$ (d) $27\frac{3}{4}$

31. Colin and April both thought of six numbers. Colin's first number was 0, and April's first number was 12.5. Colin added 0.5 each time to get his other numbers. April subtracted 2.5 each time to get her other numbers. Which of the following statements about Colin and April's numbers are incorrect?

(a) April's second number was 10.

(b) Colin's third number was 1.

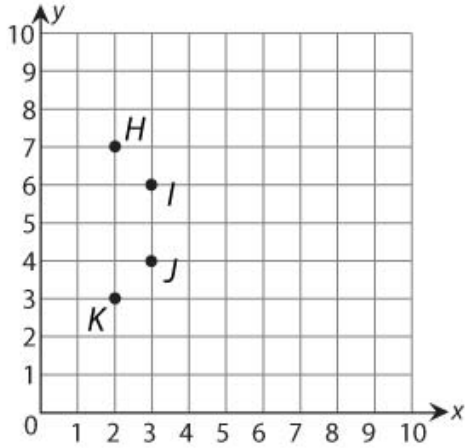
(c) Colin's sixth number was the same as April's first number.

(d) April's sixth number was the same as Colin's first number.

32. I have equal numbers of quarters, dimes, nickels, and pennies. The value of these coins could be any of the following *except:*

(a) $0.41 (b) $1.23 (c) $1.68 (d) $2.46

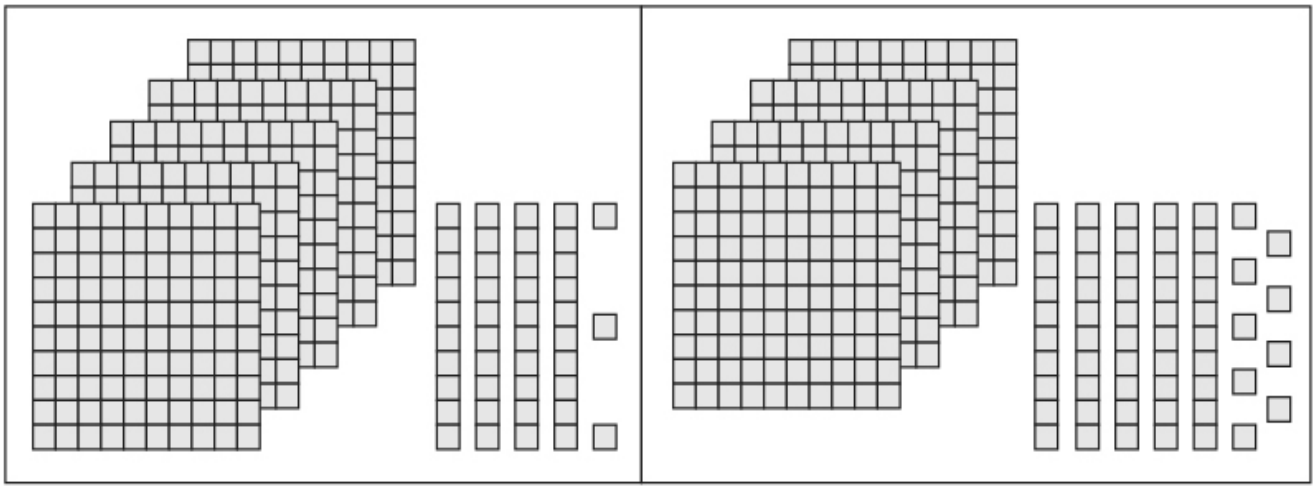
33. Look at the coordinate grid below.




Which point is located 3 units further from the origin along the y-axis than it is from the origin along the x-axis?

(a) Point H (b) Point I (c) Point J (d) Point K

34. Two numbers are represented by the models below.



What is the sum of the numbers?

(a) 992 (b) 1002 (c) 1012 (d) 1092

35. The large rectangle on the right has a perimeter of 46 cm and is divided into nine small rectangles. The perimeters of five of the small rectangles is given in the figure, in cm. What is the perimeter of rectangle A?

| | | |
|---|---|---|
| | 12 | |
| 12 | 10 | 18 |
| | 14 | A |

(a) 16 cm (b) 18 cm (c) 20 cm (d) 22 cm

36. Casey, Macy, Stacy, Tracy, and Bob rode on a roller coaster that has 5 cars, each seating one person. Macy is not in the first seat and Bob is not in the last seat. Stacy sat directly behind Tracy. There is exactly one person between Macy and Casey and there are exactly two people between Casey and Tracy. Who is in the middle seat?

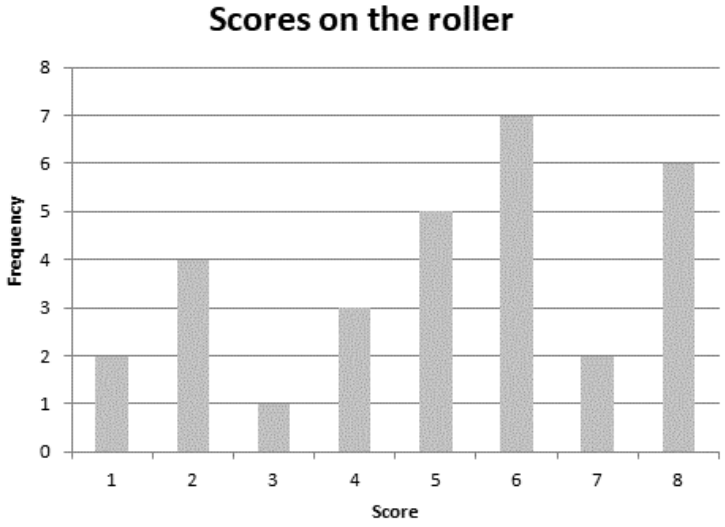
(a) Casey

(b) Macy

(c) Stacy

(d) Tracy

37. A roller can land on any one of 8 faces that are marked with number 1 to 8. Margie rolled the roller 30 times and recorded her scores in a bar graph:




Which of the following statement incorrectly interprets the data from the bar graph?

(a) Margie rolled an 8 twice as many times as she rolled a 4.

(b) Margie rolled a 3 half as many times as she rolled a 7.

(c) The total number of times Margie rolled a 4 or 5 is equal to the total number of times she rolled a 7 or 8.

(d) Margie rolled a 2 twice as many times as she rolled an 8.

38. Mr. Blake drew a shape on the board for his math students. The shape had the following properties:

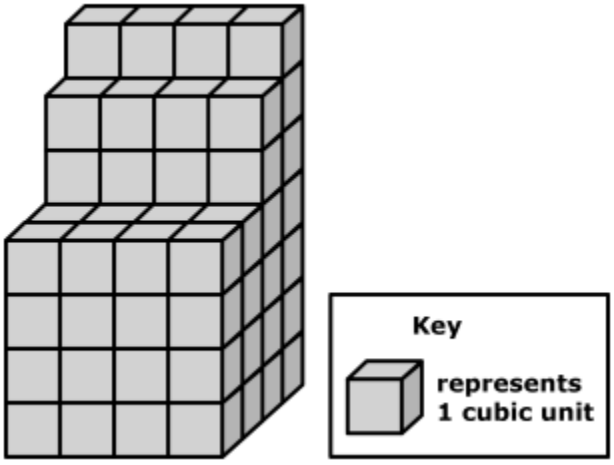
- 4 sides
- 2 right angles

- 1 angle greater than 90 degrees
- 1 angle less than 90 degrees
- 1 pair of parallel sides

Which of the following can be the shape Mr. Blake drew?

(a) Square
(b) Rectangle
(c) Trapezoid
(d) Parallelogram

39. What is the volume of the figure shown below?




(a) 28 cubic units
(b) 32 cubic units
(c) 45 cubic units
(d) 84 cubic units

40. Which equation has the same unknown value as $252 \div 14 = \blacksquare$?

(a) $\blacksquare \div 252 = 14$
(b) $14 \times \blacksquare = 252$
(c) $252 \times \blacksquare = 14$
(d) $\blacksquare \div 14 = 252$

41. Find the difference in the SIMPLEST form:

$$6\frac{4}{5} - 4\frac{3}{15} =$$

(a) $2\frac{1}{10}$ (b) $2\frac{3}{5}$ (c) $2\frac{9}{15}$ (d) $2\frac{1}{15}$

42. How many integers between 2020 and 2400 have four distinct digits arranged in increasing order? (For example, 2347 is one integer.)

(a) 12 (b) 13 (c) 14 (d) 15

43. Jamal has a number that is 24 times larger than the difference of 92 and 13. Which of the following expressions does NOT represent Jamal's number?

(a) $24\times(92 - 13)$

(b) $92 - 13\times24$

(c) $(24\times92) - (24\times13)$

(d) $(92 - 13)\times24$

44. By adding one set of parentheses to the expression below, its value can be made to equal 5. Which of the following answers shows the parenthesis correctly placed to make its value equal to 5?

$$16\div4.5 - 2.5 - 12\times0.25$$

(a) $(16 \div 4.5) - 2.5 - 12 \times 0.25$

(c) $16 \div (4.5 - 2.5) - 12 \times 0.25$

(b) $16 \div 4.5 - (2.5 - 12) \times 0.25$

(d) $16 \div 4.5 - 2.5 - (12 \times 0.25)$

45. We have 6 tents for 18 campers. Each tent holds either 2 or 4 campers. If all tents hold the maximum number of campers, exactly how many of our tents hold 2 campers?

(a) 1

(b) 2

(c) 3

(d) 4

46. Students from Mrs. Brock's class are standing in a circle. They are evenly spaced and consecutively numbered starting with 1. The student with number 3 is standing directly across from the student with number 17. How many students are there in Ms. Brock's class?

(a) 28

(b) 29

(c) 30

(d) 31

47. Look at the following number: 15.555<u>5</u>3

How does the value of the underlined digit compare to the value of the digit to its left?

(a) It is $\frac{1}{10}$ times the value of the digit to its left.

(b) It is 10 times the value of the digit to its left.

(c) It is $\frac{1}{100}$ times the value of the digit to its left.

(d) It has the same value as the digit to its left.

48. A factory ships bottles in large boxes. Each large box contains 2,340 bottles. A shipping truck can transport 6 large boxes of bottles. A company makes an order from the factory that will take 3 full trucks to transport. How many bottles were in the order?

(a) 14,040

(c) 42,120

(b) 4,680

(d) 24,280

49. In this ***Magic Product Square,*** the numbers 1 through 9, without repetition, are placed in the nine cells. The product of the three numbers in each row and in each column is given. What is the number in the cell marked N?

| | | | |
|---|---|---|---|
| | 1 | | **28** |
| | | 5 | **135** |
| **N** | | | **96** |
| **42** | **54** | **160** | |

(a) 1

(b) 2

(c) 3

(d) 4

50. The total weight of 2 blue sacks and 4 red sacks is 48 kg. If the weight of a blue sack is $\frac{3}{4}$ the average weight of all 6 sacks, the weight of 1 red sack is _____ kg.

(a 4)

(b 8)

(c) 9

(d 12)

**5th Grade Individual Test**
**Answer Key**

1. C
2. D
3. D
4. C
5. B
6. D
7. D
8. B
9. B
10. D
11. B
12. A
13. A
14. D
15. D
16. A
17. B
18. B
19. B
20. B
21. C
22. D
23. C
24. D
25. A
26. C
27. A
28. D
29. C
30. D
31. C
32. C
33. B
34. B
35. D
36. B
37. D
38. C
39. D
40. B
41. B
42. D
43. B
44. C
45. C
46. A
47. A
48. C
49. B
50. C