

Kansas City Area Teachers of Mathematics
2018 KCATM Math Competition

**NUMBERS AND OPERATIONS
GRADE 5**

#1-40

NO CALCULATOR

INSTRUCTIONS – You MAY write on this test!

- **Do not open this booklet** until instructed to do so.
- Time limit: **15 minutes**
- You may **NOT use calculators** on this test.
- Some multiple-choice questions do **NOT** have the correct answer as one of the choices. On those questions, the response is: **E. None of the above**
Example: $3 + 4 =$ A. 4 B. 5 C. 6 D. 8 E. None of the above
- If a division problem has a remainder (for instance $21 \div 5 = ??$), the answer is in this form: **4 r 1**
- **Simplify ALL fractions.** Fractions must be expressed in lowest terms.
- All answers that are improper fractions are written as mixed numerals or whole numbers.

Examples: $\frac{4}{2}$ should be written as 2

$\frac{7}{3}$ should be written as $2\frac{1}{3}$

Student Name _____ Student Number _____

School _____

1. Which of the following makes a number pattern?
 - A. 1, 7, 13, 19, ...
 - B. 6, 10, 14, 17, 21, 25, 29, ...
 - C. 5, 8, 11, 14, 18, 21, 24, ...
 - D. 5, 9, 14, 19, 24, 29, 34, 39
 - E. None of the Above

2. $2222 = 2000 + \underline{\hspace{2cm}} + 2$. What is the missing number?
 - A. 22
 - B. 200
 - C. 220
 - D. 222
 - E. None of the above

3. What is the value of $0.2448 \div 0.04$?
 - A. 0.614
 - B. 6.14
 - C. 61.4
 - D. 614
 - E. None of the above

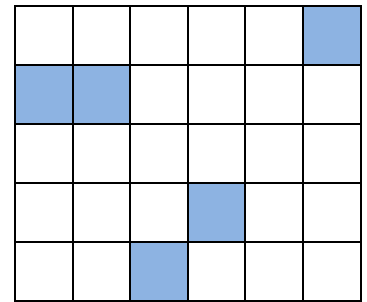
4. When 21 is added to 30 % of a number, it gives the number itself. The number is
 - A. 6.3
 - B. 37
 - C. 30
 - D. 9
 - E. None of the above

5. What is the one's place digit for $(7 + 7 + 7 + 7 + 7) + (7 + 7 + 7 + 7 + 7) + (7 + 7 + 7 + 7 + 7) + (7 + 7 + 7)$?
 - A. 5
 - B. 6
 - C. 7
 - D. 8
 - E. None of the above

6. Which fraction shows $\frac{80}{128}$ in simplest form?
- A. $\frac{10}{16}$
 - B. $\frac{5}{16}$
 - C. $\frac{5}{8}$
 - D. $\frac{12}{16}$
 - E. None of the above
7. Which decimal is equivalent to 2%?
- A. 0.2
 - B. 0.02
 - C. 20
 - D. 2.0
 - E. None of the above
8. A centipede has 25 pairs of shoes. It needs one shoe for each of its 100 feet. How many more shoes does the centipede need to buy?
- A. 20
 - B. 35
 - C. 50
 - D. 75
 - E. None of the above
9. If $\heartsuit \times 4 = \clubsuit$
 $\clubsuit - \heartsuit = 360$,
then what is the value of $\clubsuit + \heartsuit$
- A. 480
 - B. 840
 - C. 720
 - D. 600
 - E. None of the above

10. How many more squares need to be shaded to cover 50% of the total area?

- A. 5
- B. 10
- C. 15
- D. 20
- E. None of the above



11. What number is in the tenths place: 82.768

- A. 7
- B. 2
- C. 8
- D. 6
- E. None of the above

12. What is 0.6×392.75 approximately equal to?

- A. 24000
- B. 2400
- C. 240
- D. 24
- E. None of the above

13. In a certain ancient mysterious language,

- ☉ This sign was used to represent 1,
- ☽ This -- to represent 10 and
- ☾ This – to represent 60. Thus, 22 would be written like this: ☽ ☽ ☉ ☉

How would 124 have been written?

- A. ☽ ☉ ☉ ☉ ☉ ☉ ☉
- B. ☉ ☉ ☽ ☽ ☉ ☉ ☉ ☉
- C. ☉ ☽ ☽ ☉ ☉ ☉ ☉
- D. ☉ ☉ ☉ ☉ ☉ ☉
- E. None of the above

14. Which of the following is the greatest number?
- A. $2 \times 0 \times 0 \times 3$
 - B. $(2+0) \times (0 + 3)$
 - C. $20 \times 0 \times 3$
 - D. $(2 \times 0) + (0 \times 3)$
 - E. None of the above
15. How many integers can one find in the interval from 2.09 to 15.3?
- A. 13
 - B. 11
 - C. 12
 - D. Infinitely many
 - E. None of the above
16. I have 9 bills of 100 dollar, 9 bills of 10 dollar, and 10 coins of 1 dollar. How many dollar do I have in total?
- A. 1000
 - B. 991
 - C. 9910
 - D. 9901
 - E. None of the above
17. Which of the following is different from the others?
- A. 10 hundreds
 - B. 100 tens
 - C. 10 thousands
 - D. 1000 ones
 - E. None of the above
18. $\frac{2003+2003+2003+2003+2003}{2003+2003} = ?$
- A. 2003
 - B. $\frac{1}{3}$
 - C. $\frac{5}{2}$
 - D. 6009
 - E. None of the above

19. A turkey is put in the oven at 10:30a a.m. If the turkey takes $2\frac{3}{4}$ hours to cook, at what time should it be taken out of the oven?

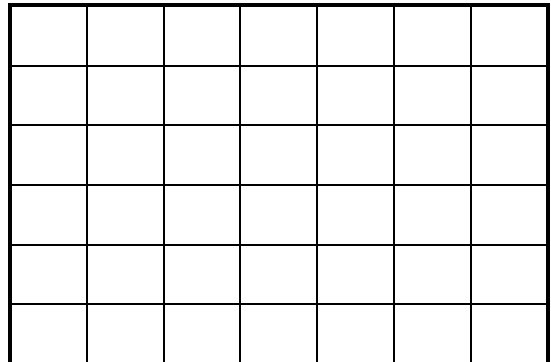
A. 12:15 p.m. B. 12:45 p.m. C. 1:15 p.m. D. 1:45 p.m. E. None of the above

20. A loaded trailer truck weighs 26,643 kilograms. When the trailer truck is empty, it weighs 10,547 kilograms. About how much does the load weigh?

- A. 14,000 kilograms
- B. 16,000 kilograms
- C. 18,000 kilograms
- D. 36,000 kilograms
- E. None of the above

21. I want to cut a rectangle of size 6×7 into squares with side lengths represented by whole numbers. What is the smallest number of squares I can get? (All parts must be squares)

- A. 4 B. 5 C. 7 D. 9 E. None of the above



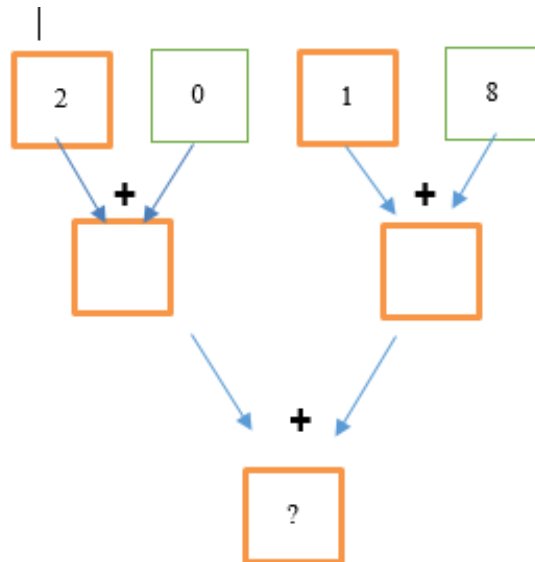
22. In the following calculations, two digits which are the same number are covered with a ★

$$4\star + 5\star = 104$$

Which digit is under the stars?

- A. 2 B. 4 C. 5 D. 7 E. None of the above

23. We put 2, 0, 1, and 8 into an adding machine, as shown.



What is the result in the box with the question mark?

- A. 2 B. 8 C. 9 D. 11 E. None of the above

24. In December Tom-the-cat slept for exactly 3 weeks. Which calculations should we do in order to find how many minutes he stayed awake during this month?

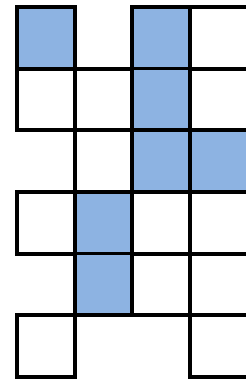
- A. $(31-7) \times 3 \times 24 \times 60$
B. $(31-7 \times 3) \times 24 \times 60$
C. $(30-7 \times 3) \times 24 \times 60$
D. $(31-7) \times 24 \times 60$
E. $(31-7 \times 3) \times 24 \times 60 \times 60$

25. What is the difference between the smallest 5-digit number and the largest 4-digit number?

- A. 1 B. 10 C. 1111 D. 9000 E. 9900

26. What fraction of the image on the right is unshaded?

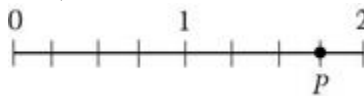
- A. $\frac{6}{17}$ B. $\frac{7}{17}$ C. $\frac{9}{17}$ D. $\frac{10}{17}$ E. None of the above



27. There will be 58 people at a breakfast and each person will eat 2 eggs. There are 12 eggs in each carton. How many cartons of eggs will be needed for the breakfast?

- A. 9 B. 11 C. 72 D. 116 E. None of the above

28. On the number line given below, what number does P represent?



- A. $\frac{2}{3}$ B. $\frac{3}{4}$ C. $1\frac{2}{3}$ D. $1\frac{3}{4}$ E. None of the above

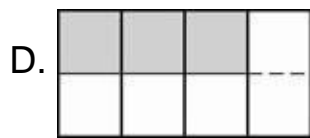
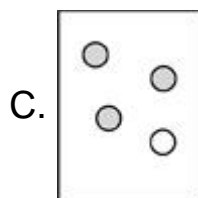
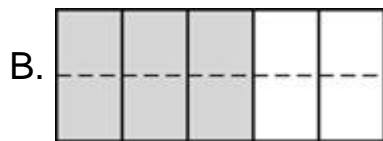
29. Divide: $5\overline{)476}$ (Note that r stands for remainder)

- A. 85 r1
B. 95 r1
C. 96
D. 135 r1
E. None of the above

30. The largest number in the following list: 0.109, 0.2, 0.114, 0.19 is

- A. 0.109 B. 0.2 C. 0.114 D. 0.19 E. None of the above

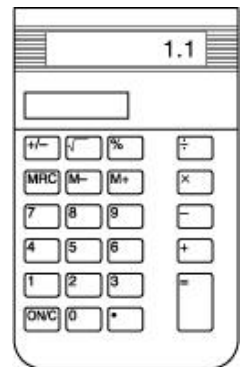
31. Which picture shows that $\frac{3}{4}$ is the same as $\frac{6}{8}$?



E. None of the above

32. Ben bought 4 items at a bake sale and added their cost on his calculator. The total cost read 1.1 on the calculator. What amount does Ben need to pay?

- A. 11 cents
- B. 1 dollar and 1 cent
- C. 1 dollar and 10 cents
- D. 11 dollars
- E. None of the above.



33. If $1111 \times 1111 = 1234321$ then what is the answer to 1111×2222 ?

- A. 3456543
- B. 2346642
- C. 2457642
- D. 2468642
- E. None of the above

34. Amber and Charlotte each ran a mile. It took Amber 11.79 minutes. It took Charlotte 9.08 minutes. Which number sentence can Charlotte use to best estimate the difference in their times?

- A. $11 - 9 = \square$
- B. $11 - 10 = \square$
- C. $12 - 9 = \square$
- D. $12 - 10 = \square$
- E. None of the above

35. Sue bought a notebook for \$3.59. She gave the clerk a \$5 bill. Which of these is the correct amount of change?

- A. One dollar, four dimes, and a penny
- B. One dollar, five dimes, and a penny
- C. Two dollars, four dimes, and a penny
- D. Two dollars, five dimes, and nine pennies
- E. None of the above

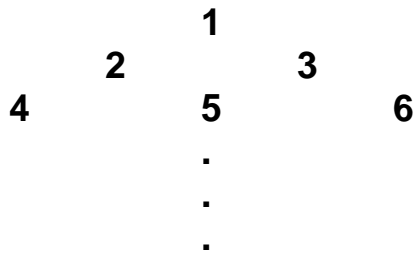
36. Which of the following is a multiple of 7?

- A. 75
- B. 76
- C. 77
- D. 78
- E. None of the above

37. What is $0.8 - 0.07 =$

- A. 0.1
- B. 0.71
- C. 0.793
- D. 0.01
- E. None of the above

38. The natural numbers are arranged in the form of a triangle: 1 is in the first row, 2 and 3 are in the second row, 4, 5, and 6 are in the third row, and so on. What is the sum of the numbers written in the 10th row?



- A. 490
- B. 495
- C. 500
- D. 505
- E. None of the above

39. Fifteen numbers are arranged in a row so that the sum of any four consecutive number is 12. Three numbers are already given in the respective cells of the row. What number must be in the cell marked by ☺?

1							4										2
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- A. 1
- B. 2
- C. 4
- D. 5
- E. None of the above

40. There are oranges, apricots and peaches in a big basket. How many fruits are there in the basket if the peaches and apricots together are 18, the oranges and the apricots together are 28 and 30 fruits are not apricots?

- A. 46
- B. 20
- C. 40
- D. 38
- E. None of the above