Kansas City Area Teachers of Mathematics
2015 KCATM Math Competition

Numbers and Operations
GRADE 5

NO CALCULATOR

INSTRUCTIONS

- **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
  Ex: 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 ÷ 5 = ??), the answer is in this form: **4 r 1.** The answer may also be a decimal value.
- All fractions are expressed in lowest terms.
- All answers that are improper fractions are written as mixed numerals or whole numbers.

  i.e. $\frac{4}{2}$ should be written as 2

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

Student Name _____ Student Number _____

School _____

1. **Round** 65.3471 to the **nearest tenth**.

   A. 65 B. 70 C. 65.3 D. 65.35 E. None of the above

2. Base 10 means that every digit to the left of a digit is 10 times greater than that digit and every digit to the right of a digit is 1/10 the value of that digit. Using the number 65.3471, **what is the value of the digit "6" compared to the value of the digit "3" in the number?**

   A. The value of the digit 6 is twice the value of the digit 3 in the number.
   B. The value of the digit 6 is ten times the value of the digit 3 in the number.
   C. The value of the digit 6 is 1/100 the value of the digit 6 in the number.
   D. The value of the digit 6 is 100 times the value of the digit 3 in the number.
   E. None of the above

3. Choose the correct **expanded form** for: 347**.**392

   A. $3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$
   B. $3 \times 10 + 4 \times 1 + 7 \times (1/10) + 3 \times (1/100) + 9 \times (1/1000) + 2 \times (1/10000)$
   C. $3 \times 1{,}000 + 4 \times 100 + 7 \times 10 + 3 \times 1 + 9 \times (1/10) + 2 \times (1/100)$
   D. $3 \times 100{,}000 + 4 \times 10{,}000 + 7 \times 10{,}000 + 3 \times 100 + 9 \times 10 + 2 \times 1$
   E. None of the above

4. Choose the **correct statement** based on place value using the symbols <, =, or >.

   A. 12.134 > 12.135 B. 183.127 < 183.126 C. 204.836 = 204.835
   B. 158.718 > 158.717 E. None of the above

5. Divide: 1450 ÷ 25

   A. 58 B. 60 C. 48 D. 52 E. None of the above

6. Multiply: 76 x 24
   A. 1444 B. 1824 C. 1524 D. 1644 E. None of the above

7. Which model does **NOT** give you the correct answer to the multiplication of 15 x 26.

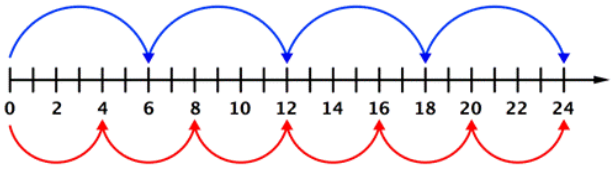
A.

	10	**5**
20	200	100
6	60	30

B. (15 x 20) + (15 x 6) D. (25 x 15) + (1 x 15)

C.(10 x 26) + (5 x 26) E. None of the above

8. The square root of 72 is between:
   A. 6 and 7 B. 7 and 8 C. 8 and 9 D. 9 and 10 E. None of the above



9. Use the number line above to identify the mathematics operations that it could be showing.

i. 4 x 6 ii. 6 x 4 iii. 4 + 4 + 4 + 4 + 4 + 4 iv. 6 + 6 + 6 + 6

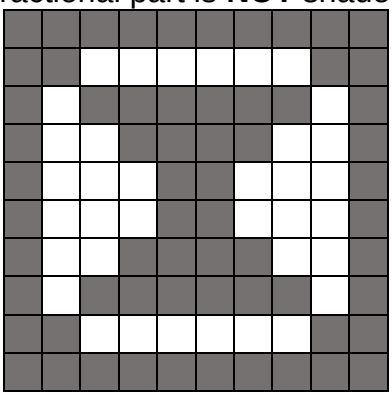
A. i. only B. ii. only C. iii. only D. iv. only E. All of the above

---

10. Evaluate: 22 + 10 ÷ 2 – 4

A. 20 B. 23 C. 31 D. 12 E. None of the above

11. What fractional part is **NOT** shaded in the hundreds chart below?



A. $\frac{3}{5}$ B. $\frac{16}{25}$

C. $\frac{1}{4}$ D. $\frac{9}{25}$

E. None of the above

12. Which of these numbers divided by 3 has reminder of 0?

A. 875 B. 764 C. 912 D. 658 E. None of the above

13. Which of the following addition problems is **NOT** correct reasoning?

A. 2/3 + 5/4 = 8/12 + 15/12 = 23/12
B. 1/4 + 3/8 = 2/8 + 3/8 = 5/8
C. 4/9 + 9/4 = 13/13 = 1
D. 7/5 + 2/3 = 21/15 + 10/15 = 31/15
E. None of the above

14. Rio is making the pieces for a large Jenga puzzle to play outside. Fifty-four total pieces are needed. Rio is buying just enough 8 foot long boards to be able to cut the boards into 2 foot long pieces. Find the cost of the boards Rio must purchase if the cost of each board is $3.

A. $42 B. $40.50 C. $30 D. $45 E. None of the above

15. Which fraction is the largest? $\frac{5}{6}$, $\frac{3}{4}$, $\frac{7}{8}$, $\frac{4}{5}$, $\frac{2}{3}$

A. $\frac{5}{6}$ B. $\frac{2}{3}$ C. $\frac{4}{5}$ D. $\frac{7}{8}$ E. None of the above

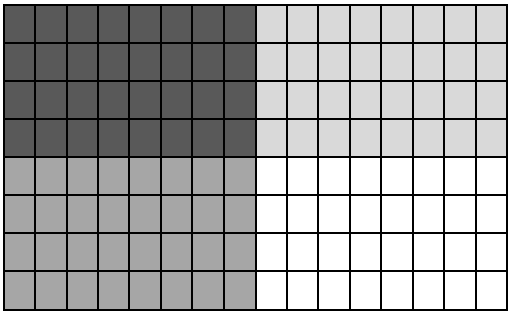
16. Use number sense to determine the correct reasoning below that makes the answer to this problem wrong?

2/5 + 1/2 = 3/7

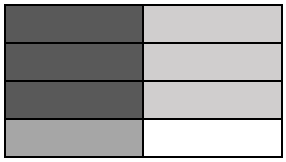
A. 3/7 < 1/2, therefore it couldn't be the sum of 2/5 and 1/2.
B. 3/7 > 1/2, therefore it couldn't be the sum of 2/5 and 1/2.
C. 1/2 > 2/5, therefore it couldn't be the sum of 2/5 and 1/2.
D. 3/7 = 1/2, therefore it couldn't be the sum of 2/5 and 1/2.
E. None of the above

17. Which shaded array shows **3/4 x 1/2**?

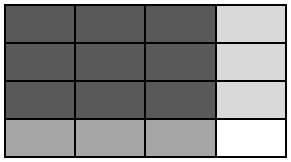
A.



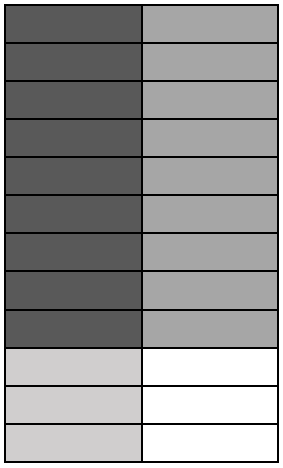
B.



C.



D.



E. None of the above

---

18. **6,400 ÷ 40 =**

A. 120 B. 110 C. 160 D. 106 E. None of the above

19. **750 + 50,000 – 3,500 – 200 + 250 =**

A. 48,300 B. 47,700 C. 54,300 D. 47,300 E. None of the above

20. You want to buy a pair of basketball shoes. The advertisement says **20% off** the original price. If the original price of the pair of shoes is $73, what would be the discount?

A. $1.46 B. $14.60 C. $7.30 D. $58.40 E. None of the above

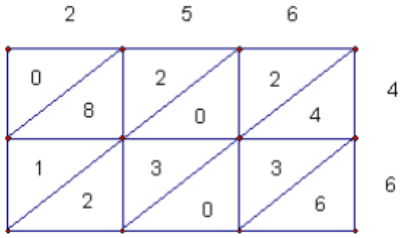
21. $5\frac{1}{6}+1\frac{1}{4}+2\frac{5}{8}$ = *(Simplify your answer to a reduced mixed number.)*

A. $8\frac{7}{8}$ B. $8\frac{7}{18}$ C. $9\frac{1}{24}$ D. $10\frac{13}{48}$ E. None of the above

22. A carpenter has a trim board 16 feet long. The carpenter wants to cut the board into pieces that are each $\frac{3}{8}$ of a foot long. Which expression shows how to do this?

A. 16 x $\frac{3}{8}$ B. 16 ÷ $\frac{3}{8}$ C. 16 + $\frac{3}{8}$ D. 16 - $\frac{3}{8}$ E. None of the above

23. What is the answer to the following lattice operation?



A. 804,206 B. 123,036 C. 205,060 D. 11,776 E. None of the above

24. What is **59 x 0.07 =**

A. 4,013 B. 4.13 C. 0.413 D. 41.3 E. None of the above

25. **8 x 6 – (5 + 2) + (13 - 5) ÷ 4 =**

A. 4.4 B. 34 C. 43 D. 12.5 E. None of the above

26. $8\overline{)2463}$ A. 38.1 B. 307.875 C. 308.95 D. 307.75 E. None of the above

27. **0.9 x 8.7** A. 78.3 B. 7.83 C. 0.783 D. 783 E. None of the above

28. Allie, Ben, and Caleb just inherited some money from their grandpa. Each will get 1/3 of the inheritance, N. Each will put 25% of their inheritance into an account for college. Which statement does **NOT** show the amount that will go into the college account?

A. $\left[\left(\frac{1}{3}\right)N\right]$ X $\left(\frac{1}{4}\right)$ B. $\left(\frac{1}{12}\right)N$ C. $\left[\left(\frac{1}{3}\right)N\right]$ X 0.25

D. $\left[\left(\frac{N}{3}\right)\right]$ X $\left(\frac{1}{4}\right)$ E. None of the above

29. **0.0365×10^4** A. 365 B. 3650 C. 36.5 D. 0.0000365 E. None of the above

30. $1\frac{1}{3} + 2\frac{1}{3} + 3\frac{1}{3} - 4\frac{1}{3} =$

A. $11\frac{1}{3}$ B. $3\frac{2}{3}$ C. 7 D. $2\frac{2}{3}$ E. None of the above

31. 409 ÷ 23

A. 16 r 17 B. 18 r 16 C. 17 r 18 D. 15 r 16 E. None of the above

32. $(24)\times\left(2\frac{1}{8}\right)$

A. $12\frac{1}{8}$ B. 51 C. $26\frac{1}{8}$ D. $48\frac{1}{8}$ E. None of the above

33. $(16)\div\left(1\frac{3}{4}\right)$

A. $16\frac{1}{4}$ B. 28 C. 12 D. $9\frac{1}{7}$ E. None of the above

34. Pi Day was special this year. Which is **NOT** an approximate value of π ?

A. 22/7 B. 3.14 C. 3.1415 D. 3.141592653 E. All are approximations

35. To find the total cost of a purchase, the clerk could take 100% + 8% ***if*** the tax for that city is 8%. That means that the total cost could be found by taking **1.08 times the cost.** Find the total cost of a purchase of $120.

A. $129.60 B. $121.08 C. $128.20 D. $130.80 E. None of the above

36. What is the **prime factorization** of 120?

A. $2^3 \times 3 \times 5$ B. $2^2 \times 3 \times 10$ C. $2^4 \times 5$ D. $2 \times 3^2 \times 5$ E. None of the above

37. Find the selling price of an I-Phone that costs $260 and then is marked **up 20%** because of demand.

A. $272 B. $280 C. $208 D. $312 E. None of the above

38. What is the approximate value (to the nearest tenth) of $\sqrt{3}$?

A. 1.4 B. 1.5 C. 1.6 D. 1.7 E. None of the above

In each of the next two questions, there are four calculations, of which one may be incorrect. Find the **incorrect calculation**, if any.

39. A. $7.3 + 8.9 + 19.51 = 35.71$ B. $603 \div 12 = 50.25$

C. $28{,}000 - 16{,}789 = 11{,}221$ D. $90 \times 45 = 4050$

E. 1/3 of 453 = 151

---

40. A.
$$\begin{array}{r} \$45.93 \\ \$99.26 \\ \$19.68 \\ +\ \$9.47 \\ \hline \$174.34 \end{array}$$

B.
$$\begin{array}{r} \$106.44 \\ -\ \$85.97 \\ \hline \$\ 20.47 \end{array}$$

C. $\frac{5}{6} \div 1\frac{2}{3} = \frac{1}{2}$ D. 35% of 52 = 18.2 E. $12 \times \frac{2}{5} = 4.75$

Shade the correct answer!
Example: A ● C D E

Name_____

School _____

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

Shade the correct answer!

Name_____

Example: A ● C D E

School _____

ANSWER KEY – 3.14.15 (JH)

1.	A	B	●	D	E	21.	A	B	●	D	E
2.	A	B	C	●	E	22.	A	●	C	D	E
3.	●	B	C	D	E	23.	A	B	C	●	E
4.	A	●	C	D	E	24.	A	●	C	D	E
5.	●	B	C	D	E	25.	A	B	●	D	E
6.	A	●	C	D	E	26.	A	●	C	D	E
7.	A	B	C	D	●	27.	A	●	C	D	E
8.	A	B	●	D	E	28.	A	B	C	D	●
9.	A	B	C	D	●	29.	●	B	C	D	E
10.	A	●	C	D	E	30.	A	B	C	●	E
11.	A	B	C	●	E	31.	A	B	●	D	E
12.	A	B	●	D	E	32.	A	●	C	D	E
13.	A	B	●	D	E	33.	A	B	C	●	E
14.	●	B	C	D	E	34.	A	B	C	D	●
15.	A	B	C	●	E	35.	●	B	C	D	E
16.	●	B	C	D	E	36.	●	B	C	D	E
17.	A	●	C	D	E	37.	A	B	C	●	E
18.	A	B	●	D	E	38.	A	B	C	●	E
19.	A	B	C	●	E	39.	A	B	●	D	E
20.	A	●	C	D	E	40.	A	B	C	D	●