

Kansas City Area Teachers of Mathematics
2016 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 $21 \div 5 = ??$), 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 _____ School _____

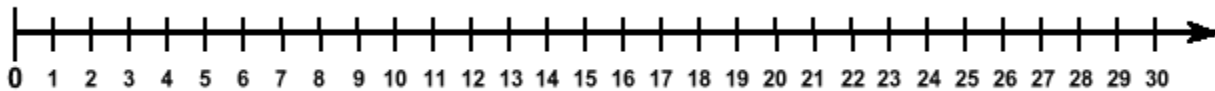
1. If 9 people want to share 50 apples, **between which two whole numbers** does the answer fall?

- A. 3 and 4 B. 4 and 5 C. 5 and 6 D. 6 and 7 E. None of the above

2. The fraction $\frac{3}{4}$ is **equivalent** to which fraction?

- A. $\frac{6}{9}$ B. $\frac{15}{20}$ C. $\frac{12}{15}$ D. $\frac{9}{16}$ E. None of the above

3. Use the number line to determine the number that is **17 more than (13 – 4)**.



- A. 16 B. 26 C. 25 D. 0 E. None of the above

4. Which **expression is the same** as “the sum of 8 and 7, multiplied by 2”?

- A. $2 \times 8 + 7$ B. $8 + 2 \times 7$ C. $2(8 + 7)$
D. $8 + 7 + 2$ E. None of the above

5. The problem: $6 + 6 + 6 + 6 + 6 + 6$ is **NOT** the same as:

- A. 6×6 B. $6 \times 3 + 6 \times 3$ C. $(5 \times 6) + 6$
D. $6 \times 7 - 6$ E. None of the above

6. $476 \div 5 =$

- A. 85 r 1 B. 95 r 1 C. 96 D. 135 r 1 E. None of the above

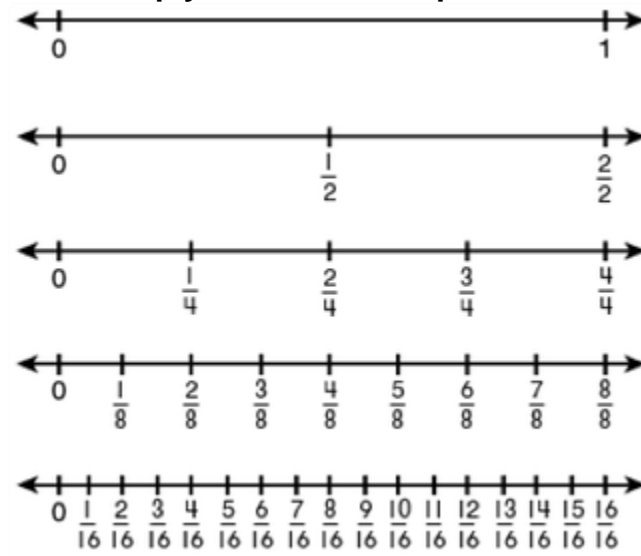
7. Double 47.

- A. 84 B. 86 C. 94 D. 96 E. None of the above

8. 75×12 is the same as:

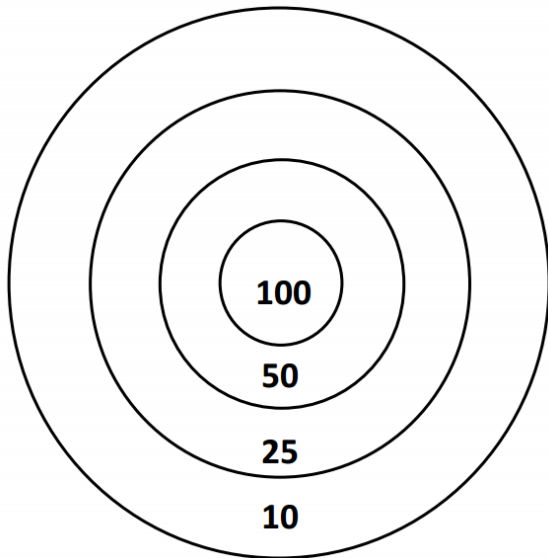
- A. $(70 \times 12) + (5 \times 12)$ B. $(10 \times 70) + (5 \times 12)$ C. $(70 \times 10) + (5 \times 2)$
D. $(70 \times 10) + (75 \times 2)$ E. None of the above

Use the fraction values below to help you answer the questions #9-12.



9. Which fraction is the closest to $\frac{1}{2}$?
- A. $\frac{1}{4}$ B. $\frac{3}{8}$ C. $\frac{10}{16}$ D. $\frac{7}{16}$ E. None of the above
10. What is the sum of $\frac{1}{4} + \frac{9}{16}$?
- A. $\frac{3}{4}$ B. $\frac{5}{8}$ C. $\frac{13}{16}$ D. $\frac{10}{20}$ E. None of the above
11. What is the value of $1 - \frac{9}{16}$?
- A. $\frac{7}{16}$ B. $\frac{8}{16}$ C. $\frac{9}{16}$ D. $\frac{10}{16}$ E. None of the above
12. What is the value of $\frac{2}{8} \div \frac{1}{2}$?
- A. $\frac{3}{16}$ B. $1\frac{1}{2}$ C. $\frac{1}{2}$ D. $\frac{1}{8}$ E. None of the above
13. What is the value of $\frac{3}{4} \times \frac{1}{2}$?
- A. $\frac{3}{16}$ B. $\frac{3}{8}$ C. $1\frac{1}{2}$ D. $\frac{1}{4}$ E. None of the above

Use the dart board given to determine the scores for problems #14-15.



14. Nathan throws 3 darts in the outermost ring, one in the next ring, and two in the ring next to the center. **What is Nathan's score?**

- A. 255 B. 155 C. 185
D. 205 E. None of the above

15. Fatima throws 2 darts in the innermost ring (bullseye), two in the ring next to the center, and two in the outer ring. **What is Fatima's score?**

- A. 170 B. 275 C. 300
D. 320 E. None of the above

16. Evaluate: $16 \div 8 - 2$

- A. 8 B. 6 C. 1 D. 0 E. None of the above

17. Evaluate: $3 + 6 \times (5 + 4) \div 3 - 7$

- A. 14 B. 20 C. 28 D. 5 E. None of the above

18. What is the number 12.456 **rounded to the nearest hundredth**?

- A. 12.5 B. 12.45 C. 12.46 D. 12 E. None of the above

19. What is **1 billion plus 2 million**?

- A. 1,200,000,000 B. 1,002,000,000 C. 1, 200,000
D. 3,000,000,000 E. None of the above

20. If you purchase \$10.49 worth of groceries and give the cashier \$20, **what would be your change**?

- A. \$10.51 B. \$9.51 C. \$8.51 D. \$10.49 E. None of the above

21. 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.

Use the number **25.3471**.

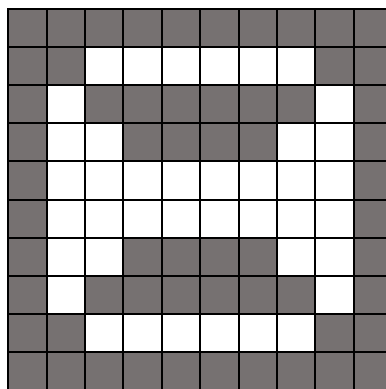
What is the value of the digit “2” compared to the value of the digit “4” in the number?

- A. The value of the digit 2 is half the value of the digit 4 in the number.
 B. The value of the digit 2 is ten times the value of the digit 4 in the number.
 C. The value of the digit 2 is 100 the value of the digit 4 in the number.
 D. The value of the digit 2 is 1000 times the value of the digit 4 in the number.
 E. None of the above
22. Choose the correct **expanded form** for: 2,346.197
- A. $2 \times 1,000 + 3 \times 100 + 4 \times 10 + 6 \times 1 + 1 \times (1/10) + 9 \times (1/100) + 7 \times (1/1000)$
 B. $2 \times 100 + 3 \times 10 + 4 \times 1 + 6 \times (1/10) + 1 \times (1/100) + 9 \times (1/1000) + 7 \times (1/10000)$
 C. $2 \times 1,000 + 3 \times 100 + 6 \times 10 + 3 \times 1 + 9 \times (1/10) + 7 \times (1/100)$
 D. $2 \times 100,000 + 3 \times 10,000 + 4 \times 10,000 + 6 \times 100 + 1 \times 10 + 9 \times 1 + 7 \times (1/10)$
 E. None of the above

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

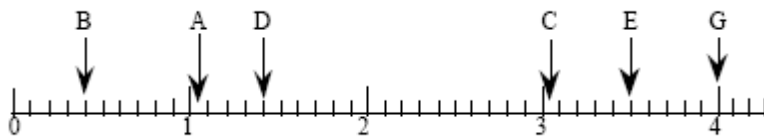
- A. $3.14 > 3.1459$ B. $3.14 < 3.1459$ C. $3.14 = 3.145$
 D. $31.459 > 314.59$ E. None of the above

24. Which **decimal value** is equal to the fractional part of the **shaded part** of the square below?



- A. 0.40 B. 0.60 C. 0.80 D. 0.75 E. None of the above
25. What **fractional part of a dollar** is a nickel?
- A. $1/10$ B. $1/5$ C. $1/50$ D. $1/20$ E. None of the above

Use the given number line below for problems #26-27.



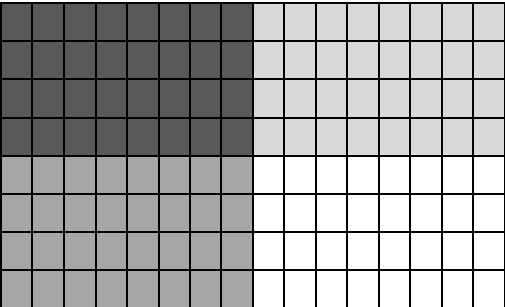
26. What is the fractional value for letter **E**?

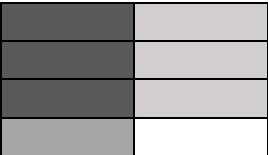
- A. $\frac{1}{2}$ B. $2\frac{1}{2}$ C. $3\frac{1}{2}$ D. $4\frac{1}{2}$ E. None of the above

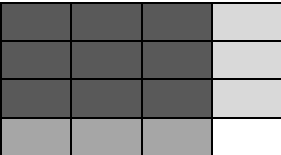
27. What is the **sum** of the decimal values of **B** and **D**?

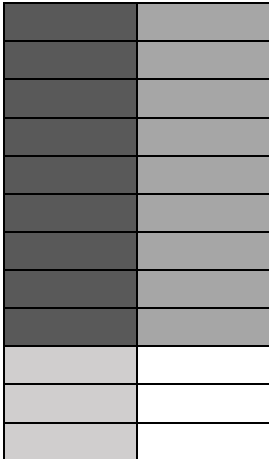
- A. 0.4 B. 0.8 C. 1 D. 1.8 E. None of the above

28. Which **darkest shaded area** in the arrays shows the answer to the multiplication of $\frac{3}{4} \times \frac{3}{4}$?

A. 

B. 

C. 

D. 

E. None of the above

29. You are building a playset for the backyard and you need 6 boards that are 12 feet long, 4 boards that are 6 feet long, and 8 boards that are 4 feet long. **How many feet of board are you needing?**

- A. 128 ft. B. 22 ft. C. 132 ft. D. 112 ft. E. None of the above

30. What is the **expanded value** of 7.2×10^3 ?

- A. 0.0072 B. 21.6 C. 720 D. 7,200 E. None of the above

31. Divide: $2450 \div 25$

- A. 902 B. 92 C. 102 D. 98 E. None of the above

32. Multiply: 150×42

- A. 6,300 B. 9,000 C. 6,150 D. 6,450 E. None of the above

33. When finished, which model does NOT give you the correct answer to 35×28 ?

A.

	30	5
20	600	100
8	240	40

B. $(35 \times 20) + (35 \times 8)$

D. $(35 \times 25) + (35 \times 3)$

C. $(28 \times 30) + (28 \times 5)$

E. None of the above

34. $\sqrt{53}$, the square root of 53, is a number times itself equal to 53. The answer is between:

- A. 6 and 7 B. 7 and 8 C. 8 and 9 D. 9 and 10 E. None of the above

35. $5\frac{1}{3} + 8\frac{2}{3} + 3\frac{1}{3} - 4\frac{1}{3} =$

A. $21\frac{1}{3}$

B. $21\frac{2}{3}$

C. 13

D. $13\frac{2}{3}$

E. None of the above

36. $(12) \times \left(2\frac{1}{4}\right)$

A. $24\frac{1}{4}$

B. 15

C. $24\frac{3}{4}$

D. 27

E. None of the above

37. Andrew and Chad are going to go to a Royals game this season. The tickets are \$12 each and a fee of \$2 for each ticket that they buy online. They are taking \$15 each for snacks. How much do they need altogether to go to the game?

- A. \$29 B. \$50 C. \$54 D. \$58 E. None of the above

38. What is $12.6 \div 9$?

- 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 is incorrect. **Find the incorrect calculation.**

39. A. $8.7 + 9.2 + 29.51 = 47.71$ B. $503 \div 25 = 20 \text{ r } 3$
C. $280,000 - 216,800 = 63,200$ D. $125 \times 40 = 5,000$
E. $1/5$ of $435 = 85$

40. A.
$$\begin{array}{r} \$50.83 \\ \$99.16 \\ \$69.68 \\ + \$9.48 \\ \hline \$229.15 \end{array}$$

B.
$$\begin{array}{r} \$504.00 \\ - \$85.57 \\ \hline \$418.53 \end{array}$$

C. $\frac{5}{8} \div 1\frac{2}{3} = \frac{3}{8}$

D. 75% of $32 = 24$

E. $12 \times \frac{1}{8} = 1.5$

Shade the correct answer!

Example: A ● C D E

Name _____

School _____

1. A B C D E

2. A B C D E

3. A B C D E

4. A B C D E

5. A B C D E

6. A B C D E

7. A B C D E

8. A B C D E

9. A B C D E

10. A B C D E

11. A B C D E

12. A B C D E

13. A B C D E

14. A B C D E

15. A B C D E

16. A B C D E

17. A B C D E

18. A B C D E

19. A B C D E

20. A B C D E

21. A B C D E

22. A B C D E

23. A B C D E

24. A B C D E

25. A B C D E

26. A B C D E

27. A B C D E

28. A B C D E

29. A B C D E

30. A B C D E

31. A B C D E

32. A B C D E

33. A B C D E

34. A B C D E

35. A B C D E

36. A B C D E

37. A B C D E

38. A B C D E

39. A B C D E

40. A B C D E

Shade the correct answer!

Example: A ● C D E

Name _____

School _____

ANSWER KEY

- 1. A B ● D E
- 2. A ● C D E
- 3. A ● C D E
- 4. A B ● D E
- 5. A B C D ●
- 6. A ● C D E
- 7. A B ● D E
- 8. ● B C D E
- 9. A B C ● E
- 10. A B ● D E
- 11. ● B C D E
- 12. A B ● D E
- 13. A ● C D E
- 14. A ● C D E
- 15. A B C ● E
- 16. A B C ● E
- 17. ● B C D E
- 18. A B ● D E
- 19. A ● C D E
- 20. A ● C D E

- 21. A B C ● E
- 22. ● B C D E
- 23. A ● C D E
- 24. A ● C D E
- 25. A B C ● E
- 26. A B ● D E
- 27. A B C ● E
- 28. A B ● D E
- 29. ● B C D E
- 30. A B C ● E
- 31. A B C ● E
- 32. ● B C D E
- 33. A B C D ●
- 34. A ● C D E
- 35. A B ● D E
- 36. A B C ● E
- 37. A B C ● E
- 38. ● B C D E
- 39. A B C D ●
- 40. A ● C D E