Kansas City Area Teachers of Mathematics
2016 KCATM Math Competition

NUMBER SENSE
GRADE 6

NO CALCULATOR

INSTRUCTIONS

- **Do not open this booklet** until instructed to do so.

- Time limit: **20 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
  i.e.   3 + 4 =   A. 4   B. 5   C. 6   D. 8   E. none of the above

- Reduce all fractions.

- Simplify improper fractions to 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. Evaluate 23 + 15 – 6 x 3

    A. 20   B. 42   C. 50   D. 96   E. None of the above

2. A box of candy 24 caramels and 18 chocolates. Which expression shows the number of candies in each box?

    A. 12 + 24 x 18   B. 12 x (24 + 18)   C. (12 x 24) + 18
    D. (12 x 18) x 24   E. None of the above

3. **Find the value** of $(5 \times 10^4) + (2 \times 10^3) + (4 \times 10^2)$.

    A. 52040   B. 50204   C. 52400   D. 50240   E. None of the above

4. Evaluate $72 \div 2^3 + \frac{45-17}{7}$

    A. 6   B. 13   C. 15   D. 40   E. None of the above

5. Which expression is equal to 2?
    A. $24 \div (2+2) \times 5$ B. $(24 \div 2) + (2 \times 5)$ C. $(24 \div 2 + 2) \times 5$
    D. $24 \div (2 + 2 \times 5)$ E. None of the above

6. Admission to an elementary fair is $5 with the cost of games cost $1 each. Which expression will help you find the cost of playing "n" games?

    A. $5n + 1   B. $5 + 1n   C. $5(1 + n)   D. $5(n – 1)   E. None of the above

7. Find the total cost of purchasing the following items at the store during tax-free savings weekend.
    *   5 folders @ $0.75 each
    *   1 pack of notebook paper @$1.20
    *   2 packs of pencils @ $1.50
    *   3 packs of pens (different colors) @ $1.00 each

    A. $9.95   B. $11.85   C. $10.50   D. $11.05   E. None of the above

8. Simplify: $40 \div 2 + (5 - \sqrt{4})$

    A. $13\frac{1}{3}$ B. 21   C. 23   D. 43   E. None of the above

9. You want to pay 15% tip when you go out to eat at a restaurant. If the bill is $20, how much would a 15% tip be?

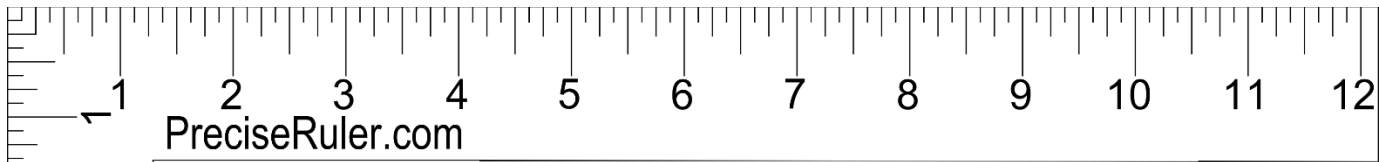   A. $2   B. $2.50   C. $3   D. $3.50   E. None of the above

10. Evaluate this expression: $\dfrac{7^2+9\times3}{24-11\times2}$

    A. 87   B. 34.5   C. 3   D. 38   E. None of the above

11. In golf, the player who has the lowest score wins. Which grouping shows the order of the winners comparing their golf scores? The order listed is 1st, 2nd, and 3rd place.

    A. -8, 5, -3   B. -4, -2, 1   C. -6, -8, -10   D. -5, -3, -2   E. None of the above

12. What number is **half way between –2 and 5**?

    A. 1 1/2   B. – 1 1/2   C. 0   D. 1   E. None of the above

13. Determine the next number in the pattern: 14, -28, 56, -112, ___

    A. 7   B. -224   C. 224   D. 336   E. None of the above

For problems #14-17, use the same two fractions to evaluate each operation.

14. $\dfrac{1}{4}+\dfrac{2}{5}=$

    A. $\dfrac{3}{9}$ B. $\dfrac{1}{3}$ C. $\dfrac{5}{8}$ D. $\dfrac{13}{20}$ E. None of the above

15. $\dfrac{1}{4}-\dfrac{2}{5}=$

    A. $\dfrac{-3}{20}$ B. $\dfrac{-1}{9}$ C. $\dfrac{-1}{20}$ D. -1   E. None of the above

16. $\dfrac{1}{4}\times\dfrac{2}{5}=$

    A. $\dfrac{2}{9}$ B. $\dfrac{5}{4}$ C. $\dfrac{1}{10}$ D. $\dfrac{5}{8}$ E. None of the above

17. $\dfrac{1}{4}\div\dfrac{2}{5}=$

    A. $\dfrac{3}{8}$ B. $\dfrac{5}{8}$ C. $\dfrac{1}{2}$ D. $\dfrac{2}{9}$ E. None of the above

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18. You want to take a 2x4x8 foot board and divide it by cutting it into smaller boards that are 1 ½ feet long. **How many small boards would you be able to cut** from the 8 foot long board?

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

The carpenter's square below might help you determine the answers to problems #19-21.
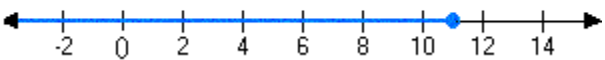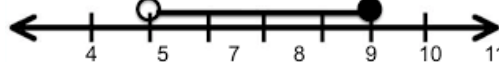
PreciseRuler.com

19. **How many ¼ inch** marks can be made in 8 inches?

 A. 4 B. 8 C. 16 D. 32 E. None of the above

20. **How many ¾ inch marks** can be made in a foot?

 A. 12 B. 16 C. 18 D. 24 E. None of the above

21. Which of the following fractions will **NOT** divide evenly into 6 inches?

 A. $\frac{1}{2}$ B. $\frac{1}{4}$ C. $1\frac{1}{2}$ D. $\frac{5}{8}$ E. None of the above
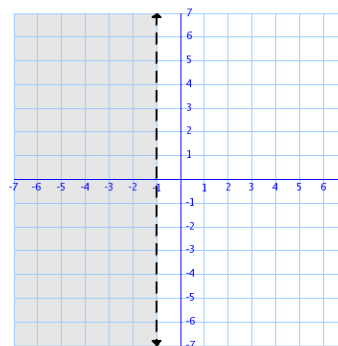
22. Which **inequality is graphed** at the right?

 A. x ≤ 11 B. x < 11 C. x ≥ 11 D. x > 11 E. None of the above

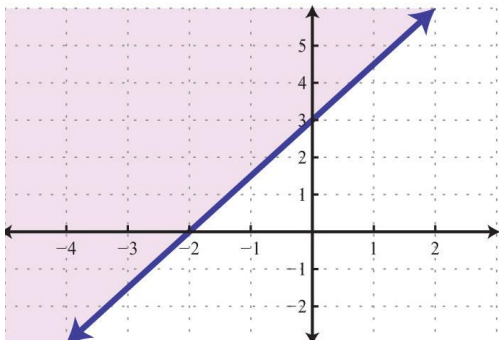23. Which **inequality is graphed** at the right?

 A. 5 < x < 9 B. 5 ≤ x < 9 C. 5 < x ≤ 9 D. 5 ≤ x ≤ 9 E. None of the above

24. Which **inequality is graphed** on the right?

 A. x < 1
 B. x ≥ 1
 C. y < 1
 D. y ≥ 1
 E. None of the above
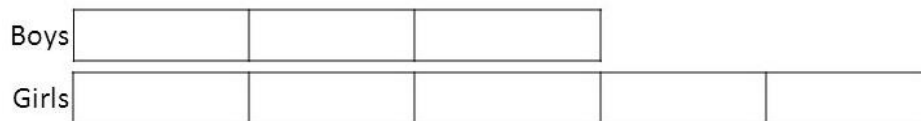
25. Which inequality is graphed below?

A. $y < \frac{3}{2}x + 3$ B. $y > \frac{3}{2}x + 3$

B. $y \le \frac{3}{2}x + 3$ D. $y \ge \frac{3}{2}x + 3$

E. None of the above

26. The ratio of boys to girls in the 6th grade is 3:5. If there are 20 more girls than boys, how many **total students** are in the sixth grade? Use the tape diagram below to help you solve for the total.

A. 50   B. 60   C. 80   D. 90   E. None of the above

27. The ratio of boys to girls in a class is 6:4. If there are 30 boys, **how many girls are there**?

A. 10   B. 15   C. 20   D. 25   E. None of the above

28. After a 25% discount, the cost of a TV is $600. Use the tape diagram to help you solve for the **original cost** of the TV.

A. $625   B. $720   C. $750   D. $800   E. None of the above

29. Find the **discount and the sale price** of a $399 PlayStation VR that is 10% off to a company's employees.

A. $39.90; $359.10   B. $39.90; $351.90   C. $10; $389
D. $40; $359   E. None of the above

30. At a party, the large cheese pizza is cut into 12 slices and the extra-large veggie pizza is cut into 18 slices. If the host wants to serve identical platters that contain the same combination of cheese and veggie slices, with no slices left over, **what is the greatest number of platters** the host can prepare?

A. 9   B. 6   C. 4   D. 3   E. None of the above

31. You have 56 grams of a radioactive kind of iodine. If its half-life is 8 days**, how much iodine would be left after 16 days?**

   A. 28g   B. 48g   C. 24g   D. 14g   E. None of the above

32. Abby and Jonah are baking pies for a bake sale. Abby baked 11 apple pies and 14 blueberry pies. John baked 17 apple pies and 20 blueberry pies. **Who baked a higher ratio** of apple pies to blueberry pies?

   A. Abby   B. Jonah   C. They were both the same ratio.

33. If it is estimated that 70% of the voters will vote in the Presidential election this year If a community has 56,700 people, how many people will **not** be voting?

   A. 39,690   B. 18,120   C. 17,010   D. 35,420   E. None of the above

34. **Between which 2 integers** does $\sqrt{85}$ lie?

   A. 84 and 86   B. 8 and 9   C. 7 and 8   D. 10 and 11   E. None of the above

35. What is the greatest common factor **(GCF)** of 48 and 60?

   A. 4   B. 6   C. 12   D. 24   E. None of the above

36. What is the least common multiple **(LCM)** of 48 and 60?

   A. 240   B. 120   C. 480   D. 600   E. None of the above

37. Charlotte has 4 1/5 cups of M&Ms to take on a hike to share with her friends. She is putting even amounts into 7 bags. **How much will she put in each bag?**

   A. 4/7   B. 3/5   C. 11/5   D. 4/5   E. None of the above

38. **6979 ÷ 5 =**

   A. 1395   B. 1395.2   C. 1395.4   D. 1395.8   E. None of the above

39. Find the **produc**t: $\left(\frac{2}{9}\right) \times \left(\frac{5}{8}\right) \times \left(1\frac{1}{2}\right)$

   A. $\frac{10}{19}$ B. $1\frac{8}{19}$ C. $\frac{1}{10}$ D. $\frac{5}{24}$ E. None of the above

40. Solve the inequality: **- 2(x + 7) < 16**

   A.   x < -15   B. x < 15   C. x > -15   D. x > 15   E. None of the above

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