The Association of Mathematics Teachers of New Jersey's
3rd Annual Middle School Math Contest
Wednesday, December 10, 2014

Directions:

- ✓ Some problems require more than one blank to be answered correctly. All answers on the Student Response Sheet must be in the correct order of the blanks.

- ✓ Problems with more than one blank must have all parts correct and in the right sequence in order to receive credit for the problem.

- ✓ All answers should be written in simplest form using mixed numbers when appropriate.

- ✓ For the non-calculator section, all decimal answers should be rounded to the hundredths place, when necessary.

- ✓ For the calculator section, all decimal answers should be rounded to the thousandths place, when necessary.

- ✓ You may use calculators on the calculator section **only**.

- ✓ Your answers must be clearly written. Illegible answers will be marked incorrect.

- ✓ You will have exactly two 22-minute testing sections and a 1-minute stretch break between the two sections to complete this contest. Work quickly, work accurately, and good luck.

- ✓ You may write on this test paper or on any scrap paper provided by your teacher, but your answers must be written on the Student Response Sheet to be official.

1. John wants to put down carpet in his rectangular bedroom. The bedroom measures $9\frac{7}{9} ft.$ by $8\frac{3}{4} ft.$ Determine how much carpet he needs to order. Express your answer as a mixed number in square feet.

2. Jane is having a big dinner party and hosting 12 guests. She is preparing a new recipe for the party. Each serving of the main dish feeds 3 people. The recipe calls for $1\frac{3}{4}$ cups of chicken per serving. Jane has 4 cups of chicken. Does she have enough for the party? How much extra chicken does she have or how much is she short by?

3. Justin lives $1\frac{1}{3}$ blocks west of Stacey. They draw a number line to model this situation. Because Stacey lives $2\frac{5}{6}$ blocks east of school, they give her house the coordinate $2\frac{5}{6}$. Justin incorrectly claims that the coordinate of his house is $4\frac{1}{6}$.

    a. Draw and label a number line to model the situation.

    b. What is the correct coordinate of Justin's house?

4. A forest covers 56,000 acres. A survey finds that 0.4% of the trees in the forest are old trees. How many acres of old trees are there?

5. There are three stores where you can rent DVDs. The table shows the cost y in dollars to rent x DVDs at store A. The graph represents the cost at store B. The equation $y = 3.85x$ represents the cost at store C. At which store is the cost of renting DVDs the least?
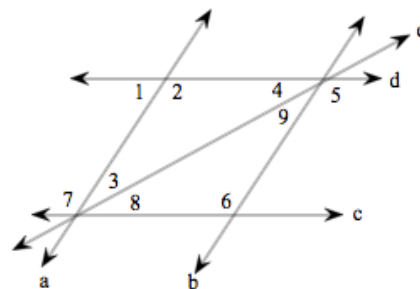
Store A

Number of DVDs (x)	Cost in Dollars (y)
4	15.60
6	23.40
7	27.30

Store B
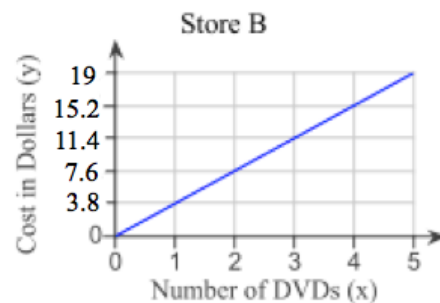
6. The data below represent the cost of admission for a one-day pass to each of 12 amusement parks in the United States. Find the interquartile range for this data set.
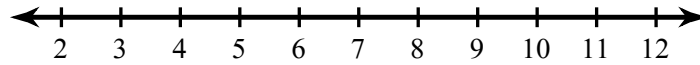
$$42, 31, 27, 53, 60, 49, 42, 33, 45, 61, 30, 54$$

7. Identify two pairs of corresponding angles in the diagram. Only use angles that have individual numbers.
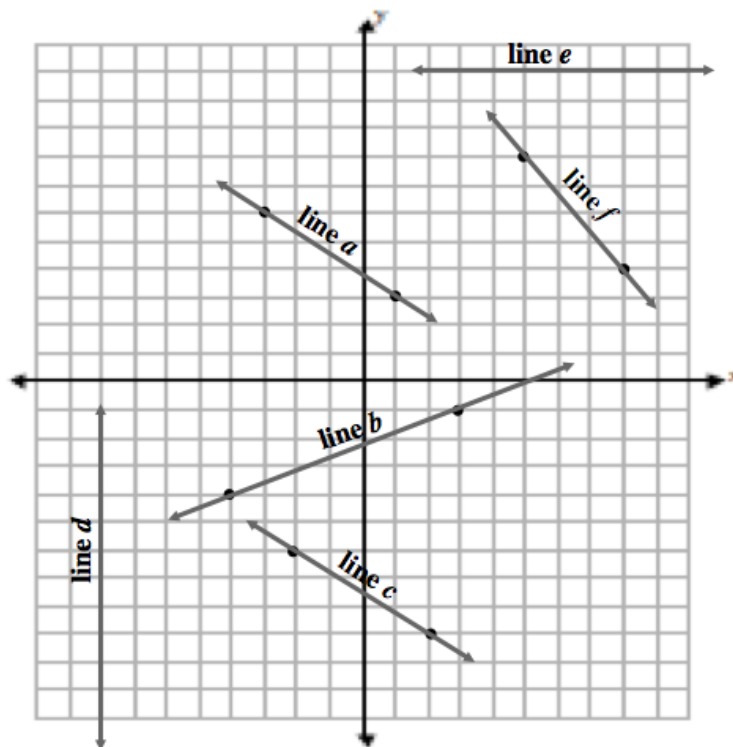
8. (a) Solve the inequality below then (b) graph the inequality. Write both answers on your answer sheet.

$$-4x + 5 > -19$$

9. A recipe for lemonade calls for $1\frac{1}{4}$ cups of water for each cup of concentrate. If you use $3\frac{2}{3}$ cups of concentrate how much water should you use?

10. Using the graph below, identify the two lines with the same rate of change. What is the slope of these lines?

The teacher will collect the non-calculator section of test. Now, students will take a 1-minute stretch break. There should be no talking.**

11. An Internet service provider charges $18 per month plus an initial set-up fee. One customer paid a total of $81 after 2 months of service. Write an equation that represents the total charges y of Internet service after x months.

12. In 1995, Orlando, Florida, the population was about 175,000. At that time, the population was growing at a rate of about 2000 per year. Predict what the population will be in 2020.

13. The number 480 is increased by 42%. The result is then decreased by 76%. What is the final number?

14. The Frosty Ice-Cream Shop sells sundaes for $2.50 each and banana splits for $4 each. On a hot spring day the store sold twice as many banana splits as sundaes, for a total of $42. Determine how many of each the store sold. Be sure to label each answer.

15. If the simple interest on $6,000 for 8 years is $1,056, then what is the interest rate? Write your answer as a percent.

16. The below triangles are similar. Find the missing side lengths for AC and AB.
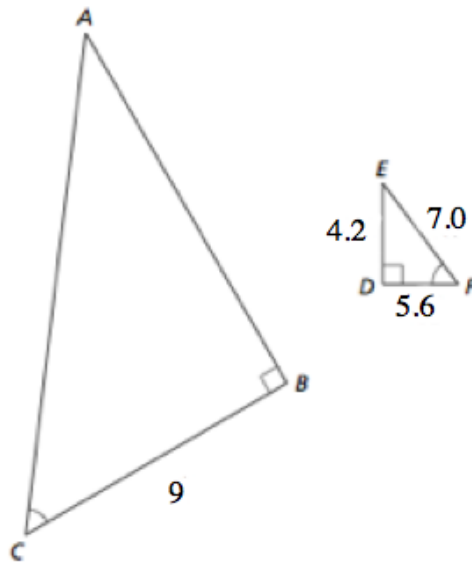
17. A rectangular garden 8 meters wide has a diagonal measuring 17 meters. Find the length of the garden.

18. If a 28-foot tree casts a 20-foot shadow at the same time a nearby building casts a 65-foot shadow, how tall is the building?

19. A store had apples on sale for $1.05 a pound. Jack spent $6.51 on apples. How many pounds of apples did Jack buy?

20. The table below represents the test scores from Mr. Rhodes science class. Mr. Rhodes goal is for the class average to be 88%. What does the remaining student have to earn on the test so that the class reaches the goal?

Mr. Rhodes Science Class
88%
74%
94%
78%
82%
98%
90%
78%
82%
92%
100%
93%
91%
?

****** END OF CONTEST ******