1. Express the following complex fraction as a common fraction: $\dfrac{2}{5+\dfrac{3}{1+4}}$	$\frac{5}{14}$
2. If Ж = 6 and ◊ = 3, what is the value of Ж x Ж + ◊?	39
3. For every foot a trampoline stretches down, it will launch Mark 2.5 feet into the air. How far down must it stretch to launch Mark 15 feet in the air?	6 feet
4. Before you can take a bite of your new chocolate bar, a friend comes along and takes $\frac{1}{4}$ of the bar. Then another friend comes along and takes $\frac{1}{3}$ of what is left. What portion of your chocolate bar did you get to eat? Express your result as a fraction.	$\frac{1}{2}$
5. A certain rectangular solid has a volume of six cubic feet. If the length of the solid is 48 inches, and the width is 36 inches, what is the height?	6 in. or ½ ft or 0.5 ft
6. The hands of a clock point in the same direction at noon and at midnight. How many times between noon and midnight does this occur?	10 times
7. Allison is traveling round trip from Las Vegas to Tucson (405 miles one way). If she averages 50 mph, how many minutes will Allison be on the road?	972 minutes
8. Cross out 4 digits from the number 4921508 in such a way that the resulting 3 digit number will be the smallest possible. What is that smallest number?	108
9. If k is between 2 and 3, then which of the following is smallest? k k-2 k+3 -k 6-k	-k
10. In a pipeline, a cylindrical mechanism called a "pig" is run through the pipeline periodically to clean it. These pigs travel at 3 meters per second. What is the speed in kilometers per hour?	10.8 kph
11. If you get this question right, $\frac{1}{2}$ of the questions before this one right, and $\frac{2}{5}$ of the questions after this one wrong, how many questions would you get right? Do not include the Tie Breaker problem in your calculations.	18
12. On a recent episode of "*Who Wants to Be a Mathematician*" a contestant was asked to arrange the following numbers in order lowest to highest: 2/3 0.6666 3/5 0.666 0.67 When in proper order, what is the middle number?	0.6666
13. Sam needs 12 minutes to go around a square. How long will it take him to go around a square with an area four times as large?	24 min
14. Find the length of the longest side of a rectangle with area of 36 in^2 and perimeter of 26 in.	9 in
15. On the number line below each of the labeled points are evenly spaced. What is the value of *r* ? ----+-------+-------+-------+-------+---- *P* *4/3* *q* *14/3* *r*	$\frac{19}{3}$
16. How many three-letter arrangements can be made if the first and third letters each must be one of the 21 constants and, and the middle (second) letter must be one of the five vowels? Examples: KOM and XAX.	2,205

17. A fox can eat 2 fish in the same amount of time that a bear can eat 4 fish. Together they ate 30 fish. How many fish did the bear eat?	20 fish
18. It takes three cups of flour, three-fourths of a cup of sugar, one egg, and a half teaspoon of salt to make a certain batch of cookies. If you have 99 cups of flour, 24 cups of sugar, three dozen eggs, and 20 teaspoons of salt, how many batches of cookies can you make before running out of an ingredient?	32 batches
19. Four notebooks cost as much as five sharpeners. If 10 sharpeners cost $4, how much do 13 notebooks cost?	$6.50
20. Lindsey went on a long 40-mile bike ride. For the first twenty miles, which included a lot of downhill riding, he averaged 15 miles per hour (mph). For the last twenty miles, which included a lot of uphill riding, Lindsey averaged 10 mph. What was Lindsey's average speed for the whole 40-mile ride?	12 mph
21. Consider the sequence of numbers 2, 5, 8, 11, 14 . . . , in which each number is 3 more than its predecessor. What is the 100th number in the sequence?	299
22. The average of 5 consecutive integers is 13. One of the integers is removed and the sum of the remaining integers is 53. What is the value of the integer that was removed?	12
23. When the length of a rectangle is increased by 20% and the width is increased by 10%, by what percent is the area of the rectangle increased?	32%
24. A full tank of oil weighs 30 oz, but a half-full tank of oil weighs 18 oz. What is the weight of the empty tank?	6 oz
25. The three brothers Tom, John, and Steve were born exactly 4 years apart. The eldest is exactly 5 times as old as the youngest. How old is the youngest brother?	2 years or 1 year
26. A group of ten persons were planning to chip in equally to buy several pizzas. After the pizzas were ordered, one person left. As a result, each of the remaining nine persons had to pay an extra 60 cents. How much was the total bill?	$54.00
27. The distance between Oklahoma City and Nashville is 642 miles. Train-A leaves Oklahoma City and Train-B leaves Nashville at the same time, traveling toward one another on the same railway with constant speed. They meet after 6 hours. Train-A travels 24 mph faster than Train-B. What distance did Train-A travel before they met?	393 miles
28. Two jugs are filled with water. If you remove 1 liter of water from the first jug, then the two jugs contain the same amount of water. If you remove 2 liters from the second, then the second jug would contain half as much as the first. How many liters of water are in the largest jug?	6 liters
29. Solve for x: $2^3 \cdot 4^3 \cdot 16^{12} = 2^x$	57
30. Simplify: $\dfrac{2^{-1}+3^{-1}}{6^{-1}}$. Express your answer as a common fraction or integer.	5
31. If a hen and a half can lay an egg and a half in a day and a half, how long will three hens take to lay 12 eggs?	6 days
Tie Breaker If n! = (n)(n-1)(n-2). . .(3)(2)(1), for what value of n will (7!)(5!)(3!)(1!) = n! ?	10

9th Annual
Oklahoma School of Science and Mathematics
Middle School Mathematics: An Awesome Contest
February 26, 2011

NAME: (Please print) _____ **Email** _____	**AGE**	**DATE OF BIRTH** mm/dd/yy _ _ / _ _ / _ _	**GRADE LEVEL** **6**
SCORE (For official use) L: _____ R: _____ Total: _____ TB: Y N	**GENDER** (Circle one) **M F**	**HOME ADDRESS** (Please print) Street _____ City _____ Zip _____ School _____	
Parents' names: (Please print)			

Directions: Use the scratch paper provided to do your work. Calculators are allowed, but not necessary. Write the answer(s) to each question in the box to the right of the question. All fractions should be in simplest form (use improper fractions instead of mixed numbers). Round decimal answers to three decimal places. Units are not necessary unless specifically requested in the problem.

This is a 31-question, 1-hour contest. Each question is worth one point. Your score will be the number of correct answers. There is no partial credit or penalty for wrong answers. Please continue working or reworking problems until time is called.

Do Not Open or Turn Over Until Instructed To Do So