mathleague.org

Junior High Target Round 11011

Name: _____
Grade: _____
School: _____

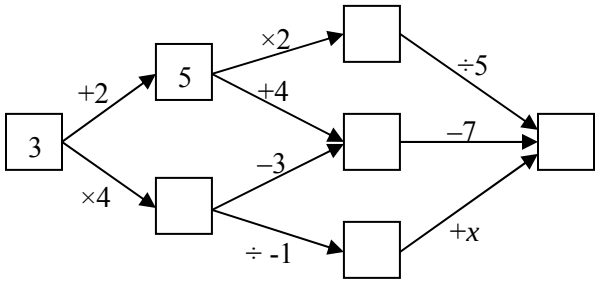
Score: # 1 _____ Scorer's initials _____
Score: # 2 _____ Scorer's initials _____

DO NOT BEGIN UNTIL YOU ARE INSTRUCTED TO DO SO

This round of the competition consists of eight problems. They will be presented to you in pairs. Work on one pair of the problems will be completed and answers will be collected before the next pair will be distributed. The time limit for each set of the two problems is six minutes. The first pair of problems is on the other side of this sheet. When instructed to begin, pick up your pencil and begin working. Record your final answer in the designated space on the problem sheet. All answers must be complete, legible, and simplified to lowest terms. This round assumes the use of calculators, and calculations may also be done on scratch paper, but no other aids are allowed. If you complete the problems before time is called, use the time remaining to check your answers.

1. Allison earns $11.30 per hour, and she gets paid every two weeks. In the first week she worked for 33 hours, while in the second week she worked for 37 hours. If 15% of her pay gets withheld for taxes, how much will she get paid at the end of the two weeks? 1._____

2. In the diagram below, the box on the left starts with the number 3. To complete the diagram, follow the arrows and perform the operations indicated by each one. What value of x is needed so that each path leads to the same number in the right-most box? 2._____



mathleague.org

Junior High Target Round 11011

Name: _____
Grade: _____
School: _____

Score: # 3 _____ Scorer's initials _____
Score: # 4 _____ Scorer's initials _____

DO NOT BEGIN UNTIL YOU ARE INSRUCTED TO DO SO

The second pair of problems is on the other side of this sheet. When instructed to begin, pick up your pencil and begin working. Record your final answer in the designated space on the problem sheet. All answers must be complete, legible, and simplified to lowest terms. This round assumes the use of calculators, and calculations may also be done on scratch paper, but no other aids are allowed. If you complete the problems before time is called, use the time remaining to check your answers.

3. A bacteria colony starts with 5 bacteria. If the colony doubles in population every 8 hours, how many bacteria will there be after 4 days? 3._____

4. Chickens sell for $27, while pigs sell for $62. If Stan sold 46 animals for a total of $2257, how many of the animals were pigs? 4._____

Junior High Target Round 11011

Name: _____
Grade: _____
School: _____

Score: # 5 _____ Scorer's initials _____
Score: # 6 _____ Scorer's initials _____

DO NOT BEGIN UNTIL YOU ARE INSRUCTED TO DO SO

The third pair of problems is on the other side of this sheet. When instructed to begin, pick up your pencil and begin working. Record your final answer in the designated space on the problem sheet. All answers must be complete, legible, and simplified to lowest terms. This round assumes the use of calculators, and calculations may also be done on scratch paper, but no other aids are allowed. If you complete the problems before time is called, use the time remaining to check your answers.

5. A single line divides the plane into two regions, while two intersecting lines divide the plane into four different regions. What is the maximum number of regions that the plane can be divided into by 6 intersecting lines? 5._____

6. Call a number simple if it is not divisible by the squares of any of its prime factors. For example, 34 is a simple number. How many numbers between 11 and 30, inclusive, are not simple numbers? 6._____

Junior High Target Round 11011

Name: _____
Grade: _____
School: _____

Score: # 7 _____ Scorer's initials _____
Score: # 8 _____ Scorer's initials _____

DO NOT BEGIN UNTIL YOU ARE INSRUCTED TO DO SO

The fourth pair of problems is on the other side of this sheet. When instructed to begin, pick up your pencil and begin working. Record your final answer in the designated space on the problem sheet. All answers must be complete, legible, and simplified to lowest terms. This round assumes the use of calculators, and calculations may also be done on scratch paper, but no other aids are allowed. If you complete the problems before time is called, use the time remaining to check your answers.

7. How many different subsets of the set {1, 2, 3, 4, 5, 6} contain at least one multiple of 3? 7._____

8. An ice cream cone consists of a hemisphere on top of a circular cone. The hemisphere and the base of the cone have equal radii, and the height of the cone is twice its radius. If the volume of the entire ice cream cone is 288π, what is the radius of the hemisphere? 8._____