2012 Rocket City Junior Math Mania
Algebra and Probability – 6th Grade

1. Evaluate: $\sqrt{256}$

2. When two standard six-sided dice are rolled, what is the probability that the sum of the results is four?

3. What value of *h* satisfies $3h+17=h+59$?

4. Evaluate: 8^3-3^3

5. Wesley picks a number in the set of numbers from 1 to 30 (including 1 and 30). What is the probability that his number will have at least one "2" in it?

6. What is the median of the data set {5, 2, 11, 2, 19, 35, 2, 19, 17}?

7. After "trick-or-treating," Jared gives one-third of his candy to his brother and twenty pieces to his sister. This left him 22 pieces. How many pieces did he have originally?

8. Evaluate as a decimal: $1.2\times3.4+5.6$

9. A rectangular dartboard has sides measuring 20 cm by 30 cm, and has a rectangular bulls-eye that measures 3 cm by 4 cm. If my dart hits the dartboard, what is the probability that it hits the bulls-eye?

10. 45% of 240 is how many more than 55% of 180?

11. Arrange the variables A, B, C, and D in increasing numerical order:
    $A=9\times8$ $\quad B=111-44$ $\quad C=1024\div8$ $\quad D=34+45$

12. How many ways can you split 5 pieces of candy among 3 different friends if each friend has to get at least one piece?

13. What value(s) of *w* satisfy $4w-9=2w+57$?

14. Express in simplest radical form: $\sqrt{180}$

15. When two marbles are drawn without replacement from a bag containing three red marbles and four blue marbles, what is the probability that both marbles are red?

16. Evaluate: $4^4-3^3+2^2-1^1$

17. If I drive forty miles at twenty miles per hour and then drive thirty miles at ten miles per hour, what is my average speed over the two trips in miles per hour?

18. A quarter is flipped 3 times. What is the probability of exactly two heads?

19. A single card is chosen from a 52-card deck of cards, what is the probability that it is a Queen or a club?

20. A bag contains only red marbles and blue marbles, and the probability of drawing a red marble is 3/4. If there are 4 blue marbles in the bag, then how many total marbles are in the bag?

2012 Rocket City Junior Math Mania
Geometry and Potpourri – 6th Grade

1. What is the name for a triangle with exactly two equal sides?

2. John and Bill leave the Space and Rocket Center at the same time. John travels 9 miles in a straight line, while Bill travels 7 miles in a straight line. If their paths are not in a straight line, what is the greatest distance that could be between them?

3. Jack writes down all the multiples of 3 between 100 and 200. Jill writes all of the multiples of 5 between 74 and 151. How many numbers are on both of the lists?

4. What is the perimeter, in inches, of a regular decagon with sides measuring 4 in?

5. What is the next term of the sequence 4, 7, 11, 16, 22, 29, 37, __?

6. A square has an area of 49 in^2. A second square is drawn with sides that are twice as long as the first square. What is the area of the second square, in square inches?

7. Express 140 as a product of prime numbers.

8. What is the sum of the first ten terms of an arithmetic sequence with first term 19 and common difference 7? The sequence begins 19, 26, 33, …

9. Two identical cubes are on top of a table. Ryan picks up one cube and stacks it on top of the other. If one face of one cube has area 12, then what is the total area of all the visible faces?

10. How many diagonals can be drawn in a convex octagon?

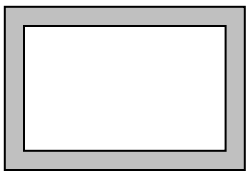
11. What are the next **two** numbers in the pattern: 2, 3, 7, 11, 13, 17, 19, 23, …?

12. Two angles of a triangle are 58 and 60. What is the measure of the other angle?

13. A rectangle has an area of 91, and the length is 13. What is the perimeter of the rectangle?

14. How many lines of symmetry does a regular drawing of a 5-pointed star have?

15. A rectangular picture measuring 20 cm by 30 cm is surrounded by a rectangular frame that is 2 cm wide on all sides of the picture. What is the area of just the picture frame?



16. Put these angle types in order from the largest angle measure to the smallest: acute, obtuse, straight, right.

17. Which measurement is closest to the length of this paper: 3 inches, 1 foot, 2 yards, ½ mile?

18. One equilateral triangle has a side of length 12, while another has a side of length 6. How much more is the perimeter of the larger triangle than the perimeter of the longer triangle?

19. A pizza is cut using 3 straight lines. What is the greatest number of pieces you can make with these three cuts?

20. The area of a square is 64 square inches. What is the area of the largest circle that will fit inside the square? (Use 3.14 for π.)