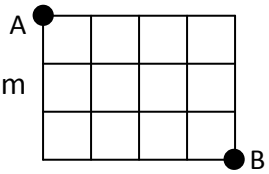
2012 Rocket City Junior Math Mania
Algebra and Probability – 4th Grade

1. Find the product of 3 more than twenty and 3 less than twenty.

2. A certain class has 1 student in it on the first day of school. On the second day, there are two students; on the third day there are four students, and the number of students doubles each day. How many students will there be on the 8th day of school?

3. Raj chooses a random letter of the alphabet. What is the probability that the letter he chooses is in the word GRISSOM?

4. What value of *h* satisfies 5*h* + 17 = 26 + 10 + 26?



5. In the array of unit squares to the right, how many paths along the gridlines from A to B moving only down and right?

6. Evaluate: 8! (Note: 8! = 8 X 7 X 6 X 5 X 4 X 3 X 2 X 1)

7. Wesley picks a number in the set of numbers from 1 to 30 (including 1 and 30). What is the probability that his number has at least one of its digits as a "2"?

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

9. When five times the magic number is divided by two, the result is 35. What is the magic number?

10. Evaluate as a decimal: 1.6 + 2.57 + 3 + 9.45

11. 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?

12. Arrange the variables A, B, C, and D in increasing numerical order:
$A = 9 \times 8$ $B = 111 - 44$ $C = 1024 \div 8$ $D = 34 + 45$

13. If you have four identical pieces of Halloween candy left when the final group of two trick-or-treaters arrives at your door, how many different ways could you pass out the candy? (You don't have to give each person the same number of pieces.)

14. How many ways can you split 5 pieces of candy among 2 different friends if each friend has to get at least one piece?

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

16. Jake begins adding the number 1 + 2 + 3 + 4 and so on. Which number does he add to get a sum of more than 200 for the first time?

17. I am thinking of a certain number. If you add 14 to the number, then you would be the same distance from 30 as if you subtracted 8 from the number. Of which number am I thinking?

18. A secret number is multiplied by 8, then 8 is added. The result is 112. What is the secret number?

19. In how many different orders can the letters ABCD be arranged?

20. If a bag contains 4 white balls, 3 red balls, 8 black balls, and 5 orange balls. What is the probability of taking one random ball out of the bag and getting a black ball or a white ball?

2012 Rocket City Junior Math Mania
Geometry and Potpourri – 4th Grade

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

2. The perimeter of a rectangle is 48. If the length is 13, what is the width?

3. 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 whole number distance that could be between them?

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

5. 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?

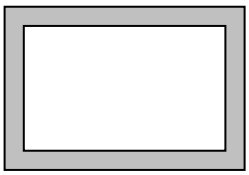
6. What is the sum of the first 8 terms of an arithmetic sequence with first term 19 and common difference 7? The sequence begins 19, 26, 33, …

7. The area of a square is 64 square inches. What is the radius of the largest circle that will fit inside the square?

8. What is the perimeter of a hexagon if each side has length 12 cm?

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. 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?



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

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

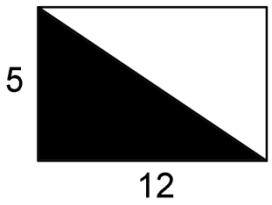
13. How many lines of symmetry does a regular drawing of a 5-pointed star have?

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

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

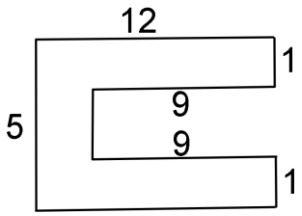
16. One equilateral triangle has a side of length 12, while another has a side of length 6. How much more is the perimeter of the larger triangle than the perimeter of the longer triangle?

17. What is the area of the shaded right triangle to in the picture to the right?



18. Starting today (November 3rd), your mother gives you 3 dollars right when you wake up. On the 3rd you get three dollars, on the 4th, you will get four dollars, on the 5th you get 5 dollars, and so on. You want to purchase a new video game that costs $40. What is the first date you will have enough money to be able to purchase the game? (Give the month and the day, like December 5th.)

19. What is the perimeter of the figure to the right?



20. What is the next term in the sequence: 1, 3, 9, 27, …