

2008 Rocket City Junior Math Mania
Algebra Test – 6th Grade

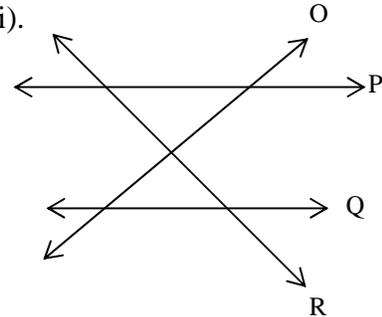
1. Evaluate: $5 - 8 \times (7 + 9 \div 6)^3$
2. If 8 chickens can lay 12 eggs in 3 days, how many eggs can 5 chickens lay in 6 days?
3. Evaluate: $(-2)^3 - (-3)^0 (-4)^2$
4. If F pounds of flour can be purchased with N nickels, how many pounds of flour can be purchased for one dollar?
5. Evaluate:
$$\begin{array}{r} 259 \\ \times 83 \\ \hline \end{array}$$
6. What value(s) of a satisfy $2(3 - a) + 3(2a + 5) = 65$?
7. What is the largest prime factor of 8050?
8. If I drive 80 kilometers in 2 hours and then 60 kilometers in 5 hours, what was my average speed in kilometers per hour over the two trips?
9. A piggy bank contains only quarters and dimes. If there are 34 coins worth a total of \$4.30, how many quarters are in the piggy bank?
10. What value(s) of b satisfy $b^2 - 6b + 8 = 0$?

2008 Middlementary Math Bonanza Geometry Test – 6th Grade

1. A circular spinner is divided into three sections, two of which have central angles of 61° and 105° . What is the measure of the central angle of the third (in degrees)?

2. Find the volume of a sphere with a radius of 9 (in terms of pi).

3. In the figure shown, $\overline{P} \perp \overline{Q}$, $\overline{O} \perp \overline{R}$, and the smaller angle between \overline{O} and \overline{P} measures 19° . What is the measure, in degrees, of the smaller angle between \overline{Q} and \overline{R} ?

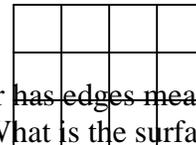


4. What is the length, in centimeters, of the hypotenuse of a right triangle with legs measuring 12 cm and $12\sqrt{3}$ cm?

5. How many fluid ounces are there in 3 gallons?

6. What is the area, in square centimeters, of a triangle with sides measuring 7, 25, and 24 cm?

7. How many squares of any size can be found in the unit grid shown?



8. Two right rectangular prisms are similar to one another. The smaller has edges measuring 2, 3, and 4 cm, while the larger has a longest edge measuring 12 cm. What is the surface area, in square centimeters, of the larger prism?

9. How many diagonals can be drawn in a convex heptagon (7-gon)?

10. What is the area, in square centimeters, of a rhombus with sides measuring 20 cm and a diagonal measuring 24 cm?

2008 Rocket City Junior Math Mania
Potpourri Test – 6th Grade

1. What is the sum of the first 6 terms of an infinite geometric sequence beginning 2, 6, 18, ...?
2. How many subsets of the set $\{2,3,5,7\}$ contain the element 3?
3. What is the next term of the sequence 2, 5, 9, 14, 20, 27, ___?
4. How many positive integers are factors of 48?
5. What is the sum of A, B, and C?

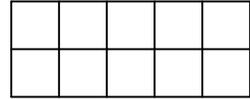
A is the difference between 148 and 92.
B is the product of 9 and 18.
C is the quotient of 345 and 3.
6. What is the next term of the sequence 4, 11, 7, 9, 10, 7, 13, ___?
7. What is the range of the data set $\{12,19,19,34,49,49,49,62,62,87\}$?
8. How many two-digit multiples of 2 do not contain the digit 2?
9. What is the smallest prime number greater than 200?
10. Write an expression that equals 20 using the one-digit numbers 3, 5, 7, and 9 exactly once each and the operations of addition, subtraction, multiplication, and division (and parentheses) as much or as little as you like.

2008 Rocket City Junior Math Mania
Probability Test – 6th Grade

1. In an Olympic qualifying race, the first three people across the finish line will qualify to compete in the Olympics. How many different sets of qualifiers can be selected in a race with eight competitors?

2. How many ways are there to arrange the letters in the word “COFFEE”?

3. In the grid of unit squares shown, how many paths of length seven are there from the upper left corner to the lower right corner traveling along grid lines?



4. The probability of rain tomorrow is $\frac{3}{4}$, while the probability of wind tomorrow is $\frac{1}{3}$. If these are independent events, what is the probability that it is neither rainy nor windy tomorrow?

5. How many ways can five people sit around a round table?

6. Sam and Max play a game in which the first person to get heads when they flip a fair two-sided coin wins. The first player gets to flip the coin once, then the second player gets to flip the coin twice, then the first player gets to flip the coin three times, then the second player gets to flip the coin four times. What is the probability that no one has won the game after the process described?

7. When a single card is drawn from a standard fifty-two card deck, what is the probability that it is either a heart or a Jack (or both)?

8. When three fair, six-sided dice are rolled, what is the probability that the product of the numbers shown is six?

9. Your friend (who you trust completely) rolls two standard, six-sided dice behind a screen and tells you that she did not roll any numbers higher than four. What is the probability that she rolled doubles?

10. In a survey of the 138 members of the computer club, 89 knew Python, 75 knew Java, and 68 knew C#. If 37 knew all three languages, 53 knew both Python & C#, 40 knew both Java & C#, and 61 knew both Java & Python, how many club members did not know any of these languages?