# Math Bee – Sample Packet (4th Grade)

## Regulation Tossups

(1) [Computational Pyramidal] Cameron has a large book collection. If he has 45 books on each shelf he has in his room, and he has a total of 6 shelves, one can multiply the number of books per shelf by the total number of shelves, to determine the total number of books. How many total books does he have? You have five seconds to answer.

ANSWER: **270**

(2) [Computational Non-Pyramidal] If the current time is 11:25 am, what time was it 2 hours and 30 minutes ago? You have 30 seconds to answer.

ANSWER: **8:55** am (accept equivalents like **5 minutes before 9**; do NOT accept "8:55 pm")

(3) [Computational Non-Pyramidal] Convert 60 feet to yards. You have 30 seconds to answer.

ANSWER: **20** yards

(4) [Computational Non-Pyramidal] What is the area between y equals 4, y equals 8, x equals 0, and x equals 2? You have 30 seconds to answer.

ANSWER **8**

(5) [Computational Pyramidal] This number is the sum of the number of legs on most cats, the number of sides on a quadrilateral, and the number of sides on a triangle. For the point, what is this number obtained by starting with 10, subtracting 3, and then adding 4? You have five seconds to answer.

ANSWER: **11**

(6) [Computational Non-Pyramidal] You have a bag that contains 5 green marbles, 3 yellow marbles, and 2 blue marbles. What is the probability of drawing a yellow marble from the bag? You have 30 seconds to answer.

ANSWER: **3/10** (or **30%**)

(7) [Computational Non-Pyramidal] What is 7 raised to the 3rd power? You have 30 seconds to answer.

ANSWER: **343**

(8) [Non-Computational Pyramidal] The equation x squared plus y squared equals r squared defines this figure in Cartesian coordinates. Any line segment passing through this figure's center and both sides is called a diameter. For the point, name this shape consisting of all points a fixed distance from a center point. You have three seconds to answer.

ANSWER: **circle**

(9) [Computational Pyramidal] A candy jar contains 7 pieces of yellow candy, 15 pieces of blue candy, 4 pieces of red candy, and 9 pieces of green candy. You can determine the probability that a certain-colored piece ill be selected by dividing the number of those pieces by the total number of pieces in the jar. What is the probability, in fractional lowest terms, that a randomly selected piece of candy from the jar will be either green or blue? You have five seconds to answer.

ANSWER: **24 / 35**

(10) [Computational Non-Pyramidal] Convert the fraction two-thirds to an equivalent fraction with the denominator 27. You have 30 seconds to answer.

ANSWER: **18/27** (or **eighteen twenty-sevenths**)

(11) [Non-Computational Pyramidal] A dodecahedron has twelve faces shaped like these polygons. A star with five points can be inscribed in this shape by connecting every other vertex. All examples of these polygons have interior angles summing to 540 degrees. The headquarters building of the U.S. military is named for being shaped like, for the point, what five-sided polygon? You have three seconds to answer.

ANSWER: **pentagon**

(12) [Computational Non-Pyramidal] Evaluate this expression: 1+2+3+4+5+6+7+8+9+10. You have 30 seconds to answer.

ANSWER: **55**

(13) [Computational Non-Pyramidal] Ellie is counting by eights. If the first number she says is 126, what is the sixth number she says? You have 30 seconds to answer.

ANSWER: **166**

(14) [Computational Non-Pyramidal] What is the perimeter of an irregular pentagon with a base of 4 meters, two sides of 9 meters each, and two sides of 11 meters each? You have 30 seconds to answer.

ANSWER: **44** meters

(15) [Computational Pyramidal] If each side of this shape is 7 centimeters long, then the perimeter of this shape is 21 centimeters. For the point, name this shape that contains 180 degrees of internal angles. You have five seconds to answer.

ANSWER: **triangle**

(16) [Non-Computational Pyramidal] According to Euler's formula of polyhedra, the number of these things plus the number of faces minus the number of edges always equals two. In three-dimensional shapes, these things are formed when three or more edges meet. For the point, name this point, which is defined as where two lines meet to form a corner of a shape. You have three seconds to answer.

ANSWER: **vertex** (or **vertices**; accept **corner** before mention)

(17) [Computational Pyramidal] You want to know the approximate number of passengers on a train to the nearest hundred. There are 9 cars on the train, with 310 passengers in each car. By multiplying the number of cars by the number of passengers per car and rounding to the nearest hundred, you determine, for the point, that the train contains approximately how many passengers? You have five seconds to answer.

ANSWER: **2,800**

(18) [Non-Computational Pyramidal] Before penalty shootouts were introduced in 1982, after being replayed once, a tied World Cup soccer final would have been decided by performing this action. This action is performed to decide which side kicks off first in an NFL game. For the point, what is this common probability experiment that results in heads or tails? You have three seconds to answer.

ANSWER: **flipping** a **coin** (accept synonyms for "flipping" like **tossing**)

(19) [Computational Non-Pyramidal] There are 3 black marbles and 4 white marbles in a bag. If you choose a marble at random, what is the probability that it is black? You have 30 seconds to answer.

ANSWER: **3/7** (**Three-Sevenths**)

(20) [Computational Non-Pyramidal] What is 60 multiplied by 5? You have 30 seconds to answer.

ANSWER: **300**

(21) [Non-Computational Pyramidal] Man-made structures of these shapes resembled a mound called a *benben*, which symbolized creation. In *Elements*, Euclid defined these shapes as a solid figure, constructed from one plane to a point. For the point, name these shapes that were the inspiration for great structures that were notably built by the ancient Egyptians. You have three seconds to answer.

ANSWER: **pyramid**s

(22) [Computational Non-Pyramidal] If a cube has a side length of 3, what is its volume? You have 30 seconds to answer.

ANSWER: **27**

(23) [Computational Non-Pyramidal] If 4x - 2 = -10, what is the value of 6 x squared plus 2? You have 30 seconds to answer.

ANSWER: **26**

(24) [Computational Non-Pyramidal] Evaluate this expression for x=8: 7 x + 8. You have 30 seconds to answer.

ANSWER: **64**

(25) [Computational Non-Pyramidal] What is 500 plus 500 plus 400? You have 30 seconds to answer.

ANSWER: **1400**