North South Foundation

Math Bee – Level 3

SAMPLE QUESTION PAPER

1. What is the number of square units in the area of the region bounded by the graphs of $y = |x|$ and $y = -|x| + 4$?

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2. What is the number of degrees in each of the interior angle measure of a regular decagon?

3. Trucker Trent drove 15 hours at an average speed of 63 miles per hour. He gets paid 40 cents per mile. How many dollars did he earn for this trip?

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4. Thirty-six fence posts were used to fence a rectangular plot. One post was placed at each corner, and the distance between adjacent posts was 5 meters. What is the greatest possible number of square meters in the area of the plot?

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5. When some money is shared by 13 people, each gets 7 dollars. When the amount is shared by 6 fewer people, how many dollars does each person receive?

6. Tami had 1800 baseball cards. She sold $\frac{1}{2}$ of them and then gave away $\frac{4}{5}$ of her remaining ones. How many cards does Tami have left?

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7. Place a digit 0 through 9 (any digit can be used more than once) in each blank so the equation below is true. What is the sum of the six digits you placed in the blanks?
(_ 6 _, 3 _ 1) – (76, _ 35) = (_ 9, 28 _)

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8. At McMiddle School, there are 360 seventh-grade and eighth-grade students. Three-fourths of the students get an allowance, and one-third of the students are eighth-graders. What is the smallest possible number of seventh-graders who get an allowance?

9. What is the greatest integer n such that $n^2 - 11n + 24 \leq 0$?

10. In China, spheres are used to exercise a person's hands. If the diameter of a sphere is 2 inches, how many square inches are in its surface area? Express your answer in terms of π.

11. What is the least positive integer n such that 1560 divides $n!$?

12. What is the sum of the three numbers less than 1000 that have exactly five positive integer divisors?

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13. Two distinct circles and a square lie in the plane. What is the maximum number of points of intersection of two or more of these three figures?

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14. A digit can be placed in each of the boxes for the hundreds and units digits to form the least possible five-digit number divisible by 36. What is the ratio of the smaller digit to the larger digit? Express your answer as a common fraction.

21 □ 7 □

15. Evaluate: $\frac{1}{2!+1}+\frac{2}{3!-1}+\frac{3}{4!+1}$. Express your answer as a common fraction.

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16. A cube is painted so that one side is blue, two sides are red, and three sides are green. How many different such cubes can be painted? Two cubes are considered the same if one cube can be rotated in any way to match the second cube.

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17. In the following equation, $\frac{a}{b}$ is a common fraction. What is the value of $a+b$?

$$\frac{a}{b}=\frac{1}{3+\frac{1}{1+\frac{1}{4}}}$$

18. A line segment drawn from a vertex of a unit square to a point on the square forms two regions. The area of the smaller region is one-third of the area of the larger region. How many units are in the length of that segment? Express your answer as a common fraction in simplest radical form.

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19. Janene and Emily plan to go on a marathon training run. Emily arrives late, so Janene starts running16minutes before Emily. Janene runs at an average rate of 9 minutes per mile,and Emily runs at an average rate of $8\frac{1}{4}$ minutes per mile. Assuming that both girls started at the same location and ran the same route, how many minutes will Emily take to catch up to Janene?

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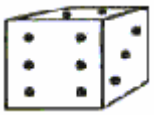
20. A standard die is tossed twice. What is the probability of obtaining exactly one 5? Express your answer as a common fraction.



ANSWER KEY	Level – 3

1	8
2	144
3	378
4	2025
5	13 (dollars)
6	180 (cards)
7	22
8	150 (seventh-graders)
9	8
10	4π (square inches)
11	13
12	722
13	18 (points)
14	1/3
15	$\frac{64}{75}$
16	3 (cubes)
17	24
18	$\frac{\sqrt{5}}{2}$ units
19	176 (minutes)
20	5 / 18