Dynamic Duo (6) – Part 1

Dynamic Duo (6)

25 minutes, 20 questions

Rules

*Each section contains 20 questions. This packet includes **Section 1 of Dynamic Duo**. You are allowed to use a **calculator** for both sections. Students may work **ONLY** with their partners to complete this problems. When you have finished this section, please do not move onto the next section; check your work in this section only. There will be a 5 minute break in between sections. Although this event does not count towards team scores, top individuals will receive awards.*

*Please write all answers onto the **answer sheet**. You may write directly on this test – however **only answers written onto the answer sheet will be graded**. Please write as neatly as possible on the blank spaces of the answer sheet. If graders are unable to read the answers, you will not be given credit.*

Names _____

_____

School _____ Grade _____

1) Is $0.9999\ldots$ (infinite string of 9's) a rational number? If so, express it in its lowest form.

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2) Evaluate 2^{3^2}.

3) $\sqrt{\frac{13}{56}} * \sqrt{\frac{7}{26}}$ Simplify .

4) $\frac{x}{y} = \frac{3}{4}$ If , find the value $\frac{5x-3y}{7x+2y}$ of .

5) Evaluate $575^2 - 425^2$.

6) Solve for x: $4x^2 - 12x + 9 = 0$.

7) Find the missing digit x in the number $93x$ so that the resulting number is divisible by 11.

8) What number squared is equal to 3^8?

9) If the GCD of two positive numbers a and b is equal to their LCM, how are a and b related?

10) What is the largest 3 digit number in base 6? Express your answer in either base 10 or base 6.

11) What is the remainder when $1! + 2! + 3! + +100!$ is divided by 12?

12) The largest of r consecutive integers is k. What is the smallest?

13) A room has six doors. In how many ways is it possible to enter by one door and leave by another?

14) A bag contains 100 apples, 100 oranges, 100 bananas, and 100 pears. Every minute you choose one fruit from the bag. How long will it take to ensure that you have at least a dozen fruit of the same kind?

15) How many integers between 1 and 6300 inclusive are divisible by neither 5 nor 3?

16) A monkey ascends a greased pole 12 feet high. He ascends 2 feet in the first minute and then slips down 1 foot in the alternate minute. If this pattern continues until he climbs the pole, in how many minutes would he reach at the top of the pole?

17) $x@y = 4y - x$ If , what is $4@3$?

18) A 3-digit integer contains one of each of the digits 1, 3, and 5. What is the probability of the integer being divisible by 5?

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19) What is the mean of the factors of 10?

20) If two coins are simultaneously tossed, what is the probability of obtaining at least one head?

Dynamic Duo (6) Solutions – Part 1

1. Yes, 1
2. 512
3. 1⁄4
4. 3⁄29
5. 150,000
6. $= \frac{3}{2}$
7. $= 5$
8. 81
9. $=$
10. 215 or 555_6
11. 9
12. $-\quad +1$
13. 30 ways
14. 45 minutes
15. 3360
16. 21 minutes
17. 8
18. 1⁄3
19. 4.5 or 9⁄2
20. 3⁄4