Mad Hatter (8)

1 minute per question, 45 questions

1. Write the result of $\frac{10,085}{5}$ in Roman Numerals.

2. The White Rabbit watches the hands on his watch as they move. How many revolutions does the minute hand of the clock make every time the second hand of the clock makes 2,880 complete revolutions?

3. What is the sum of the first 200 non-negative even integers?

4. Why is a raven like a writing desk? I haven't the slightest idea! However, I do know that 5 ravens are worth the same as 17 letters, and 20 letters are worth the same as 3 writing desks. Which is worth more, 2 ravens or 1 writing desk? Answer either "2 ravens" or "1 writing desk" with units. [*see slide*]

5. What is the fifth root of 1024 squared?

6. The Queen of Hearts has a change of heart! She offers Alice a deal. From a standard deck of 52 playing cards, if Alice draws a card that is a black diamond, she wins and is free to leave Wonderland. If not, she must stay in Wonderland forever. What is the probability that Alice wins and is allowed to leave? Express your answer as a percent.

7. What is the units digit of 2017^{2017}? [*see slide*]

8. When Alice eats from one side of the mushroom, she grows to 9 feet tall. When she eats from the other side, she shrinks to 3 inches tall. Being so many different sizes in a day is very confusing! Help Alice out. What percent of 9 feet is 3 inches? Express your answer as a percentage rounded to the nearest tenth.

9. In a croquet tournament, there are 128 competitors. In each game, 2 competitors play each other, and the losing competitor is eliminated. There are no ties. How many games must be played to determine a winner?

10. What is the hundreds' digit of the product of all of the integers from 1 to 99, inclusive?

11. The Queen of Hearts has a garden in the shape of the regular polygon shown on the screen. What is the total sum of the interior angles of her garden? [*see slide*]

12. The Cheshire Cat disappeared at 2:27 A.M. and reappeared at 9:07 P.M. the same day. For what fraction of the day had he vanished? Express as a reduced fraction.

13. How much larger is 3^5 than 5^3?

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14. If an animal is a serpent, then that animal eats eggs. The Pigeon concludes that if Alice eats eggs, then she is a serpent. In geometry, what is the Pigeon's kind of conditional statement called? (Hint: possible answer choices will be displayed on the screen) [*see slide*]

15. The March Hare and the Mad Hatter are reading the same 239-page book. The March Hare speed reads, so he reads 11 pages for every 4 that the Mad Hatter reads. The Mad Hatter has read 68 pages; how many pages does the March Hare have left to read?

16. A certain number x is greater than 1 but less than 10. When Alice is learning her division, she realizes that when she divides 55, 118, and 342 each by x, she gets the same remainder. What is the number x?

17. A jar with 60 of the Mad Hatter's special sugar cubes in it weighed 217 grams. The same jar, with 25 sugar cubes, weighed 112 grams. What is the mass, in grams, of the jar?

18. Babies have 2 feet and pigs have 4 feet. In a set of babies and pigs, there are 57 animals and 172 feet. How many pigs are there?

19. The Mad Hatter is preparing punch for his tea party. A punch recipe calls for 2¼ quarts of orange juice, 1¾ quarts of apple juice, and 1¾ quarts of soda water. How many cups of punch will this recipe make?

20. Suppose I wrote a list of all the counting numbers between 700 and 800, inclusive. How many 7s did I write?

21. The cards(men) are painting the white roses red. Out of the 42 total roses, 3/7 are white, and the rest are red. If Alice picks two roses without replacement, what is the probability that she picks two red roses? Express as a reduced fraction.

22. What day of the week was the day before yesterday if twelve days ago the day after tomorrow was Thursday?

23. The Gryphon announces that lessons are called lessons because they lessen from day to day. Every day, the lessons get 1 hour shorter. On Monday, the Gryphon did lessons for 10 hours, on Tuesday, 9 hours, and so on. What was the total number of hours spent on lessons for that 7-day week, assuming the week began on Monday?

24. Alice starts at the top of the Rabbit Hole. The Rabbit Hole has the unique property that every time Alice blinks, she falls half of the remaining distance to the bottom. How many times must Alice blink to fall at least 97% of the way to the bottom?

25. The Mock Turtle goes to the Wonderland Restaurant and orders 8 bowls of Mock Turtle soup.

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One bowl of soup costs $2.25. Ignoring tax, how much money should he leave as a tip if he wants to tip 15% of the total price?

26. The White Rabbit looks at his watch, and notices that in 26 more minutes it will be as many minutes before 3 P.M. as it was after 1 P.M. 10 minutes ago. What time is it?

27. In Wonderland, Alice found a nickel and a coin with a diameter twice as large as the diameter of the nickel. She held the larger coin fixed on the ground, and rolled the nickel around the edge of the large coin. When the nickel completes one full rotation around the large coin, how many times has the face on the nickel rotated? [*see slide*]

28. The Mad Hatter is counting the jelly beans in 7 of his jars and finds that they contain 90, 200, x, 35, 60, 110, and 45 beans. The mean, median, and mode of his number of jelly beans are all equal to x. What is x?

29. The Queen of Hearts bakes some tarts. 5/8 of them are apple and the rest are blueberry. The Knave of hearts stole ½ of the apple tarts and ¾ of the blueberry tarts. If we know a tart was stolen by the Knave, what is the probability that it was an apple tart? Express as a reduced fraction.

30. If 2017 is a base-8 number, what is its base-10 equivalent?

31. What is the midpoint of the line segment with endpoints (-6, 4) and (6, -8)? [*see slide*]

32. What is the point of intersection of the line segment in #31 and y = ^{3} ?

33. The Mad Hatter's hat costs 10 shillings and 6 pence. There are 20 shillings in a pound and 12 pence in a shilling. What is the maximum whole number of identical hats he can buy with 15 pounds?

34. In Wonderland, half of 5 equals 3. According to this proportion, what is one-third of 10?

35. In a heptagonal prism, what is the total value of the number of faces plus the number of edges plus the number of vertices?

36. The Mad Hatter has an equal number of red and blue teacups. However, he has 3 red saucers and 7 blue saucers. If he randomly selects one teacup and one saucer, what is the probability that the color of the saucer and teacup he selects are the same? Express your answer as a percent rounded to the nearest whole number.

37. Tweedledum and Tweedledee have some buttons to share. Tweedledum takes 1/3 of the buttons. Then, Tweedledee takes 3/5 of the remaining buttons. After that, Tweedledum takes ½ of the remaining buttons, and Tweedledee takes the last 6 buttons. How many buttons did

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Tweedledum take?

38. Today is May 27, 2017, and the time is (say time). The White Rabbit looks at his watch and notices that he has an appointment exactly 2 million seconds from now. On what month, day, and year is his appointment?

39. The Frog-Footman and the Fish-Footman are delivering the Queen's invitations. The Frog-Footman delivers 12 invitations every 30 minutes, while the Fish-Footman delivers 10 invitations every 40 minutes. How many minutes does it take them to deliver invitations to all 52 of the cards(men)?

40. A polygon has 14 diagonals. How many sides does it have?

41. What is $(\frac{1}{2+3} + \frac{1}{4+5})^{-1}$? Express as a reduced improper fraction. [*see slide*]

42. The March Hare, the Mad Hatter, and the Dormouse are sitting around a circular table for tea-time. If the table has 8 seats, how many different ways can the three sit around the table? Two ways are considered the same if they are identical when rotated.

43. Bill the Lizard throws spherical pebbles at Alice, but before they hit her, the pebbles turn into cylindrical cakes. The spherical pebbles and cylindrical cakes have the same volume and radius. What is the ratio of the radius of a pebble to the height of a cake? Express as a simple reduced fraction.

44. The Caterpillar has a two-digit number of legs. The sum of the two digits is 11, and if the digits are reversed, the new number is 27 less than the original number. How many legs does the Caterpillar have?

45. Today is Alice's birthday. Today, her age, in months, is 28 times her age 4 years ago, in years. In years, how old is Alice today?

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Answers

1. MMXVII
2. 48 (revolutions)
3. 39800
4. 2 ravens
5. 16
6. 0%
7. 7
8. 2.8%
9. 127 (games)
10. 0
11. 1620°
12. 7/9 (of the day)
13. 118
14. converse
15. 52 (pages)
16. 7
17. 37 (grams)
18. 29 (pigs)
19. 23 (cups)
20. 120 (7s)
21. 92/287
22. Friday
23. 49 (hours)
24. 6 (times)
25. $2.70

26. 1:52 (P.M.)
27. 3 (times)
28. 90
29. 10/19
30. 1039
31. (0, -2)
32. (-1, -1)
33. 28 (hats)
34. 4
35. 44
36. 50%
37. 21 (buttons)
38. June 19, 2017
39. 80 (minutes)
40. 7 (sides)
41. 45/14
42. 42 (ways)
43. 3/4
44. 74 (legs)
45. 7 (years old)