

# Logarithm Mania

Objective: The objective of this game is to practice solving logarithmic equations when the base, the argument, or the value of the logarithm is missing.

Equipment: 1 game board, 1 answer sheet, 12 yellow cards, 12 red orange cards, 12 blue cards, 1 6-sided die labeled {1, 1, 2, 2, 3, 3}, a set of plastic spoons (1 less than the number of players), colored bingo chips, and paper and pencil to keep score.

On Each Turn: Place spoons in the middle of the table (1 less than the number of players). 1 person rolls the die to see whether to draw a yellow, orange, or blue card (1=yellow, 2=orange, 3=blue). The person draws the card and reads the question out loud. When someone knows the answer (including the person who read the question), they grab a spoon. At this point, all other players should try to grab one of the remaining spoons as quickly as possible. Then, starting with the player who grabbed the first spoon, every player who has a spoon takes turns placing a colored bingo chip on the game board on the answer that they think is correct. The person who read the question out loud then checks the answer on the answer sheet.

Scoring is as follows: If the person who grabbed the first spoon is correct, they get 2 points. If the person is incorrect, they get 0 points and everyone else (even the person without a spoon) gets 1 point. Everyone else who placed a bingo chip (regardless of the whether or not the first person answered correctly) gets 1 point for a bingo chip on a correct answer and 0 points for a bingo chip on an incorrect answer. Thus, if the first person was incorrect and they were correct, they would actually receive 2 points total for the round. The only way for the person without a spoon to get a point is if the person who grabbed the first spoon is incorrect. The person with the most points at the end of 12 rounds is the winner. If there is a tie, play a tie-breaker round.

|                |                |                        |               |
|----------------|----------------|------------------------|---------------|
| $-4$           | $-3$           | $-1$                   | $0$           |
| $\frac{1}{64}$ | $\frac{1}{25}$ | $\frac{1}{6}$          | $\frac{1}{9}$ |
| $\frac{1}{3}$  | $1$            | $\frac{3}{2}$          | $2$           |
| $3$            | $4$            | $5$                    | $6$           |
| $8$            | $10$           | $16$                   | $25$          |
| $64$           | $49$           | <b>Logarithm Mania</b> |               |

|     | Logarithm Mania                           | Answers        |
|-----|---|----------------|
| 1.  | $\log_{1/3} x = 2$                        | $\frac{1}{9}$  |
| 2.  | $\log_5 x = -2$                           | $\frac{1}{25}$ |
| 3.  | $\log_{36} x = -\frac{1}{2}$              | $\frac{1}{6}$  |
| 4.  | $\log_5 x = 2$                            | 25             |
| 5.  | $\log_2(x) = 4$                           | 16             |
| 6.  | $\log_{27}(x) = -\frac{1}{3}$             | $\frac{1}{3}$  |
| 7.  | $\log_{\frac{1}{4}} x = -2$               | 16             |
| 8.  | $\log_7 x = 2$                            | 49             |
| 9.  | $\log_4 x = 3$                            | 64             |
| 10. | $\log_{\frac{1}{4}} x = 3$                | $\frac{1}{64}$ |
| 11. | $\log_{25} x = \frac{1}{2}$               | 5              |
| 12. | $\log_5 x = 0$                            | 1              |
| 13. | $\log_x \left(\frac{1}{4}\right) = -2$    | 2              |
| 14. | $\log_x \frac{1}{100} = -2$               | 10             |
| 15. | $\log_x \frac{9}{4} = 2$                  | $\frac{3}{2}$  |
| 16. | $\log_x 5^3 = 3$                          | 5              |
| 17. | $\log_x \frac{1}{4} = -2$                 | 2              |
| 18. | $\log_x 8 = 1$                            | 8              |
| 19. | $\log_x 125 = 3$                          | 5              |
| 20. | $\log_x 8 = 3$                            | 2              |
| 21. | $\log_5 x = 1$                            | 5              |
| 22. | $\log_x \frac{1}{25} = -2$                | 5              |
| 23. | $\log_x \frac{\sqrt{3}}{3} = \frac{1}{2}$ | $\frac{1}{3}$  |
| 24. | $\log_x \frac{1}{64} = -3$                | 4              |
| 25. | $\log_{\frac{1}{2}} 16 = x$               | -4             |
| 26. | $\log_3 81 = x$                           | 4              |
| 27. | $\log_2 32 = x$                           | 5              |
| 28. | $\log_{125}(5) = x$                       | $\frac{1}{3}$  |
| 29. | $\log_{\frac{1}{3}} \frac{1}{27} = x$     | 3              |
| 30. | $\log_2 64 = y$                           | 6              |
| 31. | $\log_5 \left(\frac{1}{125}\right) = y$   | -3             |
| 32. | $\log_3 9 = y$                            | 2              |
| 33. | $\log_6 1 = y$                            | 0              |
| 34. | $\log_6 216 = x$                          | 3              |
| 35. | $\log_5 \left(\frac{1}{5}\right) = y$     | -1             |
| 36. | $\log_3 27 = y$                           | 3              |

$$\log_{1/3} x = 2$$

1

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2

$$\log_{36} x = -\frac{1}{2}$$

3

$$\log_5 x = 2$$

4

$$\log_2(x) = 4$$

5

$$\log_{27}(x) = -\frac{1}{3}$$

6

$$\log_{\frac{1}{4}} x = -2$$

7

$$\log_7 x = 2$$

8

$$\log_4 x = 3$$

9

$$\log_{\frac{1}{4}} x = 3$$

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$$\log_{25} x = \frac{1}{2}$$

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$$\log_5 x = 0$$

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$$\log_x \left( \frac{1}{4} \right) = -2$$

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$$\log_x \frac{1}{100} = -2$$

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$$\log_x \frac{9}{4} = 2$$

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$$\log_x 5^3 = 3$$

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$$\log_x 8 = 1$$

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$$\log_x 125 = 3$$

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$$\log_x 8 = 3$$

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$$\log_5 x = 1$$

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$$\log_x \frac{1}{25} = -2$$

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$$\log_x \frac{\sqrt{3}}{3} = \frac{1}{2}$$

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$$\log_x \frac{1}{64} = -3$$

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$$\log_{\frac{1}{2}} 16 = x$$

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$$\log_3 81 = x$$

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$$\log_2 32 = x$$

27

$$\log_{125}(5) = x$$

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$$\log_{\frac{1}{3}} \frac{1}{27} = x$$

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$$\log_2 64 = y$$

30



$$\log_5 \left( \frac{1}{125} \right) = y$$

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$$\log_3 9 = y$$

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$$\log_6 1 = y$$

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$$\log_6 216 = x$$

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$$\log_5 \left( \frac{1}{5} \right) = y$$

35

$$\log_3 27 = y$$

36