

NUMBER GAME

Answer Guide

All claims, except 3e, are true. There are often alternative solutions.

- | | | |
|---|---|---|
| <p>1. $1 = 4 - (2 + 1)$
 $4 = 4 \times (2 - 1)$
 $7 = 4 + 2 + 1$
 $10 = (4 + 1) \times 2$</p> | <p>$2 = 4 \div 2 \times 1$
 $5 = 4 + 2 - 1$
 $8 = 4 \times 2 \times 1$</p> | <p>$3 = 4 + 1 - 2$
 $6 = (4 + 2) \times 1$
 $9 = 4 \times 2 + 1$</p> |
| <p>2. $1 = 2 \times 3 - 4 - 1$
 $4 = 4 + 3 - 2 - 1$
 $7 = 4 \div 2 \times 3 + 1$
 $10 = 1 + 2 + 3 + 4$
 $13 = 3 \times 4 + 2 - 1$
 $16 = (2 + 3 - 1) \times 4$
 $19 = (3 + 2) \times 4 - 1$
 $22 = 2 \times (4 \times 3 - 1)$</p> | <p>$2 = 2 \times 3 - 4 \times 1$
 $5 = 4 \div 2 + 3 \times 1$
 $8 = 4 + 3 + 2 - 1$
 $11 = 4 \times 2 \times 1 + 3$
 $14 = 3 \times 4 \times 1 + 2$
 $17 = (1 + 4) \times 3 + 2$
 $20 = (3 + 2) \times 4 \times 1$
 $23 = 2 \times 3 \times 4 - 1$</p> | <p>$3 = 4 \div (3 + 1) + 2$
 $6 = 3 \times 4 \div 2 \times 1$
 $9 = 2 + 3 + 4 \times 1$
 $12 = 3 \times 4 \times (2 - 1)$
 $15 = (3 + 4) \times 2 + 1$
 $18 = 2 \times 3 \times (4 - 1)$
 $21 = 2 \times 3 \times 4 - 1$
 $24 = 1 \times 2 \times 3 \times 4$</p> |
| <p>3a. $1 = 1 \times (3 + 5 - 7)$
 $4 = 1 \times (7 + 5) \div 3$
 $7 = (7 - 5) \times 3 + 1$
 $10 = 7 + 5 + 1 - 3$</p> | <p>$2 = 1 + 3 + 5 - 7$
 $5 = 1 \times (7 + 3 - 5)$
 $8 = 7 + 5 - 3 - 1$</p> | <p>$3 = (5 + 7) \div (1 + 3)$
 $6 = (5 + 7) \div (3 - 1)$
 $9 = 1 \times (7 + 5 - 3)$</p> |
| <p>3b. $1 = 2 \times 3 + 4 - 9$
 $4 = 9 + 2 - 4 - 3$
 $7 = 9 - (4 - 3) \times 2$
 $10 = 9 \div 3 \times 4 - 2$</p> | <p>$2 = 2 \times (4 - 9 \div 3)$
 $5 = 3 \times 4 + 2 - 9$
 $8 = 9 + 4 - 3 - 2$</p> | <p>$3 = 9 - (4 \times 3 \div 2)$
 $6 = 9 + 3 - 4 - 2$
 $9 = (3 + 2 - 4) \times 9$</p> |
| <p>3c. $1 = 8 + 2 - 4 - 5$
 $4 = 5 \times 4 - 2 \times 8$
 $7 = 8 + 5 - 4 - 2$
 $10 = 2 \times (5 - 4) + 8$</p> | <p>$2 = 5 \times 4 \div 2 - 8$
 $5 = 8 + 5 - 2 \times 4$
 $8 = 5 \times 8 \div 4 - 2$</p> | <p>$3 = 5 + 4 + 2 - 8$
 $6 = 2 \times 5 + 4 - 8$
 $9 = 8 \div 4 \times 2 + 5$</p> |
| <p>3d. $1 = 12 - 6 - 5 \times 1$
 $4 = (5 + 1) - 12 \div 6$
 $7 = 12 \div 6 + 5 \times 1$
 $10 = 12 + 5 - 6 - 1$</p> | <p>$2 = 12 + 1 - 5 - 6$
 $5 = 5 \times (12 \div 6 - 1)$
 $8 = 12 \div 6 + 5 + 1$</p> | <p>$3 = 5 \times 1 - 12 \div 6$
 $6 = 5 + 12 \div 6 - 1$
 $9 = 5 \times 12 \div 6 - 1$</p> |
| <p>3e. $1 = 10 + 9 \div 3 - 12$
 $3 = 9 + 12 \div 3 - 10$
 $5 = 10 + 12 \div 3 - 9$
 $7 = ??$
 $9 = 12 - (10 - 9) \times 3$</p> | <p>$2 = 10 \div (9 - 12 \div 3)$
 $4 = 12 \div 3 \times (10 - 9)$
 $6 = 12 \div (9 + 3 - 10)$
 $8 = 12 + 9 - 10 - 3$
 $10 = 12 + 10 - 9 - 3$</p> | |

4. Here are some to get you started. You may have other solutions.

- 1 $= 4 \div 4 \times 4 \div 4$
- 2 $= 4 \div 4 + 4 \div 4$
- 3 $= (4 + 4 + 4) \div 4$
- 4 $= 4 + (4 - 4) \times 4$
- 5 $= \sqrt{4} + 4 - 4 \div 4$
- 6 $= 4 + (4 + 4) \div 4$
- 7 $= 4 + 4 - 4 \div 4$
- 8 $= 4 \times (4 + 4) \div 4$
- 9 $= 4 + 4 + 4 \div 4$
- 10 $= \sqrt{4} \times (4 + 4 \div 4)$