

Math 9 Enriched  
Order of Operations

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Simplify:  $5 + 2 \cdot 3(4 + 5) - (3 + 1)^2$

2. Insert ( ) to make the following expression true.

$$2 \cdot 1 + 2 \cdot 3 - 2 \cdot 2 - 1 = 12$$

3. Write in simplest form:  $2^3 + \frac{3}{2} \cdot 2\sqrt{2} \div 8$

4. Express in simplest form:

$$-(2 + 6)^2 - |-2 - 6|^3$$

5. Express in simplest form:  $\frac{19.5 - 2.54}{3.2 + 1.6 \times 0.12}$

6. Evaluate:  $|-10 - (-7)|$

7. Evaluate:  $\frac{3 \cdot 6 + 2 \div -2}{12 \div 4 + 5 \cdot 2^2 - 6}$

8. Simplify:  $\frac{6 + \frac{4}{3} - 3 \div (2 + 2^2)}{1 + 2 \times 3}$

9. Fill in multiplication signs to make the statement true. (Example:  $12 \times 34 \times 5 = 2040$ )

$$1 \ 2 \ 3 \ 4 \ 5 \ 6 \ 7 \ 8 \ 9 = 12,164,520$$

10. Simplify:  $\frac{(-2)^3 - (-6)}{-\frac{1}{2}}$

11. Express in simplest form:

$$8 + 18 \div 3 \div 6 \times (18 - 5 - 4)$$

12. Simplify:  $\frac{4^2 \times 3}{\left(\frac{2}{6}\right)^2}$

13. Express in simplest form:

$$-6 \left( 12 - \left( \frac{1}{24} \right)^{-1} \right)$$

14. Simplify:  $12 + 4 \div 16 - 6.25 \times 2$

Express your answer as a decimal.

15. Simplify:  $12 \div 3^2 - 2^3 + 5^3 \div 3^2$

Express your answer as a common fraction.

16. Simplify:  $7 + 3^2 \cdot 4 - 2(14 - 8 \div 2)$

17. How many distinct values can be obtained for the expression  $1 \div 2 \div 3 \div 5 \div 7 \div 11 \div 13 \div 17$  if an unlimited number of parentheses may be placed in the expression?

18. A narcissistic number can be represented by taking its digits in the order given in combination with some mathematical operations. For example,  $145 = 1 + 4! + 5!$ , and  $81 = (8 + 1)^2$ . Write 355 as a narcissistic number.

**Answer List**

- |         |   |  |
|---------|---|--|
| 1. 43   | 2. $2 \cdot (1 + 2 \cdot 3) - 2 \cdot (2 - 1) = 12$ | 3. $8 + \frac{3\sqrt{2}}{8}$                   |
| 4. -576 | 5. 5  | 6. 3   |
| 7. 1    | 8. $\frac{41}{42}$                                  | 9. $12 \times 34 \times 5 \times 67 \times 89$ |
| 10. 4   | 11. 17  | 12. 432  |
| 13. 72  | 14. -0.25   | 15. $\frac{65}{9}$                             |
| 16. 23  | 17. 64  | 18. one solution: $(3)(5!) - 5$                |

**Catalog List**

- |               |               |               |
|---------------|---------------|---------------|
| 1. MCC AG 6   | 2. MCC AG 2   | 3. MCC AG 24  |
| 4. MCC AG 9   | 5. MCC AG 34  | 6. MCC AG 31  |
| 7. MCC AG 73  | 8. MCC AG 54  | 9. MCC AG 50  |
| 10. MCC AG 42 | 11. MCH AG 28 | 12. MCH AG 44 |
| 13. MCH AG 29 | 14. MCH AG 39 | 15. MCH AG 37 |
| 16. MCH AG 21 | 17. MCH AG 78 | 18. MCH AG 56 |