

NAME _____

Module 1 Getting Ready for Algebra
Lesson 5 Applying the Order of Operations



**independent
practice**

Simplify each expression.

1. $|-12| - 5 + 7(-3)$

-14

2. $9(-3) - |-5 - 3|$

-35

3. $7(3 - 9) + 12 \div (-4)$

-45

4. $24 \div 6 - 2(-1 - 7)$

20

5. $-3^2 + 3^3 + (-3)$

15

6. $-2 + 2^3 - 2^2$

2

7. $4^3 - 5(3 + 7 - |1|)$

19

8. $3|2(5 + 3) - 7| \div (-3)$

-9

9. $-\frac{74}{2} + \frac{36}{4} - \frac{19}{19}$

-29

10. $\frac{22}{11} + \frac{10}{5} - \frac{15}{3}$

-1

11. $\frac{\sqrt{1^2 - 4 \cdot 1 \cdot (-6)}}{2 \cdot 1}$

 $\frac{5}{2}$ or $2\frac{1}{2}$

12. $\frac{\sqrt{6^2 - 4 \cdot 1 \cdot 9}}{2 \cdot 9}$

0

13. $\frac{-26 + 4 \cdot (-6)}{5^2}$

-2

14. $\frac{-5 + 7 \cdot 3 \cdot 5}{10^2}$

1

15. $(81 \div 3^2) + (7^2 - 9)$

49

16. $(-8 - 17)^2 \div 5 - 3$

122

17. $(-4 - 9)^2 \div (-13) + (5 + 8)$

0

18. $9(3 - 5) \div 3^2$

-2

19. $(-5 + 2)^2 \div (7 + 2)$

1

20. $(-7 + 2)^2 \div 5 + 2$

7

21. $-5^2 - (-2 - 3)^2$

-50

22. $12 - 4(6) - 12 \div 2^2$

-15

23. $7|3 - 5(2 + 1) - 9| - 47$

100

24. $|3(-5)|^2 + 3(-4)^2$

273

25. $3|-7 - 4| \div 3 + \sqrt{49}$

18

26. $-120 \div 30 \div 4 + 7 - 15 \div 5$

3

27. $3^3 + |-9 - 3| + 18 \div 3$

45

28. $(-4)^2 - 3[2|-3| - 5] + 7$

20

29. $[(-2 - 6)^2 \div 2] - (5)(-2)$

42

30. $75 \div 3 + 7(2|-4| + 2) \div 10$

32

Journal

1. What does “Please Excuse My Dear Aunt Sally” have to do with the order of operations?
2. Show an example in which addition is done before multiplication.
3. How do you know whether to perform addition or subtraction first? What about multiplication or division?
4. What are “grouping symbols” and what do they indicate in the order of operations? How do you evaluate an expression that has grouping symbols within other grouping symbols?
5. Why is it necessary to have an order of operations?

Cumulative Review

Simplify, if possible.

1. $\frac{-36}{9}$

-4

2. $12(-6)$

-72

3. $52 + (-71)$

-19

4. $\frac{-2}{3} + \frac{1}{5}$

 $\frac{-7}{15}$

5. -4^2

-16

6. $(-4)^2$

16

7. $-\sqrt{49}$

-7

8. $\sqrt[3]{-8}$

-2

9. $\sqrt{-16}$

Not a real number

10. $\sqrt[3]{64}$

4

Possible Journal Responses

1. “Please Excuse My Dear Aunt Sally” is a sentence that helps remind us to simplify Parentheses first, then Exponents, followed by Multiplication and Division from left to right and finally, Addition and Subtraction from left to right.
2. Addition would come before multiplication in the expression $5(2 + 7)$ because the addition is inside parentheses. Any operation inside the parentheses takes precedence over any operation outside the parentheses.
3. Addition and subtraction are performed in the same step, moving from left to right. If the addition is farther to the left in the expression, it would be done before the subtraction and vice versa. Multiplication and division are also performed in the same step, moving from left to right. Whichever operation is farther to the left in the expression would be done first.
4. Grouping symbols include parentheses, brackets, set braces, absolute value signs, square and cube root symbols, and fraction bars. Grouping symbols indicate that all operations in a grouped expression are to be done before any operation not in a grouped expression. Expressions are to be evaluated so that the innermost grouping symbols can be removed first.
5. Without an order of operations, it would be impossible to get a unique value for some expressions.