

# Parentheses, Brackets, and Braces

Grade 5 Math • Section 3.2

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Score: \_\_\_\_\_ / 14

## Quick Review and Helpful Hints

**Grouping symbols:** Parentheses ( ), brackets [ ], braces { }.

**Rule:** Work from the **innermost** grouping outward. Evaluate parentheses first, then brackets, then braces.

All three types of grouping symbols mean “do this first.” They are used together to make nested expressions easier to read.

**Example:** Evaluate  $\{[3 + (5 \times 2)] - 4\} \times 3$ .

Innermost first:  $(5 \times 2) = 10$ . Brackets next:  $[3 + 10] = 13$ . Braces:  $\{13 - 4\} = 9$ . Finally:  $9 \times 3 = 27$ .

**Answer:** 27

## Practice Problems

Evaluate each expression by working from the innermost grouping outward.

1.  $(6 + 2) \times [3 + 1] =$  \_\_\_\_\_

7.  $3 \times \{[8 + (6 \div 2)] - 5\} =$  \_\_\_\_\_

2.  $[(8 - 3) \times 4] + 2 =$  \_\_\_\_\_

8.  $\{[5 + 3] \times [7 - 4]\} - 10 =$  \_\_\_\_\_

3.  $\{[2 \times (4 + 1)] + 3\} =$  \_\_\_\_\_

9.  $[(20 - 6) \div (3 + 4)] \times 5 =$  \_\_\_\_\_

4.  $5 \times [(9 - 5) + 2] =$  \_\_\_\_\_

10.  $\{[2^3 + (3 \times 2)] - 4\} =$  \_\_\_\_\_

5.  $\{[(12 - 4) \div 2] + 6\} \times 2 =$  \_\_\_\_\_

11.  $4 + \{[6 \times (1 + 2)] \div 9\} =$  \_\_\_\_\_

6.  $[(15 \div 3) + (4 \times 2)] =$  \_\_\_\_\_

12.  $\{[(18 - 6) \div 3] + 1\} \times 7 =$  \_\_\_\_\_

## Word Problems

13. Write a numerical expression using parentheses and brackets that equals 40: “Add 3 and 5, then multiply by the difference of 9 and 4.” Evaluate to check.

14. Alex evaluates  $\{[4 + (2 \times 3)] \times 5\}$  and gets 70. Check his work and explain whether he is correct.

\_\_\_\_\_

\_\_\_\_\_



## Answer Keys

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

11.

12.

13.

14.

### Step-by-Step Explanations

**1.** Start with the main idea. For parentheses, brackets, and braces, follow the order of operations in  $(6 + 2) \times [3 + 1]$ . The value is 32. Grouped expressions come first, then exponents, then multiplication or division before addition or subtraction.

**2.** Keep the work tidy. For parentheses, brackets, and braces, follow the order of operations in  $[(8 - 3) \times 4] + 2$ . The value is 22. Work from the inside out when you see parentheses, brackets, or braces.

**3.** Look at what the numbers mean. For parentheses, brackets, and braces, follow the order of operations in  $\{[2 \times (4 + 1)] + 3\}$ . The value is 13. One careful line at a time is better than trying to do the whole expression mentally.

**4.** Use the setup first. For parentheses, brackets, and braces, follow the order of operations in  $5 \times [(9 - 5) + 2]$ . The value is 30. Grouped expressions come first, then exponents, then multiplication or division before addition or subtraction.

**5.** Check the size of the answer. For parentheses, brackets, and braces, follow the order of operations in  $\{[(12 - 4) \div 2] + 6\} \times 2$ . The value is 20. Work from the inside out when you see parentheses, brackets, or braces.

**6.** Match the operation to the words. For parentheses, brackets, and braces, follow the order of operations in  $[(15 \div 3) + (4 \times 2)]$ . The value is 13. One careful line at a time is better than trying to do the whole expression mentally.

**7.** Write the important values first. For parentheses, brackets, and braces, follow the order of operations in  $3 \times \{[8 + (6 \div 2)] - 5\}$ . The value is 18. Grouped expressions come first, then exponents, then multiplication or division before addition or subtraction.

**8.** Follow the pattern carefully. For parentheses, brackets, and braces, follow the order of operations in  $\{[5 + 3] \times [7 - 4]\} - 10$ . The value is 14. Work from the inside out when you see parentheses, brackets, or braces.

**9.** Start with the main idea. For parentheses, brackets, and braces, follow the order of operations in  $[(20 - 6) \div (3 + 4)] \times 5$ . The value is 10. One careful line at a time is better than trying to do the whole expression mentally.

**10.** Keep the work tidy. For parentheses, brackets, and braces, follow the order of operations in  $\{[2^3 + (3 \times 2)] - 4\}$ . The value is 10. Grouped expressions come first, then exponents, then multiplication or division before addition or subtraction.

**11.** Look at what the numbers mean. For parentheses, brackets, and braces, follow the order of operations in  $4 + \{[6 \times (1 + 2)] \div 9\}$ . The value is 6. Work from the inside out when you see parentheses, brackets, or braces.

**12.** Use the setup first. For parentheses, brackets, and braces, follow the order of operations in  $\{[(18 - 6) \div 3] + 1\} \times 7$ . The value is 35. One careful line at a time is better than trying to do the whole expression mentally.

**13.** Check the size of the answer. For parentheses, brackets, and braces, add  $3 + 5 = 8$  and subtract  $9 - 4 = 5$ ;  $8 \times 5 = 40$ . Grouped expressions come first, then exponents, then multiplication or division before addition or subtraction.

**14.** Match the operation to the words. For parentheses, brackets, and braces, inside the braces,  $4 + (2 \times 3) = 10$ , and  $10 \times 5 = 50$ , not 70. Work from the inside out when you see parentheses, brackets, or braces.



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