

5.OA.1 Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.

Evaluating Expressions

How can you evaluate with brackets?

Evaluate $3.2 \times 12 - [2 + (3.6 \div 0.6)]$

Some expressions look difficult because they include parentheses and brackets. You can think of brackets as “outside” parentheses.

You evaluate inside parentheses first.

Order of Operations

- 1 Evaluate inside parentheses and brackets.
- 2 Evaluate terms with exponents.
- 3 Multiply and divide from left to right.
- 4 Add and subtract from left to right.

Another Example

How can you evaluate expressions with brackets and variables?

Evaluate $[6(x - 3.5)] \div 12 + 4.2$ for $x = 9.5$.

Step 1

Substitute a number for the variable; $x = 9.5$.

$$[6(x - 3.5)] \div 12 + 4.2$$

$$[6 \times (9.5 - 3.5)] \div 12 + 4.2$$

Step 2

Evaluate inside parentheses and brackets.

$$[6 \times (9.5 - 3.5)] \div 12 + 4.2$$

$$[6 \times 6] \div 12 + 4.2$$

$$36 \div 12 + 4.2$$

Step 3

Continue to follow order of operations.

$$36 \div 12 + 4.2$$

$$3 + 4.2$$

$$7.2$$

Guided Practice




**MATHEMATICAL
PRACTICES**

Do you know HOW?

Evaluate each expression.

1. $2.3 + (4.5 - 2.1)$
2. $(9.8 + x) \times 2.8; x = 6.2$
3. $[(5.5 + 2.3) - 2.1] + 2.3$
4. $[(7.9 + 13.5) - (y + 10.4)]; y = 9.8$

Do you UNDERSTAND?

5. How are brackets like parentheses?
-  6. **Construct Arguments** In the example at the top, would it be easier to evaluate the expression using mental math, paper and pencil, or a calculator?

Step 1

Evaluate inside parentheses and brackets.

$$3.2 \times 12 - [2 + (3.6 \div 0.6)]$$

$$3.2 \times 12 - [2 + 6]$$

$$3.2 \times 12 - 8$$

Step 2

There are no exponents, so you can multiply next.

$$3.2 \times 12 - 8$$

$$38.4 - 8$$

Remember to work from left to right.

Step 3

Lastly, subtract.

$$38.4 - 8 = 30.4$$

When you evaluate expressions, follow the rules of the order of operations.

Independent Practice

Evaluate each expression.

7. $3.1 + (9.6 - 2.3)$

8. $(9.9 + x) \div 0.25; x = 3.6$

9. $112.5 - (3.3 \div 0.6) \times 2$

10. $[(2 + 9.8) - 2.5] + 7.7$

11. $[2.1 \times (125 \div 5)] - 2.5$

12. $[(16 \times 3.5) \div 0.25] + 1 - 10^2$

13. $14.6 + [(42 - 21.4) \times 3.5]$

14. $18.9 - [(33.3 \div 11.1) \times 6]$

15. $3 \times [(18 \times 5.5) \div y]; y = 0.3$

Problem Solving



- © 16. **Construct Arguments** How do you know which part of the expression to solve first? Explain.

$$(26 + 2.5) - [(8.3 \times 3) + (1 - 0.25)]$$

- © 17. **Generalize** Explain how you could use estimation to get an approximate answer for the expression below.

$$(11.6 + 7.3) - (6.2 \times 2.1)$$

- © 18. **Reasonableness** Theresa bought three containers of tennis balls at \$2.98 each. She had a coupon for \$1 off. Her mom paid for half of the remaining cost. Evaluate the expression $[(3 \times 2.98) - 1] \div 2$.

19. Soledad solves the problem below and thinks that the answer is 92.3. Jill solves the same problem, but thinks that the answer is 67.5. Who is correct?

$$[(65 + 28.2) - (7.8 + 5.5)] - 12.4$$

- © 20. **Think About the Structure** Using order of operations, which is the last operation you should perform to evaluate this expression?

$$(1 \times 2.5) + (52 \div 13) + (5 - 6.7) - (98 + 8)$$

- A Addition C Multiplication
B Subtraction D Division

21. How long of a piece of tape would be needed to go around the perimeter of the triangle below?

