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UM PRINTABLES

PREMIUM EDUCATIONAL RESOURCES

ORDER OF OPERATIONS DISCOVERY BUNDLE

Grade 5 · CCSS 5.OA.A.1 & 5.OA.A.2

A 2-in-1 discovery-first math resource

Parentheses · Brackets · Braces · Writing Expressions

PART 1

Symbols Matter Discovery

· 3-form expression discovery

· 24 nested-grouping problems

· 4 levels of rigor

· Step-by-step worked solutions

· Order of operations anchor chart

PART 2

Words-to-Symbols Translator

· 20 translation cards

· 12 reverse-translation cards

· 8 ·3 Times as Large· tasks

· 4 exit tickets + keys

· 12-question quiz + rubric

TEACHER-READY · DISCOVERY-FIRST · ASSESSMENT-READY

Selected sample pages from the complete 21-page resource.

Preview pages are watermarked for listing use.

Anchor Chart — Order of Operations Hierarchy

Display this chart all unit. Point to it whenever a student asks "what do I do first?" — better yet, have the *student* point and say the step aloud.

ORDER OF OPERATIONS HIERARCHY — INSIDE OUT!

STEP 1 — **PARENTHESES ( )**
Innermost grouping first

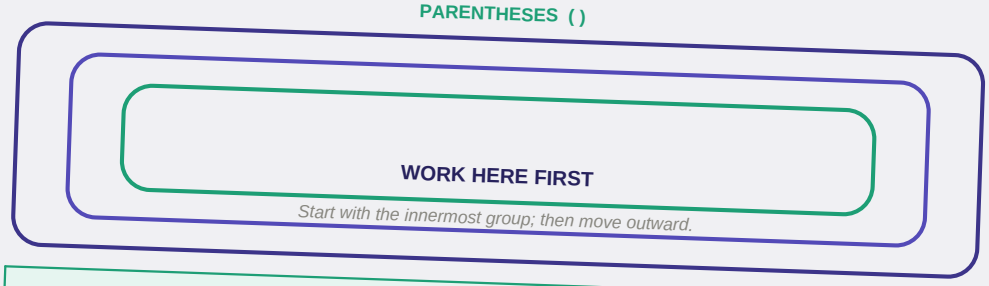
STEP 2 — **BRACKETS [ ]**
Work outside the parentheses

STEP 3 — **BRACES { }**
Then the outermost grouping

STEP 4 — **MULTIPLY & DIVIDE**
Left to right, in order

STEP 5 — **ADD & SUBTRACT**
Left to right, in order

BRACES { }
BRACKETS [ ]
PARENTHESES ( )



TEACHER TIP — "INSIDE-OUT" LANGUAGE

Activity 1 — Symbols Matter Discovery (Student Page)

Directions: Evaluate each form below, showing one operation per line. Then complete the Notice/Wonder reflection. Remember the default order: multiply & divide before you add & subtract (left to right) — unless grouping symbols say otherwise!

Family	Form A — no grouping	Form B — parentheses	Form C — ( ) inside [ ] inside { }
Family 1	4 + 6 × 2 = _____	(4 + 6) × 2 = _____	{[4 + (6 × 2)] × 3} = _____
Family 2	12 - 4 ÷ 2 = _____	(12 - 4) ÷ 2 = _____	{[(12 - 4) ÷ 2] + 6} × 3 = _____
Family 3	3 + 5 × 4 = _____	(3 + 5) × 4 = _____	{[(3 + 5) × 4] - 2} ÷ 3 = _____
Family 4	20 - 5 × 2 = _____	(20 - 5) × 2 = _____	{[(20 - 5) × 2] + 10} ÷ 5 = _____
Family 5	6 + 9 ÷ 3 = _____	(6 + 9) ÷ 3 = _____	{[(6 + 9) ÷ 3] × 4} - 5 = _____
Family 6	7 × 4 + 8 = _____	7 × (4 + 8) = _____	{[7 × (4 + 8)] - 4} ÷ 2 = _____

Notice / Wonder Reflection (Turn & Talk, then write)

1. Compare your three answers in each family. When did the answers change? When did they stay the same?
2. **I noticed** the answer changed when _____.
3. **I wonder** why the parentheses in Family 2 Form B made the answer smaller: _____.
4. Complete the rule we discovered: “Grouping symbols tell us to _____, and when they nest, we work from the _____ out.”

Activity 2 — 24 Nested-Grouping Practice (Student Pages)

Directions: Evaluate each expression. Show every step on separate paper or in your math journal: rewrite the expression after each operation you perform. Check your final answer against the answer bank — if you don't match, find the step where your work diverged (that is exactly what mathematicians do!).

LEVEL 1 • Parentheses (1–4)

1. (7 + 3) × 4
2. 5 × (8 - 2)
3. (12 + 6) ÷ 3
4. 20 - (4 + 9)

LEVEL 2 • + Brackets (5–10)

5. [(6 + 2) × 3] - 4
6. 2 × [(10 - 4) + 7]
7. [(9 + 3) ÷ 4] × 5
8. 30 ÷ [(2 + 3) × 2]
9. [8 × (7 - 5)] + 16
10. 100 - [(6 × 6) + 10]

LEVEL 3 • + Braces (11–16)

11. {[(4 + 2) × 3] - 8} × 2
12. {[(9 - 5) × 6] + 6} ÷ 3
13. 4 × {[(3 + 5) ÷ 2] + 7}
14. {[(12 + 8) ÷ 5] × 9} - 16
15. {6 + [(7 - 2) × 4]} ÷ 2
16. {[(5 × 6) - 10] ÷ 4} + 9

LEVEL 4 • Multi-Group Challenge (17–24)

17. {[(8 + 4) × 2] + [(9 - 6) × 3]} ÷ 3
18. 2 × {[(15 - 9) ÷ 3] + [(4 + 6) × 2]}
19. {[(7 + 5) × 3] - [(8 ÷ 2) + 6]} × 2

Words-to-Symbols Translation Cards (1–20)

Directions: Cut apart the cards. Translate each verbal description into a numerical expression. Use ( ) — and [ ] when needed — so your expression forces the correct order. Self-check with the key at the bottom of the page.

CARD 1 Add 8 and 7, then multiply by 2. **Write:** _____	**CARD 2** Subtract 5 from 20, then multiply by 3. **Write:** _____
CARD 3 Add 14 and 6, then divide by 4. **Write:** _____	**CARD 4** Multiply 7 by 9, then subtract 13. **Write:** _____
CARD 5 Divide 36 by 6, then add 8. **Write:** _____	**CARD 6** Add 15 and 25, then multiply by 2. **Write:** _____
CARD 7 Subtract 9 from 30, then divide by 7. **Write:** _____	**CARD 8** Multiply 12 by 5, then add 40. **Write:** _____
CARD 9 Multiply the sum of 6 and 4 by the sum of 3 and 2. **Write:** _____	**CARD 10** Divide the difference of 18 and 6 by 4. **Write:** _____
CARD 11 Add 7 and 8, multiply by 4, then subtract 10. **Write:** _____	**CARD 12** Subtract 4 from 9, multiply by 6, then add 12. **Write:** _____
CARD 13 Double the sum of 13 and 17. **Write:** _____	**CARD 14** Triple the difference of 25 and 9. **Write:** _____
CARD 15 Divide the sum of 12 and 8 by 2. **Write:** _____	**CARD 16** Add 5 and 10, divide by 3, then multiply by 4. **Write:** _____
CARD 17 Subtract 6 from 21, divide by 5, then add 9. **Write:** _____	**CARD 18** Multiply 8 by 7, subtract 16, then divide by 8. **Write:** _____

“3 Times as Large” Reasoning Task Set (8 Tasks)

Directions: Compare the expressions **without calculating**. Use structure: count how many identical groups each expression has. Explain your reasoning in a complete sentence.

1. Describe how 3 × (18932 + 921) compares to 18932 + 921.
Reasoning: Three times as large: it is 3 identical groups of (18932 + 921) instead of 1 group. (This is the CCSS example itself.)
Student work: _____

2. Describe how 5 × (247 + 1889) compares to 247 + 1889.
Reasoning: Five times as large — 5 copies of the same sum versus 1 copy.
Student work: _____

3. How does (753 + 284) compare to 4 × (753 + 284)?
Reasoning: One-fourth as large (the second is 4 times as large as the first).
Student work: _____

4. Compare 2 × (965 + 308) with 4 × (965 + 308).
Reasoning: The first is half as large as the second (2 groups vs 4 groups of the same sum).
Student work: _____

5. Describe how (1204 + 876) × 10 compares to 1204 + 876.
Reasoning: Ten times as large — 10 identical groups instead of 1.
Student work: _____

6. Compare 6 × (4521 - 213) with 3 × (4521 - 213).
Reasoning: The first is twice (2 times) as large: 6 groups vs 3 groups of the same difference.
Student work: _____

7. Which is larger: 9 × (138 + 62) or (138 + 62) × 9? Explain.
Reasoning: They are EQUAL — same number of identical groups; the order of the factors does not change the product.
Student work: _____

8. True or False — justify: 4 × (356 + 644) is 40 more than 356 + 644.
Reasoning: FALSE. It is 4 times as large (3 MORE groups of the sum), not 40 more. Multiplication scales; it does not add a fixed amount.
Student work: _____

WHAT·S INCLUDED

Order of Operations Discovery Bundle · Grade 5

CCSS 5.OA.A.1 & 5.OA.A.2

PART 1

SYMBOLS MATTER DISCOVERY

Teacher lesson script

Launch · discovery · debrief · misconceptions

Anchor chart

Hierarchy + inside-out nesting diagram

Activity 1

6 expression families × 3 forms

Activity 2

24 nested-grouping practice · 4 rigor levels

Worked solutions

Step-by-step teacher key for all 24

PART 2

WORDS · SYMBOLS TRANSLATOR

Translation cards

20 verbal-to-symbolic cards + key

Reverse cards

12 symbolic-to-verbal cards + key

Reasoning set

8 ·3 Times as Large· tasks

Exit tickets

4 formative checks + answer keys

Summative assessment

12-question quiz + answer key + rubric

TEACHING FOCUS

Evaluate expressions with grouping symbols · Write and interpret numerical expressions

Compare multiplicative scale without calculating · Build precision with structured reasoning

Suggested pacing: 3·5 days · Teacher-ready practice, assessment, and worked solutions

A discovery-first resource designed to make ·inside-out· order visible and explainable.