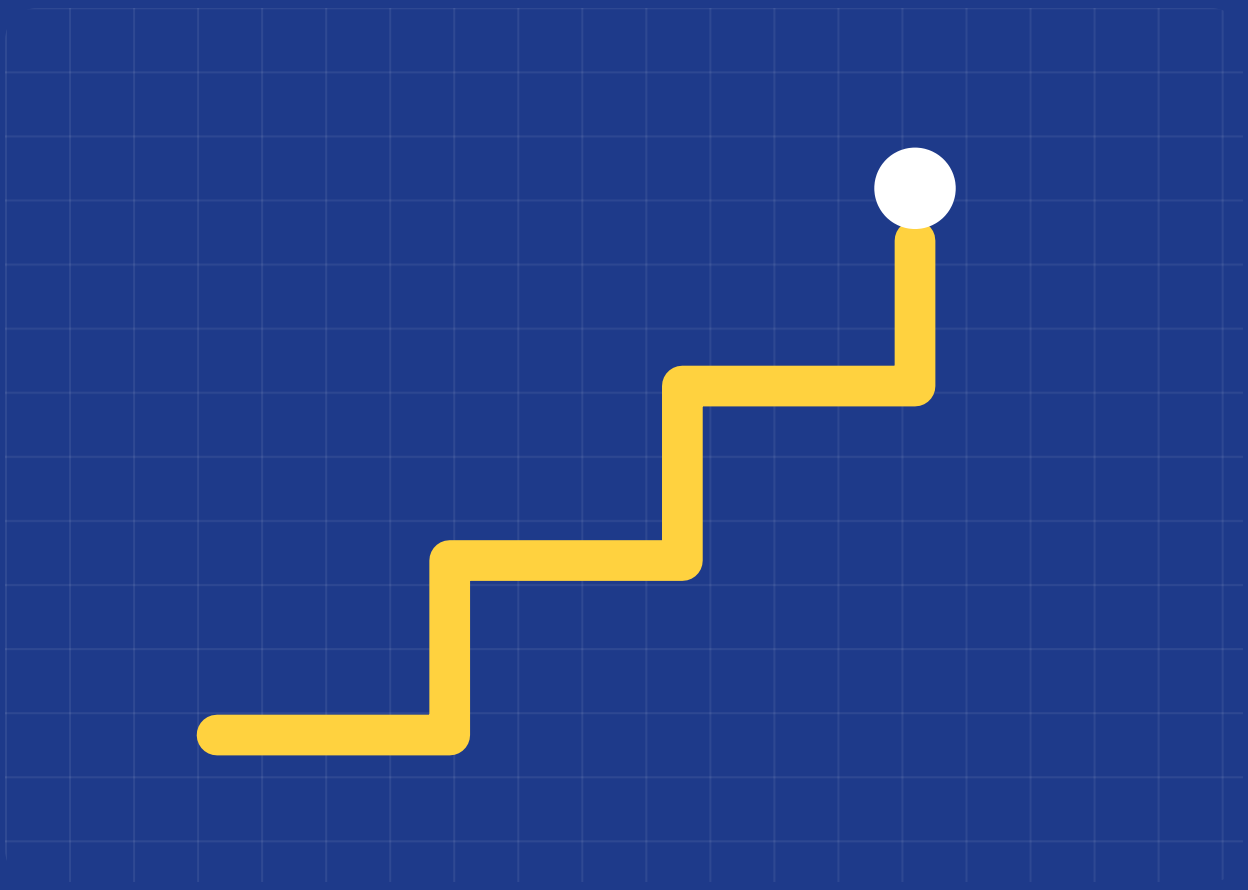
UpOnly Learning



GRADE 5

FREE SAMPLE WORKBOOK

Math Grade 5

One step at a time. · Ages 10–11 · Free sample: 1 of 11 topics

UO-MATH-5

OUR STORY

One step at a time

I'm Dr. Evan J. Hasson. I've run a specific chiropractic practice for over twelve years, and I'm a dad of three. My work is about alignment: get the structure right, and everything else works better.

At home, nothing was aligned. I was spending thousands a month on tutors, extracurriculars and programs, and when I asked about enrolling a second or third child the answer was always the same: that'll be double, that'll be triple. The charter school had a waiting list. The good public school had a waiting list. The private schools had the kind of list where it helps to know someone, or to give generously first.

And underneath all of it, the same quiet threat: if you don't pay for this, your child will fall behind. Not sold with evidence. Sold with fear.

So I did my own research, and here is what I found: none of it is secret. The standards are published. The order a child should learn in is written down and freely available. It is just scattered. Nobody had done the work of pulling it together, putting it in order and handing it over. So I did.

When every step has its place, confusion has nowhere to hide.

I built this for my own kids. I'm giving it to yours.

Dr. Evan J. Hasson, DC
Founder and dad of three

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No guaranteed results, and mistakes happen. Every student learns differently. We write and review every question and answer key carefully, and we still get things wrong — an answer key can be wrong, and a question can be worded badly or have two defensible answers. Check the answer key before you hand it over, and trust your own judgment over ours. Found a problem? **Photograph the page and email it to support@uponlylearning.com** — the picture tells us more than a description, and we fix it for every family.

Safety. Some activities use household items such as scissors, coins or food. An adult should supervise and skip anything unsafe for the student.

Not professional advice. This workbook does not replace an evaluation by a qualified educator or specialist. The founder is a Doctor of Chiropractic; UpOnly Learning does not provide medical or health advice.

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INTRODUCTION

How to use this workbook

Each topic follows the same steps, so your student always knows what comes next.

① **Quick Check.** 10 questions before you teach. Read them aloud for younger students. A high score means you can move faster.

② **Learn It.** Key words, step-by-step teaching with lines you can read aloud, worked examples and the mistakes to watch for.

③ **We Do It Together.** 10 questions you do side by side. The answer and the "why" are printed right after each question, so you can talk it through.

④ **You Try.** 10 questions your student does alone.

Answers with short explanations for every question are in the **Answer Key** at the end of each topic, so students can work without peeking. Go over each wrong answer together using the explanation.

This workbook is printed in full color. To save ink, choose "Black and white" or "Grayscale" in your printer settings; every page still works in black and white.

Want online checks that score themselves and track each student's progress? Visit uponlylearning.com.

GRADE 5

CONTENTS · UO-MATH-5

Math: Grade 5

Free Sample Workbook · Ages 10–11 · 1 of 11 topics, with a Quick Check, a lesson, We Do It Together, You Try and an answer key

Our story

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How to use this workbook

Topic 1 · Expressions and patterns

Parentheses, order of operations, numerical patterns 5.OA

Quick Check · Learn It · We Do It Together · You Try · Answer Key

Expressions and patterns

The student will be able to evaluate expressions with parentheses, brackets and braces using the order of operations, write simple expressions from words, and generate and compare two numerical patterns from given rules.

① Quick Check

Do this before the lesson. It shows what your student already knows. Score: ____ / 10

1. Evaluate 6 + 2 × 5.

A 16 **B** 30 **C** 40 **D** 13

2. Evaluate 20 ÷ 4 + 1.

A 4 **B** 21 **C** 6 **D** 6.5

3. Evaluate (18 - 3) × 4.

A 60 **B** 72 **C** 25 **D** 6

4. Evaluate (6 + 2) × 5.

A 16 **B** 40 **C** 30 **D** 13

5. Lia buys 4 pens for $2 each and a bag for $9. Which expression shows the total cost?

A 4 + 2 + 9 **B** 4 × (2 + 9) **C** (4 + 2) × 9 **D** 4 × 2 + 9

6. What is the 6th term of a pattern that starts at 0 and adds 9?

A 36 **B** 15 **C** 45 **D** 54

7. Write an expression for: 'Triple the difference of 20 and 6.' Then evaluate it.

8. Evaluate 5 × (8 + 2) - 4 × 3.

A 138 **B** 26 **C** 50 **D** 38

9. Pattern A: start at 0, add 3. Pattern B: start at 0, add 15. The table shows the first 4 terms. If the A term is 21, what is the matching B term?

Term	1st	2nd	3rd	4th
Pattern A	0	3	6	9
Pattern B	0	15	30	45

A 63 **B** 36 **C** 105 **D** 84

10. Evaluate $6 \times [(10 - 4) \div 3] + 2 \times 5$.

A 80 **B** 22 **C** 46 **D** 30

② Learn It

Key words

- **expression**: A math phrase with numbers and operations but no equal sign, like 3 × (4 + 2)
- **parentheses ( )**: Grouping symbols that tell you to do what is inside them first
- **brackets [ ] and braces { }**: Grouping symbols used around parentheses when there are groups inside groups
- **order of operations**: The agreed order for doing math: grouping symbols first, then multiply and divide from left to right, then add and subtract from left to right
- **numerical pattern**: A list of numbers made by following a rule, like add 3
- **ordered pair**: Two numbers written as (x, y) that go together

Warm-up

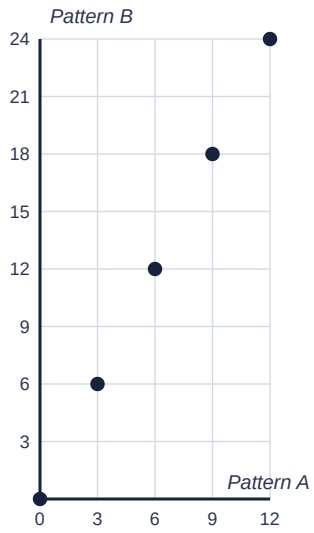
1. Write 3 + 4 × 2 on paper. Ask the student to solve it without any hints.
2. If they get 14, ask: Could someone else get a different answer? (11.)
3. Explain that mathematicians agreed on an order so everyone gets the same answer.

> *If everyone did math in a different order, we'd all get different answers. Today we'll learn the rules that make sure everyone agrees.*

Teach

1. Order of operations: Write the steps on an index card. 1) Grouping symbols: parentheses, then brackets, then braces, working from the inside out. 2) Multiply and divide from left to right. 3) Add and subtract from left to right.
2. Solve 3 + 4 × 2: no parentheses, so multiply first: 4 × 2 = 8, then 3 + 8 = 11.
3. Solve (3 + 4) × 2: parentheses first: 7, then 7 × 2 = 14. Point out how the parentheses changed the answer.
4. Nested groups: Solve 3 × [5 + (8 - 2)]. Inside parentheses: 8 - 2 = 6. Inside brackets: 5 + 6 = 11. Then 3 × 11 = 33.
5. Writing expressions from words: 'Add 8 and 7, then multiply by 2' is written (8 + 7) × 2. Explain that 3 × (18,932 + 921) is three times as large as 18,932 + 921, without calculating anything.
6. Numerical patterns: Make a table. Rule A: start at 0, add 3. Rule B: start at 0, add 6. Pattern A: 0, 3, 6, 9, 12. Pattern B: 0, 6, 12, 18, 24.
7. Compare: each number in Pattern B is twice the matching number in Pattern A. Write ordered pairs: (0, 0), (3, 6), (6, 12), (9, 18), (12, 24).

Term	1st	2nd	3rd	4th	5th
Pattern A	0	3	6	9	12
Pattern B	0	6	12	18	24



> *Grouping symbols are like a 'do this first' sign. Work from the inside out, then multiply and divide, then add and subtract.*

Guided practice

1. Solve together: 2 × (9 + 3) - 5. (Parentheses: 12. Multiply: 24. Subtract: 19.)
2. Solve together: 50 - 2 × [3 + (12 ÷ 4)]. (12 ÷ 4 = 3, 3 + 3 = 6, 2 × 6 = 12, 50 - 12 = 38.)
3. Ask the student to write an expression for 'subtract 4 from 10, then divide by 2' ((10 - 4) ÷ 2 = 3).
4. Make two patterns together. Rule A: start at 0, add 2. Rule B: start at 0, add 8. Write 5 terms of each and ask the student how the patterns relate (B is 4 times A).
5. Ask the student to write the ordered pairs from those patterns.

> *Let's work through these step by step. Circle the part you'll do first before you start.*

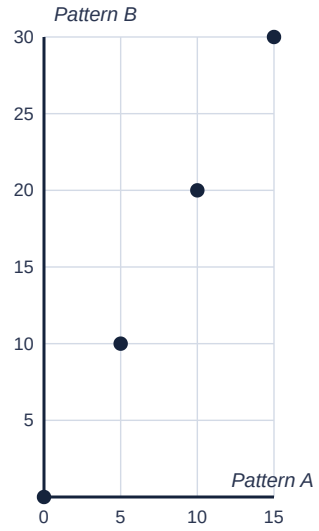
Worked examples

Evaluate 4 × (6 - 2) + 8 ÷ 2.

20. Parentheses first: 6 - 2 = 4. Then multiply and divide left to right: 4 × 4 = 16 and 8 ÷ 2 = 4. Then add: 16 + 4 = 20.

Pattern A starts at 0 and adds 5. Pattern B starts at 0 and adds 10. Write the first 4 terms of each and describe how they relate.

Term	1st	2nd	3rd	4th
Pattern A	0	5	10	15
Pattern B	0	10	20	30



A: 0, 5, 10, 15. B: 0, 10, 20, 30. Each term in Pattern B is 2 times the matching term in Pattern A.

Watch for these mistakes

Mistake: Always work from left to right, so 10 - 2 × 3 = 8 × 3 = 24.
Fix: Remind the student that multiplication comes before subtraction when there are no grouping symbols. 2 × 3 = 6, then 10 - 6 = 4. Have them circle the multiplication part first.

Mistake: Multiplication always comes before division, so 12 ÷ 2 × 3 = 12 ÷ 6 = 2.
Fix: Multiplication and division are partners and are done in order from left to right. 12 ÷ 2 = 6, then 6 × 3 = 18.

③ We Do It Together: 10 questions

> *Do these side by side. Read each question together, let your student answer, then read the answer and the "why" right below it and talk it through.*

1. What is the rule? 0, 7, 14, 21, 28

A Start at 0, add 7 **B** Start at 0, add 6 **C** Start at 7, add 7 **D** Multiply by 7

> **Answer: A** Start at 0, add 7
> **Why:** Each number is 7 more than the one before.

2. Which grouping symbol is used outside parentheses when there are groups inside groups?

A plus sign + **B** comma , **C** equal sign = **D** brackets [ ]

> **Answer: D** brackets [ ]
> **Why:** Brackets go around parentheses, and braces go around brackets.

3. Write 'subtract 5 from 12, then divide by 7' as an expression.

A (12 - 5) ÷ 7 **B** 12 - 5 ÷ 7 **C** (5 - 12) ÷ 7 **D** 5 - 12 ÷ 7

> **Answer: A** (12 - 5) ÷ 7
> **Why:** Subtracting 5 from 12 means 12 - 5. Group it, then divide by 7.

4. In 10 - 2 × 3, what do you do first?

A Divide 10 by 2 **B** Add 2 + 3 **C** Multiply 2 × 3 **D** Subtract 10 - 2

> **Answer: C** Multiply 2 × 3
> **Why:** With no grouping symbols, multiply before you subtract.

5. Write 'multiply 6 by the sum of 3 and 8' as an expression.

A 6 × 3 + 8 **B** (6 × 3) + 8 **C** 6 + 3 × 8 **D** 6 × (3 + 8)

> **Answer: D** 6 × (3 + 8)
> **Why:** The sum 3 + 8 must be grouped first, then multiplied by 6.

6. Evaluate 30 - [4 × (5 - 2)].

A 18 **B** 12 **C** 78 **D** 3

> **Answer: A** 18
> **Why:** Parentheses: 5 - 2 = 3. Brackets: 4 × 3 = 12. Then 30 - 12 = 18.

7. Ty says 15 - 3 × 2 = 24. What is the correct value?

A 18 **B** 24 **C** 12 **D** 9

> **Answer: D** 9
> **Why:** Multiply first: 3 × 2 = 6. Then 15 - 6 = 9.

8. Without calculating, how does (2,315 - 418) ÷ 2 compare to 2,315 - 418?

A It is half as large **B** It is twice as large **C** It is 2 less **D** It is the same

> **Answer: A** It is half as large
> **Why:** The whole difference is divided by 2, so the result is half of it.

9. Which expression has the greatest value?

A 5 + 3 × 6 - 1 **B** 5 + 3 × (6 - 1) **C** (5 + 3) × (6 - 1) **D** (5 + 3) × 6 - 1 × 9

> **Answer: C** (5 + 3) × (6 - 1)
> **Why:** (5 + 3) × (6 - 1) = 8 × 5 = 40. The others: 5 + 3 × 6 - 1 = 22, 5 + 3 × (6 - 1) = 20, and (5 + 3) × 6 - 1 × 9 = 39.

10. Insert grouping symbols into 2 × 3 + 4 × 5 + 1 so the value is 60. Show each step.

> **Answer:** (2 × 3 + 4) × (5 + 1) = 60: 2 × 3 = 6, 6 + 4 = 10, 5 + 1 = 6, 10 × 6 = 60. Any other grouping that truly equals 60 is also correct.
> **Why:** Grouping changes which operations happen first. 10 × 6 = 60.

④ You Try: 10 questions

Now your student works alone. Check answers in the Answer Key at the end of this topic. Score: ____ / 10

1. Write 'add 4 and 9, then multiply by 3' as an expression.

A 4 × 9 + 3 **B** (4 + 9) × 3 **C** 4 + 9 × 3 **D** 3 + 4 × 9

2. A pattern starts at 0 and adds 6. What is the 4th number?

A 24 **B** 10 **C** 12 **D** 18

3. Evaluate 9 + 12 ÷ 3.

A 24 **B** 7 **C** 13 **D** 4

4. Which ordered pairs come from Pattern A (start 0, add 1) and Pattern B (start 0, add 5)?

A (0, 0), (1, 5), (2, 10), (3, 15) **B** (0, 0), (1, 6), (2, 7), (3, 8) **C** (0, 0), (5, 1), (10, 2), (15, 3)

D (1, 5), (2, 6), (3, 7), (4, 8)

5. Pattern A: start at 0, add 2. Pattern B: start at 0, add 8. Look at the table. How do the matching terms compare?

Term	1st	2nd	3rd	4th
Pattern A	0	2	4	6
Pattern B	0	8	16	24

A Each A term is 4 times the B term **B** Each B term is 2 times the A term

C Each B term is 6 more than the A term **D** Each B term is 4 times the A term

6. Without calculating, how does 4 × (527 + 96) compare to 527 + 96?

A It is 4 times as large **B** It is 4 more **C** It is 4 times smaller **D** It is the same

7. Evaluate [20 - (3 + 7)] ÷ 2.

A 5 **B** 15 **C** 0 **D** 12

8. Which expression matches 'divide 72 by the product of 3 and 4, then add 5'?

A 72 ÷ (3 × 4 + 5) **B** 72 ÷ (3 × 4) + 5 **C** 72 ÷ 3 × 4 + 5 **D** (72 ÷ 3) × (4 + 5)

9. Where do parentheses go so 24 ÷ 4 + 2 × 3 equals 24?

A 24 ÷ 4 + (2 × 3) **B** (24 ÷ 4 + 2) × 3 **C** 24 ÷ (4 + 2) × 3 **D** (24 ÷ 4) + 2 × 3

10. Sam has $50. He buys 3 books for $8 each and 2 games for $6 each. Which expression shows the money left, and what is it?

A 50 - (3 × 8 + 2 × 6) = $26 **B** 50 - (3 × 8 + 2 × 6) = $14 **C** 50 - 3 × 8 + 2 × 6 = $38

D (50 - 3) × 8 + 2 × 6 = $388

Expressions and patterns: Answers and explanations

① Quick Check

1. Evaluate 6 + 2 × 5.
   A 16
   Multiply first: 2 × 5 = 10. Then 6 + 10 = 16.

2. Evaluate 20 ÷ 4 + 1.
   C 6
   Divide first: 20 ÷ 4 = 5. Then 5 + 1 = 6.

3. Evaluate (18 - 3) × 4.
   A 60
   Parentheses first: 18 - 3 = 15. Then 15 × 4 = 60.

4. Evaluate (6 + 2) × 5.
   B 40
   Parentheses first: 6 + 2 = 8. Then 8 × 5 = 40.

5. Lia buys 4 pens for $2 each and a bag for $9. Which expression shows the total cost?
   D 4 × 2 + 9
   4 pens at $2 is 4 × 2, then add $9 for the bag.

6. What is the 6th term of a pattern that starts at 0 and adds 9?
   C 45
   0, 9, 18, 27, 36, 45. The 6th term is 45.

7. Write an expression for: 'Triple the difference of 20 and 6.' Then evaluate it.
   3 × (20 - 6) = 42.
   The difference 20 - 6 = 14 is grouped first, then tripled: 3 × 14 = 42.

8. Evaluate 5 × (8 + 2) - 4 × 3.
   D 38
   Parentheses: 8 + 2 = 10. Multiply: 5 × 10 = 50 and 4 × 3 = 12. Then 50 - 12 = 38.

9. Pattern A: start at 0, add 3. Pattern B: start at 0, add 15. The table shows the first 4 terms. If the A term is 21, what is the matching B term?
   C 105
   Each B term is 5 times the A term because 15 is 5 × 3. So 21 × 5 = 105.

10. Evaluate 6 × [(10 - 4) ÷ 3] + 2 × 5.
    B 22
    10 - 4 = 6. 6 ÷ 3 = 2. Then 6 × 2 = 12 and 2 × 5 = 10. 12 + 10 = 22.

④ You Try

1. Write 'add 4 and 9, then multiply by 3' as an expression.
   B (4 + 9) × 3
   The sum is done first, so put 4 + 9 in parentheses, then multiply by 3.

2. A pattern starts at 0 and adds 6. What is the 4th number?
   D 18
   0, 6, 12, 18. The 4th number is 18.

3. Evaluate 9 + 12 ÷ 3.
   C 13
   Divide first: 12 ÷ 3 = 4. Then 9 + 4 = 13.

4. Which ordered pairs come from Pattern A (start 0, add 1) and Pattern B (start 0, add 5)?
   A (0, 0), (1, 5), (2, 10), (3, 15)
   Pair matching terms: A 0, 1, 2, 3 with B 0, 5, 10, 15.

5. Pattern A: start at 0, add 2. Pattern B: start at 0, add 8. Look at the table. How do the matching terms compare?
   D Each B term is 4 times the A term
   A: 0, 2, 4, 6. B: 0, 8, 16, 24. 8 is 4 × 2, 16 is 4 × 4 and so on.

6. Without calculating, how does 4 × (527 + 96) compare to 527 + 96?
   A It is 4 times as large
   The whole sum is multiplied by 4, so the expression is 4 times the sum.

7. Evaluate [20 - (3 + 7)] ÷ 2.
   A 5
   Parentheses: 3 + 7 = 10. Brackets: 20 - 10 = 10. Then 10 ÷ 2 = 5.

8. Which expression matches 'divide 72 by the product of 3 and 4, then add 5'?
   B 72 ÷ (3 × 4) + 5
   The product 3 × 4 is grouped so it is found first, then 72 ÷ 12 = 6 and 6 + 5 = 11.

9. Where do parentheses go so 24 ÷ 4 + 2 × 3 equals 24?
   B (24 ÷ 4 + 2) × 3
   24 ÷ 4 = 6, 6 + 2 = 8 and 8 × 3 = 24.

10. Sam has $50. He buys 3 books for $8 each and 2 games for $6 each. Which expression shows the money left, and what is it?
    B 50 - (3 × 8 + 2 × 6) = $14
    3 × 8 = 24 and 2 × 6 = 12, so he spends 36. 50 - 36 = 14.

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1. Expressions and patterns 5.OA
2. Powers of 10 and decimals 5.NBT.A
3. Multi-digit operations 5.NBT.B
4. Decimal operations 5.NBT.B.7
5. Adding fractions with unlike denominators 5.NF.A
6. Multiplying and dividing fractions 5.NF.B
7. Converting units both ways 5.MD.A.1
8. Line plots and fair shares 5.MD.B.2
9. Volume 5.MD.C
10. Coordinate plane 5.G
11. Classifying two-dimensional figures 5.G.B

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One step at a time.

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