



Writing and interpreting expressions

GRADE 5 MATH

Answer keys for the exit ticket and practice worksheet, plus notes for the lesson slides. Each answer shows the steps and the most likely wrong answer (“If wrong”), so you can tell what a mistake means, not just that it is one. Questions go from **fluency** to **application** to **reasoning**.

Exit Ticket — answer key

Use: End of the writing-and-interpreting-expressions lesson. Item 3 is the diagnostic and the instruction not to calculate is the assessment, not a constraint on it — a child who computes 19853 and 59559 gets the right comparison by the one route the standard excludes, so mark the method here rather than the number. Item 2 catches two errors at once, and the give-away is that a word-order answer has the RIGHT DIGITS with the wrong sign. Teach this bank close to the “Order of operations and grouping symbols” sheet (Grade 5): that one is a child reading an expression as a to-do list, this one is a child writing one, and both are the last stop on the equal-sign thread from G1 OA-07 and G3 OA-04.

Timing: 5–8 min · independent · no calculators.

1. Add 8 and 7, then multiply by 2 **APPLICATION**

Answer: $(8 + 7) \times 2$

1. The last thing done is the multiplication by 2, so the shape is $() \times 2$.
2. Everything that must be finished first goes inside the bracket: $8 + 7$.
3. So $(8 + 7) \times 2$. Its value is 30, though the item did not ask for it.

If wrong: Wrote 30. That is the value and not the expression — the standard asks for the RECORD of the calculation, because a record can be checked and changed while a number cannot.

2. Two expressions **APPLICATION**

Answer: $(3 \times 8) - 5$ and $12 - 5$

1. “5 less than the product of 3 and 8”: the product is 3×8 , and 5 comes off it, so $(3 \times 8) - 5$.
2. “Subtract 5 from 12”: the 12 is the amount being reduced, so $12 - 5$.
3. In both, the number named first in the words is not the number written first.

If wrong: Wrote $5 - 3 \times 8$ and $5 - 12$, following the order the words name the numbers. Both are negative, and both have the right digits — a sign that the translation, not the arithmetic, is what went wrong.

3. Comparing without calculating REASONING

Answer: **it is three times as large, because the bracket makes $18932 + 921$ a single amount and the 3 multiplies all of it**

1. The brackets say $18932 + 921$ is one number. Call it the sum.
2. $3 \times$ (the sum) is three of that same amount.
3. So whatever the sum turns out to be, the first expression is three times it.
4. No arithmetic is needed, and that is the point — the structure answers the question by itself.

If wrong: Calculated 19853 and then 59559 and divided. The answer is right and the method is the one the standard rules out: the comparison is a fact about the STRUCTURE, and reading it from the structure is the skill being assessed.

4. Tam's expression REASONING

Answer: **$8 + 7 \times 2$ means $8 + 14$, which is 22; the brackets go around whatever must be finished before the LAST operation, so $(8 + 7) \times 2$**

1. In $8 + 7 \times 2$ the multiplication is one number, 14, so the expression means $8 + 14 = 22$.
2. The words wanted the doubling to happen to the whole sum, so the sum has to be a single number first.
3. Find the LAST operation named — “then multiply by 2” — and the shape is $() \times 2$.
4. Everything before it goes in the bracket: $(8 + 7) \times 2$, which is 30.

If wrong: Said Tam “forgot the brackets”. True, and the answer needs what the expression MEANS without them and how to find where they go — the last-operation question is the transferable part, and without it the next translation is another guess.

Quick answers for fast checking:

#	Level	Answer
1	application	$(8 + 7) \times 2$
2	application	$(3 \times 8) - 5$ and $12 - 5$
3	reasoning	three times as large; the bracket makes the sum one amount
4	reasoning	means $8 + 14 = 22$; brackets found from the last operation

Practice Worksheet — answer key

Use: In-class practice after the deck. Items 5, 6 and 7 all carry the instruction not to calculate, and that instruction IS the item — the numbers in 6 and 7 are deliberately awkward so that reading the structure is faster than arithmetic, which is the habit being built. Item 7 is the one to take to the board: it is the standard's own example with the brackets removed, and it shows that $3 \times (a + b)$ and $3 \times a + b$ differ by a

stated amount that can be named without evaluating either. Item 3 is the only place the reversed-division error can show, since $+$ and $\times$ hide it completely.

Timing: 15–20 min · pairs · no calculators · items 4 and 7 on the board.

1. Twice the sum of 9 and 6 FLUENCY

Answer: $2 \times (9 + 6)$

1. The last operation is the doubling, so the shape is $2 \times ()$.
2. The sum goes inside: $2 \times (9 + 6)$. Its value is 30.

If wrong: Wrote $2 \times 9 + 6$, which is 24 — only the 9 was doubled. “The sum” is a single amount, and the bracket is what says so.

2. Half the sum of 14 and 6 FLUENCY

Answer: $(14 + 6) / 2$

1. Last operation: the halving. So $() \div 2$.
2. The sum goes inside: $(14 + 6) \div 2$, which is 10.

If wrong: Wrote $14 \div 2 + 6$, which is 13 — half of the first number only.

3. Divide 20 by 4, then add 3 FLUENCY

Answer: $20 / 4 + 3$

1. “Divide 20 by 4” is $20 \div 4$, not $4 \div 20$.
2. The addition is last, and division already outranks addition, so no brackets are needed: $20 \div 4 + 3$, which is 8.
3. Brackets would not be wrong here — $(20 \div 4) + 3$ says the same thing — but they are not doing any work.

If wrong: Wrote $4 \div 20 + 3$ — the divisor written first, as long division writes it. This is the only item on the sheet where the swap can show, because $\div$ is not commutative: a fifth instead of 5, out by a factor of 25.

4. What each expression records APPLICATION

Answer: $(2 + 3) \times 4$ records adding 2 and 3, then multiplying by 4; $2 + 3 \times 4$ records multiplying 3 by 4, then adding 2

1. In the first, the bracket makes $2 + 3$ one number, 5, and it is that number which is multiplied by 4.
2. In the second, 3×4 is one number, 12, and 2 is added to it.
3. So the values are 20 and 14. Same three numbers, same two operations, different records.

If wrong: Described both as “add 2 and 3 and multiply by 4”. If two different expressions get the same description, the description is not reading the brackets.

5. $(2 + 3) \times 4$ against $2 + 3$ REASONING

Answer: **four times as large, because the bracket makes $2 + 3$ one amount and it is multiplied by 4**

1. $(2 + 3)$ is a single number, and the expression is 4 of them.
2. So it is four times as large, whatever $2 + 3$ happens to be.
3. Checking afterwards: 5 and 20, and 20 is 4×5 . But the comparison did not need it.

If wrong: Worked out 5 and 20 and then compared. The right answer by the excluded route; the structure gives it directly.

6. $(18932 + 921) / 2$ against $18932 + 921$ REASONING

Answer: **half as large**

1. The bracket is one amount, and the expression is that amount divided by 2.
2. So it is half as large, whatever the sum is.
3. The size of the numbers is irrelevant, which is exactly why they are large.

If wrong: Attempted the sum, then the division. The numbers are deliberately awkward so that calculating is the slow route and reading the structure is the fast one.

7. $3 \times (18932 + 921)$ against $3 \times 18932 + 921$ REASONING

Answer: **not the same — the first triples the whole sum, the second triples only 18932, so the first is bigger**

1. In the first, the bracket makes the sum one amount and all of it is tripled: three lots of 18932 AND three lots of 921.
2. In the second, only 18932 is tripled and a single 921 is added.
3. So the first has two extra 921s in it, which is 1842 more.
4. Bigger, therefore, and by a stated amount — still without finding either value.

If wrong: Said “the same, because the numbers are the same”. The numbers are; the structures are not, and this pair is the clearest case on the sheet that brackets change what an expression means rather than how it looks.

8. Subtract the product of 2 and 5 from 40 APPLICATION

Answer: **$40 - (2 \times 5)$, which is 30**

1. The product is $2 \times 5 = 10$.
2. “Subtract ... from 40” means the 40 is being reduced, so 40 comes first: $40 - (2 \times 5)$.
3. Value: $40 - 10 = 30$.
4. The brackets are optional here, since $\times$ outranks $-$, but they make the record clearer.

If wrong: Wrote $2 \times 5 - 40$, which is -30 — the backwards reading of “from”, with the right digits and the wrong sign.

9. Why an expression rather than an answer REASONING

Answer: **because the expression records what was DONE, so it can be checked, changed and compared, while a number cannot**

1. 30 does not say where it came from, so a mistake in it cannot be found.
2. $(8 + 7) \times 2$ can be checked one part at a time.
3. It can also be adapted — change the 2 to a 3 and the new answer is immediate.
4. And it can be compared with other expressions without either being evaluated, which is what items 5 to 7 on this sheet do.

If wrong: Said “to show your working”. Close, and the sharper answer is that an expression can be REASONED about — comparing $3 \times (a + b)$ with $3 \times a + b$ needs the structures and not the values.

Quick answers for fast checking:

#	Level	Answer
1	fluency	$2 \times (9 + 6)$

2	fluency	$(14 + 6) \div 2$
3	fluency	$20 \div 4 + 3$
4	application	20 and 14; the bracket changes which part is one number
5	reasoning	four times as large
6	reasoning	half as large
7	reasoning	not the same; the first is bigger by two extra 921s
8	application	$40 - (2 \times 5) = 30$
9	reasoning	a record can be checked, changed and compared

Lesson slides — teaching notes & timing

Mini-lesson slides, then the practice worksheet. Slide numbers match the deck.

Slide	~Time	Note
1/8	0:00	Teach this close to the “Order of operations and grouping symbols” sheet (Grade 5) — it is the same belief seen from the writing side, and the pair reinforce each other. Here the child produces the to-do list rather than reading one.
2/8	0:45	Write the words and the wrong expression side by side, and evaluate the wrong one. 22 against 30 settles it faster than any correction; the child can see that every symbol they were given is present and the meaning still went wrong.
3/8	1:45	THE technique. Ask “what happens LAST?” every time. Once the final operation is named, the brackets have an obvious home — everything that has to be finished first goes inside them.
4/8	3:00	Both swaps, quickly but explicitly, and they have different causes: “from” names the smaller number first, while long division trains children to write the divisor first. Worth saying why the error survives so long: with + and $\times$ a swap makes no difference at all, so nothing corrects it until subtraction or division shows up.
5/8	4:00	Why the standard asks for an expression rather than an answer. An expression is a record: it can be checked, adapted, and reasoned about without redoing anything. A number has discarded all of that.
6/8	4:45	The standard's own example, and the moment to forbid calculating. Ask for the comparison with the numbers left alone. Some children will reach for the sum — that is the habit worth naming out loud.
7/8	6:00	The bracket contrast. $3 \times (a + b)$ against $3 \times a + b$, in words rather than letters: tripling the whole sum, against tripling only the first part.
8/8	7:15	The 5-less-than phrasing catches both errors at once: word order AND the backwards reading. Then the comparison item. Exit ticket after.