



MATH WITH MR DJ

GRADE 7 · EXPRESSIONS & EQUATIONS

ADDING & SUBTRACTING LINEAR EXPRESSIONS

Today's goal: I can add linear expressions with rational coefficients and subtract linear expressions with rational coefficients.



Tan



Digit



Blaze



Pi



WARM-UP

Turn & talk · 1 min

$$(5x + 2) - (3x - 4)$$

1 Work it out silently.

TURN & TALK

is it $2x - 2$ or $2x + 6$?



Adding is the easy case

1 $(5x + 2) + (3x - 4) = 8x - 2.$

- 2 Nothing inside the bracket changes. Just collect like terms.



BIG IDEA 2

Subtracting: flip EVERY sign

$$1 \quad (5x + 2) - (3x - 4) = (5x + 2) + (-3x + 4)$$

$$2 \quad = 2x + 6$$

REMEMBER

$3x \rightarrow -3x$ AND $-4 \rightarrow +4$. Both. Every time.



WATCH OUT!

Why $2x - 2$ is wrong

- 1 It subtracts the $3x$ and then copies -4 across untouched.
- 2 The minus is subtracting the WHOLE bracket, not just its first term.

DON'T FALL FOR IT

Write the flipped line out. Every time. Even when you're sure.



BIG IDEA 4

Check by substituting

- 1 At $x = 1$: original gives 8, and $2x + 6$ gives 8. Match.
- 2 The wrong answer $2x - 2$ gives 0 — caught.

REMEMBER

Pick a value that doesn't make a bracket vanish.



SPOT THE SLIP!

Turn & talk

Something went wrong here...

THE PROBLEM

Simplify $(4x + 3) - (2x + 5)$.

WHAT A STUDENT DID

Answered $2x + 8$ by leaving the $+5$ unflipped.

YOUR MISSION

What went wrong? What's the right answer?



Simplify $(4x + 3) - (2x + 5)$.

1 Flip inside: $(4x + 3) + (-2x - 5)$.

2 $4x - 2x = 2x$

3 $3 - 5 = -2$.

Answer: $2x - 2$



Pick your pepper!



MILD

Simplify $(4x + 3) + (2x + 5)$.

#1 on your practice sheet



MEDIUM

Simplify $(6x - 2) - (x - 7)$.

#3 on your practice sheet



SPICY

In question 3 the constant went from -2 to $+5$. Explain where the $+7$ came from.

#7 on your practice sheet

How's it going?



3 • Got it!

I could teach it



2 • Almost

One more example, please



1 • Not yet

I need some help



MATH WITH MR DJ

NOW YOU!

Practice sheet: everyone does Mild & Medium, then climb the peppers.

Stuck? Look back at Mr DJ's example at the top of the sheet.

Need it again? Watch "Combining Like Terms - Watch me solve this in under 2 minutes - then you try one!" on YouTube @MathWithMrDJ

Brain break: 3 new daily puzzles at puzzles.mathwithmrdj.com

