



MATH WITH MR DJ

GRADE 7 · EXPRESSIONS & EQUATIONS

MULTI-STEP PROBLEMS WITH RATIONAL NUMBERS

Today's goal: I can solve multi-step real-life problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), solve multi-step mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), apply properties of operations to calculate with numbers in any form (whole numbers, fractions, and decimals), converting between number forms with appropriate and assess the reasonableness of answers using mental computation and estimation strategies.



Ten



Digit



Raze



Pi



Three shirts at \$12.50, plus 8% tax

1 Before you calculate — roughly how much?

TURN & TALK

give me a number in five seconds.



Estimate with friendly numbers

1 $3 \times \$12 = \$36$, plus a little for tax.

2 So the answer should be somewhere near \$38–\$40.



BIG IDEA 2

Now calculate: \$40.50

1 $3 \times 12.50 = 37.50$, then $\times 1.08 = 40.50$.

2 Close to \$36–\$40. Believable.

REMEMBER

Adding \$8 instead of 8% gives \$45.50 – the estimate catches it.



WATCH OUT!

Estimate **BEFORE**, not after

- 1 An estimate made afterwards is just your answer rounded.
- 2 It agrees with everything, so it catches nothing.



BIG IDEA 4

Track the DIRECTION of your rounding

- 1 Rounded down → the true answer is higher.
- 2 Rounded up → the true answer is lower.

REMEMBER

2.4×1.5 : estimate 3, exact 3.6. Higher, as predicted.



SPOT THE SLIP!

Turn & talk

Something went wrong here...

THE PROBLEM

How many litres would fill it?

WHAT A STUDENT DID

Answered 60, the whole capacity.

YOUR MISSION

What went wrong? What's the right answer?



How many litres would fill it?

1 $60 - 45 = 15.$

Answer: 15 litres



YOUR TURN

Whiteboards up!

Pick your pepper!



☞ MILD

Four items cost \$7.25 each. Find the total.

#1 on your practice sheet



☞☞ MEDIUM

Take 10% off that total. What is the new price?

#3 on your practice sheet



☞☞☞ SPICY

Is your exact answer above or below your estimate? Explain why that happened.

#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

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 "How to Estimate With Percents" on YouTube @MathWithMrDJ

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

