

Make Mistakes Matter! Don't correct them, investigate them!

Mistakes might not be a simple slip up. It might make sense to the student and contain partial understanding and sometimes may result in the correct answer. Rejecting and correcting it is asking students to reject something that makes sense to them and accepting something that doesn't.

It's important to predict & anticipate, but don't assume! Ask the kids!

Why did you set it up/start this way?

Why did you decide to ____?

What makes you say that?

What do you mean by that?

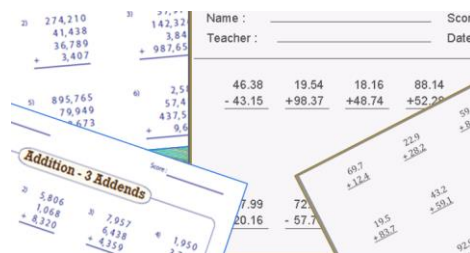
"I lined it up by the back of the number."

$$\begin{array}{r} 2.53 \\ + 1.7 \\ \hline 2.70 \end{array}$$

Why does it make sense that someone might think this?

It is important to ask this of yourself, but also of our students.

Students often have extremely varied reasoning that is different from our assumptions.



How could you test that out? Prove that? (Encourage physical and visual representations)

Can you draw a picture to represent your thinking?

Could you show it on a number line? (graph, etc.)

Can you build it with...? (popsicle sticks, sugar cubes, etc.)

How could you use...? (base ten blocks, algebra tiles, etc.)



Why doesn't it work? Why here and not here? Why then and not now?

$$\begin{array}{r} 253 \\ + 17 \\ \hline \end{array}$$
$$\begin{array}{r} 2.53 \\ + 1.70 \\ \hline \end{array}$$

$$\begin{array}{r} 2.53 \\ + 1.7 \\ \hline \end{array}$$

Asking students comparative (when and where) questions gets students to clarify important distinguishing details.

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Designing tasks around mistakes

1. Give the answer, ask students to explain how they know.

Without calculating, show how you know that $\frac{1}{4} + \frac{1}{4}$ does not equal $\frac{2}{8}$

2. Ask students to agree or disagree with a solution or strategy.

Yazmine says that $8 \div \frac{1}{2}$ is more than 8.

Daniella says that $8 \div \frac{1}{2}$ is less than 8.

Who's right? Why?

3. Ask students to choose between two different solutions or strategies.

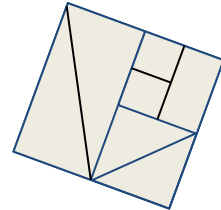
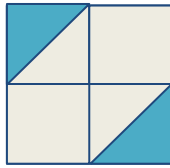
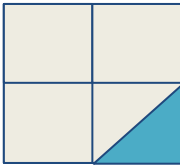
Jenna says $\frac{3}{4}$ is equal to 0.34

Do you agree or disagree?

Explain your reasoning.

4. Give students non-routine examples.

What fraction is shown?



Ask one more question! – Exit ticket

“How can we figure out the fraction name when we don't have enough or when we have too many pieces?”

“Why can we not call these fifths when there are clearly 5 pieces, why are we calling them tenths?”

“When does lining up by the back of the number work? Not work? How can we modify the rule to work every time?”

“If 8 is more than 3, why, when we put the number in the denominator, does it do the opposite of what we expect?”