Math is more than math facts: fractions, decimals and the rest

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Math facts matter, but they are one strand of about twenty. Here is what else K–8 math covers, why fractions matter so much, and how to practise all of it.

Math facts matter, but they are only one strand of school math. There are about twenty. A child who knows 7 × 8 = 56 instantly has a real advantage. But K–8 math also covers place value, fractions, decimals, percents, measurement, time, money, shapes, data, chance, patterns and early algebra. When home practice is mostly flashcards and timed drills, the rest gets squeezed out. Fractions in particular deserve more room than they usually get. Peabody is free through the end of 2026, and this post is part of our free curriculum guide for parents and teachers.

We are writing this partly about ourselves. Peabody's own math practice has leaned too hard on facts. We are rebuilding it so a child can open fractions, decimals, measurement or shapes in one tap. More on that at the end.

Why fractions matter so much

In 2008 the US National Mathematics Advisory Panel reviewed the research on school math. It called proficiency with fractions "the most important foundational skill not presently developed". It counted decimals, percents and negative fractions as part of that.

Later research backed the panel up. A 2012 study by Robert Siegler and colleagues, using national data from both the US and the UK, found that what elementary children knew about fractions and division predicted their algebra and overall high-school math results five or six years later. That held even after accounting for other differences between the children.

Fractions are where many children first decide math "doesn't make sense". Before fractions, a bigger number always meant more. Then suddenly 1/8 is smaller than 1/4. Getting the idea right early saves a great deal of trouble later.

What fractions actually look like, grade by grade

Under the Common Core, fractions don't start in 4th grade with adding. They build up slowly:

- Grade: 1st · What children do with fractions: Split circles and rectangles into halves and fourths
- Grade: 2nd · What children do with fractions: Halves, thirds and fourths; equal shares don't have to look the same
- Grade: 3rd · What children do with fractions: Unit fractions (1/3 is one of three equal

parts); fractions on a number line; simple equivalent fractions; comparing
- Grade: 4th · What children do with fractions: Equivalent fractions by rule; comparing any two; adding and subtracting with like denominators; tenths and hundredths
- Grade: 5th · What children do with fractions: Adding and subtracting unlike denominators; multiplying fractions; a fraction as division
- Grade: 6th · What children do with fractions: Dividing a fraction by a fraction
- Grade: 7th · What children do with fractions: Negative fractions and all four operations with rational numbers

Two ideas run through all of it. First, a fraction is a number, with a place on the number line between 0 and 1 or beyond. It is not just a shaded slice of pizza. Second, decimals and percents are fractions too: 0.25 is 25/100, which is 25%. Federal practice guides recommend teaching fractions as numbers, and using the number line as the main picture for whole numbers, fractions and decimals alike.

So what about math facts?

Facts still count. The Math Panel said that fluent computation requires automatic recall of addition, subtraction, multiplication and division facts.

The question is how and when to practise them. A 2021 federal practice guide on helping elementary students who struggle with math looked at the evidence. It rated timed activities as a strong part of an intervention when they are short, about one to five minutes. It also said it does not recommend "merely giving students timed worksheets". The order matters too. Children should understand what multiplication means, for example equal groups or an array, before they race against a clock.

So the sensible recipe is:

- Understand first. Equal groups, arrays and skip counting come before speed.
- Short bursts after that. A couple of minutes a day, not a 20-minute drill.
- Keep it private. No public speed charts. Children who are slower at recall are often doing fine with the ideas.

The guide's page on math fact fluency goes through both sides of the timed-test argument.

The rest of the map

Here is the whole of K–8 math in eight groups. If your child's practice only ever touches the first three, the other five are worth a look:

1. Counting and numbers: counting, place value, rounding, negative numbers.
2. Add and subtract: facts, strategies, word problems.
3. Multiply and divide: facts, arrays, long division, multiples and factors.
4. Fractions, decimals and percents: the strand above.

5. Measure, time and money: length, weight, volume, area and perimeter, telling time and elapsed time, coins and change.
6. Shapes and space: naming and sorting shapes, angles, symmetry, volume, transformations.
7. Data and chance: picture and bar graphs, line plots, averages, probability.
8. Patterns and algebra: patterns, input–output rules, ratios, expressions, equations, functions.

Mix it up

One more finding is worth knowing. When practice mixes different kinds of problems together, children tend to remember more than when they do twenty of the same kind in a row. This is called interleaved practice. In one large classroom trial with 7th graders, which the federal What Works Clearinghouse says meets its standards, students who did mixed review scored 61% on a delayed test. Students who did blocked practice scored 38%.

At home, that can be as simple as three problems a day from three different groups on the list above. Try one fraction, one time or money question and one times-table fact, instead of a page of one kind.

Easy ways to practise the other strands at home

- Fractions in the kitchen. Doubling or halving a recipe is real fraction work. Our post on kitchen math has ideas, and Peabody's Kitchen has recipes kids can cook.
- Time and money in the day. "We leave in 25 minutes: what time is that?" "You have $5; can you buy both?"
- Data from anything. Count the birds at the feeder for a week and draw a bar graph.
- A number line on the wall. Mark 0, 1/2 and 1, and let children place 1/4, 3/4 and 0.5 on it.
- Printables. Peabody Teach has free number lines, a hundreds chart and manipulatives to print.

What we are changing on Peabody

Peabody's Numbers page has opened on four fact buttons, with fractions and decimals deep inside each grade's path. That is backwards from everything above, so we are rebuilding it. Math will be organized into the eight groups in this post. Fractions will be one tap away. Each round will mix two or three groups, and fact practice will become a short warm-up instead of the main event. Children will still be able to play as much as they like, and nothing will be locked.

Until then, Peabody's math practice from counting to 8th grade, its library of leveled stories, and everything else are free through the end of 2026.

Questions parents ask

Should my child memorize math facts?

Yes. Quick recall of addition, subtraction, multiplication and division facts frees up attention for harder problems. Build understanding first, then practise in short bursts.

When do kids learn fractions?

Under the Common Core, children start splitting shapes into halves and fourths in 1st grade. Unit fractions and fractions on a number line come in 3rd grade. Adding fractions with like denominators comes in 4th grade, and unlike denominators in 5th.

Are timed math tests bad?

Short timed practice of a minute or a few minutes is supported by the evidence once a child understands the facts. Long timed worksheets on their own are not recommended in the federal practice guide. Public speed rankings add pressure without helping.

My child is great at facts but struggles with word problems. Why?

Word problems need a different skill: working out what kind of problem it is, such as joining, taking away, comparing or equal groups. Practise naming the kind of problem before solving it, and avoid keyword tricks like "altogether means add", which often mislead.

Free at peabody.kids/blog/math-is-more-than-math-facts