

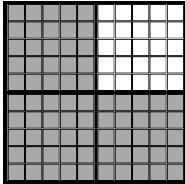
Grade 5, Unit Six: Fractions, Decimals & Percents

In this unit your child will:

- show fractions, decimals, and percents with pictures and numbers
- identify decimals and percents that are equal to a given fraction
- compare and order decimal numbers and fractions
- compare, add, and subtract decimal numbers
- rewrite improper fractions as mixed numbers and vice versa
- compare, add, and subtract fractions by first rewriting them with a common denominator
- apply fraction and division skills to interpret pie graphs
- calculate percents of numbers to solve problems

$\frac{1}{4}$	$\frac{25}{100}$	0.25	$1 \div 4$	$\frac{250}{1,000}$	0.250	$\frac{2,500}{10,000}$	0.2500
$\frac{2}{10} + \frac{5}{100}$	$\frac{2}{10} + \frac{1}{10}$	$\frac{20}{100} + \frac{5}{100}$	$0.2 + 0.05$	$\frac{2}{10}$	$\frac{25}{100}$	$0.20 + 0.05$	
one fourth		one quarter		2 tenths and 5 hundredths			

Your child will learn and practice these skills by solving problems like those shown below. Keep this sheet for reference when you're helping with homework.

Problem	Comments
<p>Circle all the numbers that are equal to $\frac{3}{4}$.</p> <p style="text-align: center;"> 50% <u>75%</u> <u>0.750</u> 0.25 0.075 </p> <p style="text-align: center;"> <u>0.75</u> 0.025 $\frac{8}{6}$ <u>$\frac{6}{8}$</u> $\frac{4}{8}$ </p> <p>Which numbers above are less than $\frac{3}{4}$?</p> <p style="text-align: center;"> 50% ($\frac{1}{2}$) 0.25 ($\frac{1}{4}$) 0.075 ($\frac{75}{1000}$) 0.025 ($\frac{25}{1000}$) $\frac{4}{8}$ ($\frac{1}{2}$) </p> <p>Which numbers above are greater than $\frac{3}{4}$?</p> <p style="text-align: center;">$\frac{8}{6}$ ($1 \frac{2}{6}$)</p>	<p>Students use grids divided into 100 equal parts to see the relationships between fractions, decimals, and percents. The example here shows some equivalencies for $\frac{3}{4}$. By the end of the unit, students will be able to recall equivalencies for key fractions including $\frac{1}{4}$, $\frac{1}{2}$, and $\frac{3}{4}$.</p> <div style="text-align: right; margin-top: 10px;">  </div> <p style="text-align: right; margin-top: 10px;"> $\frac{3}{4}$ $\frac{75}{100}$ 0.75 75% </p> <p>Students also know that they can generate equivalent fractions by multiplying (or dividing) the numerator and denominator by the same amount. So $\frac{3}{4} = \frac{6}{8}$ because $3 \times 2 = 6$ and $4 \times 2 = 8$.</p>
<p>Yesterday it rained 0.57 inches. Today it rained 1.36 inches. Exactly how much more did it rain today than yesterday?</p> <div style="text-align: right; margin-top: 10px;"> $\begin{array}{r} 0.126 \\ 1.36 \\ - 0.57 \\ \hline 0.79 \end{array}$ </div>	<p>Students use algorithms to add and subtract decimals after lining up the decimal points. Their understanding of these numbers and ability to make good estimates helps them judge whether their answers are reasonable.</p>

Marc walked $\frac{3}{4}$ of a mile and then ran $1\frac{2}{3}$ of a mile. How far did he go altogether? Show all your work.

$$1\frac{2}{3} = \frac{3}{3} + \frac{2}{3} \qquad \frac{3}{3} + \frac{2}{3} = \frac{5}{3}$$

$$3, 6, 9, 12 \qquad \frac{3}{4} \times 3 = \frac{9}{12} \qquad \frac{20}{12} + \frac{9}{12} = \frac{29}{12}$$

$$4, 8, 12 \qquad \frac{5}{3} \times 4 = \frac{20}{12} \qquad 29 + 12 = 2 \text{ r}5$$

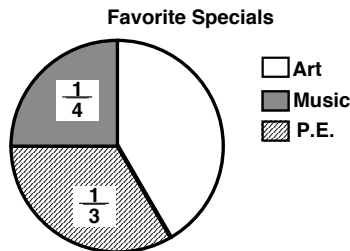
$$\qquad \qquad \qquad \qquad \qquad \qquad \text{so } \frac{29}{12} = 2\frac{5}{12}$$

Marc went $2\frac{5}{12}$ miles altogether. That's a little less than $2\frac{1}{2}$ miles.

To add and subtract fractions in this unit, students apply a set of key skills including converting mixed numbers to improper fractions and vice versa (e.g., $1\frac{2}{3} = \frac{5}{3}$ and $\frac{29}{12} = 2\frac{5}{12}$), rewriting fractions with common denominators, and adding and subtracting fractional amounts.

If you look closely at the work in this example, you can see how students also draw on their understanding of multiples to find common denominators and use their skills with division to convert improper fractions to mixed numbers.

There are 120 third, fourth, and fifth graders at our school. The principal asked them to pick their favorite specials. This pie graphs shows the results.



What percent of the students said music was their favorite special?

A fourth is equal to 25%, so 25% of the students chose music.

How many students said that art was their favorite special? Show all your work.

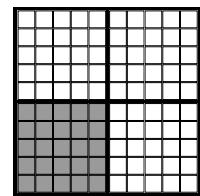
$$120 \div 4 = 30 \qquad 120 \div 3 = 40$$

$$30 + 40 = 70$$

70 students chose music or P.E. The rest chose art.

$$120 - 70 = 50 \qquad 50 \text{ students chose art.}$$

Students use grids divided into 100 equal parts to see the relationships between fractions, decimals, and percents. By the end of the unit, students will be able to recall equivalencies for key fractions including $\frac{1}{4}$, $\frac{1}{2}$, and $\frac{3}{4}$ and apply them to problems like the one at left.



$$\frac{1}{4} = \frac{25}{100} = 25\%$$

Problems like this one require that students apply a collection of skills and understandings related to fractions, percents, and division. The graph shows that a little less than half of the students surveyed chose art. This confirms that 50 is a sensible answer because it is a little less than 60 (half of 120).

Frequently Asked Questions about Unit Six

Q: Why are you doing so much—fractions, decimals, and percents—in one unit?

A: We teach fractions, decimals, and percents together because they all represent numbers that include part of a whole (numbers that can be represented as a ratio of integers, called rational numbers). As students make connections between these numbers, they are better able to work flexibly and efficiently with such numbers. For example, to calculate the new price of a \$45 jacket that is 40% off, a student might calculate that \$9 is a fifth or 20% of \$45. Double that is \$18 (40%) and \$45 – \$18 is \$27. Another student might see that the new price is 60% of \$45. Nine dollars is a fifth or 20% of \$45, so $3 \times \$9$ (\$27) is three-fifths or 60% of \$45. Strategies like these show a strong understanding of the connections between fractions and percents.