

Homework Help

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Grades K-2: Fact Families, Number Bonds, and Triangles

A **fact family** is a group of numbers that have a special relationship in terms of **addition and subtraction** or **multiplication and division**.

- For example, **3, 4, and 7** are an **addition/subtraction fact family** because all of the following are true:

$$3 + 4 = 7$$

$$4 + 3 = 7$$

$$7 - 3 = 4$$

$$7 - 4 = 3$$

- 3, 5, and 15** form a **multiplication/division fact family** because:

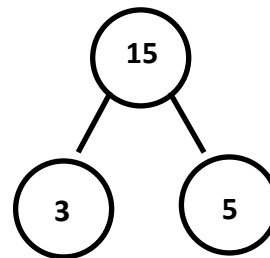
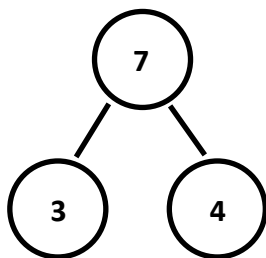
$$3 \times 5 = 15$$

$$5 \times 3 = 15$$

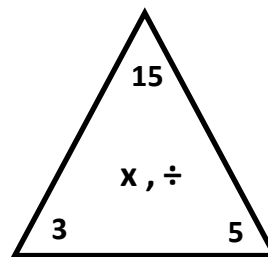
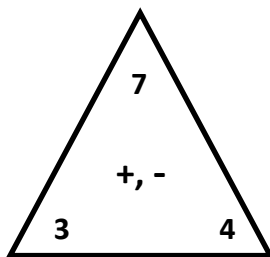
$$15 \div 3 = 5$$

$$15 \div 5 = 3$$

We can use **number bonds** to **represent these fact families**, which is **great for visual learners**. Number bonds help show, for example, that the order doesn't matter when we are adding or multiplying. For example, 3×5 and 5×3 both equal 15. Here are the number bonds for the two fact families mentioned above.



Another great visual way to represent these fact families is by using **fact family triangles**, which look a bit like number bonds. Here are the triangles for the two fact families mentioned above.



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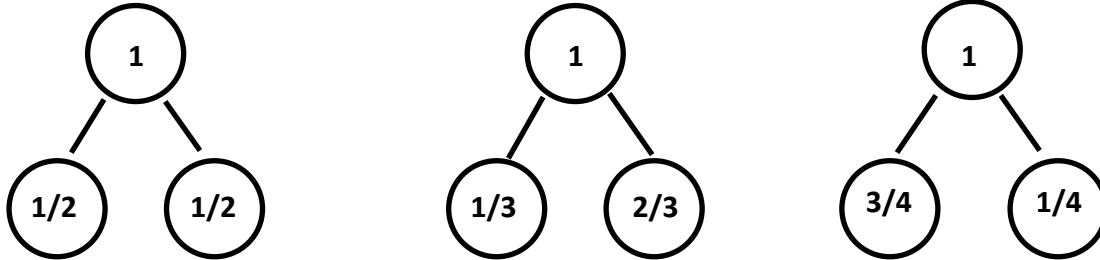
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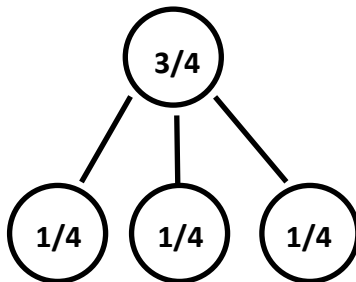


Number Bonds and Fractions

A **number bond** is a way to show how numbers relate to each other, and it's **also a way to show how parts go together to make a whole**. Number bonds can therefore **show how fractions relate to whole numbers**. Let's look at some examples with fractions.



- All of the examples show that we can think about a **whole as a sum of at least two fractions**. For example, the middle number bond shows that $1/3 + 2/3 = 1$.
- Sometimes it is helpful to **break fractions down into even smaller parts**. This is called **decomposing**. Often, teachers ask learners to **decompose into unit fractions**. A **unit fraction** is a fraction with **1 as the numerator**.
- As an example, let's **decompose $3/4$ into unit fractions**. In other words, let's see how many $1/4$ s we can break $3/4$ into.



Even though many number bonds have only two "legs," this one has three, and that's okay. The number bond just shows the whole broken down into parts, and there may be more than two parts.

- Decomposing $3/4$ shows that $3/4 = 1/4 + 1/4 + 1/4$, so it helps us understand adding fractions.
- It can also help us think about multiplication since **another way to express $1/4 + 1/4 + 1/4$ is $3 \times 1/4$** .

For More on Fact Families: <https://youtu.be/ibEuMoZxDNA>

For More on Decomposing Fractions: <https://youtu.be/5ZmLKMPVTsQ>