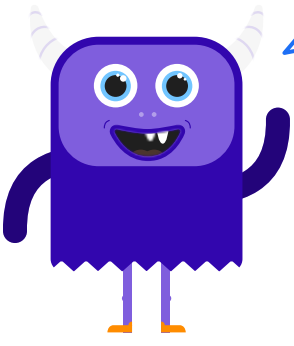
Equivalent Fractions



A **fraction** is a portion of a whole.

The number at the **top** of a fraction is the **numerator**.

$\frac{3}{8}$ ← numerator

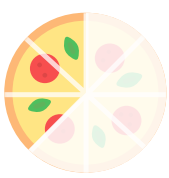
$\frac{3}{8}$ ← denominator

The number at the **bottom** of a fraction is the **denominator**.

The **numerator** tells us how many portions we have.

The **denominator** tells us how many **equally sized parts** the whole was divided into.

The pizza on the right represents $\frac{3}{8}$. We have 3 slices of pizza so our **numerator** is 3. Our pizza has been cut into 8 equal pieces so our **denominator** is 8.

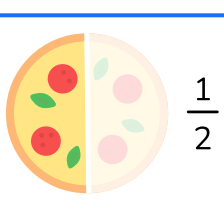


When we **simplify** a fraction, we write a fraction using the smallest numbers possible. For example, $\frac{2}{8}$ in its simplest form would be $\frac{1}{4}$.

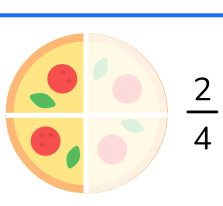
Equivalent Fractions

Equivalent fractions are fractions that represent the **same portion** of a whole.

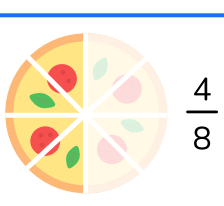
For example, if we eat **half** of a pizza, then we might have eaten $\frac{1}{2}$ or $\frac{2}{4}$ or $\frac{4}{8}$ of a pizza.



$\frac{1}{2}$

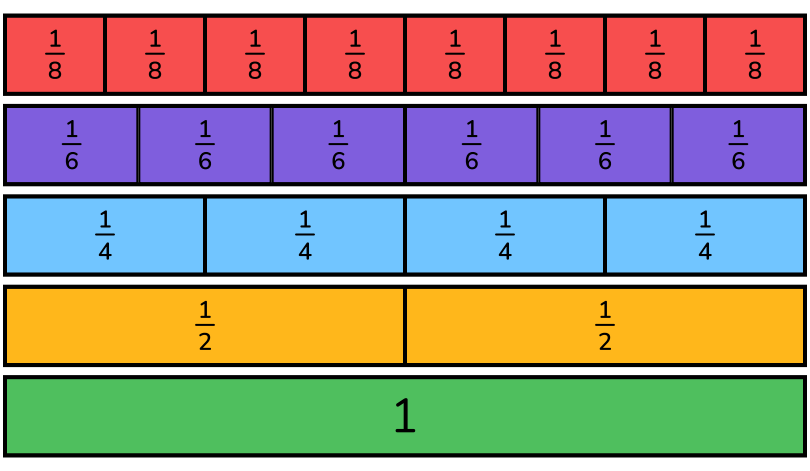


$\frac{2}{4}$

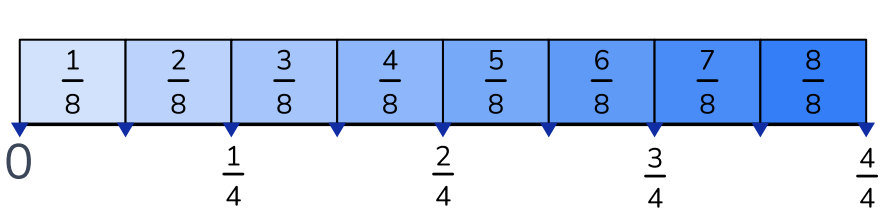


$\frac{4}{8}$

We can use **fraction walls** to help us find equivalent fractions**.** Each row is divided into equal parts. Sections that are the same size represent **equivalent fractions**.



We can also use **number lines** to visualise **equivalent fractions**. For example, we can see that $\frac{6}{8}$ and $\frac{3}{4}$ are equivalent because they're at the same point on the number line.



Method

Let's look at how we find an equivalent fraction!

1. To work out an **equivalent fraction**, we **multiply** the **numerator** and the **denominator** by the same number.

$$\frac{2}{10} \xrightarrow{\times 2} \frac{4}{20}$$

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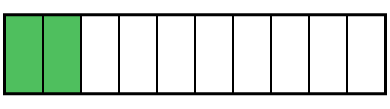

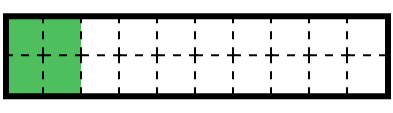

2. Alternatively, we can **divide** the **numerator** and the **denominator** by the same number.

$$\frac{2}{10} \xrightarrow{\div 2} \frac{1}{5}$$

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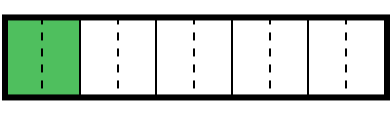
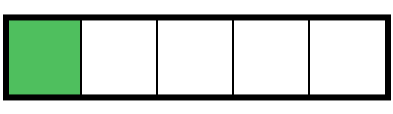
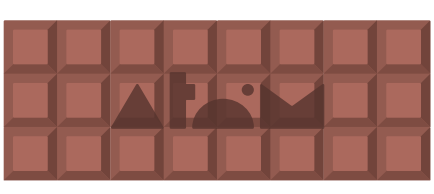




Remember!
To find an equivalent fraction, we **multiply** or **divide** the **numerator** and **denominator** by the same number. We cannot use addition or subtraction to find an equivalent fraction.

Example Question

Ato eats $\frac{4}{24}$ of a chocolate bar. Select the fraction which is equivalent to this.



A $\frac{1}{6}$ **B** $\frac{2}{8}$ **C** $\frac{1}{10}$ **D** $\frac{3}{12}$ **E** $\frac{4}{20}$

1. We need to find a fraction **equivalent** to $\frac{4}{24}$, so we will need to either **multiply** or **divide** our **numerator** and **denominator** by the same number.

Looking at our answer options, all of the **denominators** are less than 24. This tells us that we will need to do some **division**!

2. Let's check that the **denominators** of our answer options are all **factors** of 24.

We can rule out **C** $\frac{1}{10}$ and **E** $\frac{1}{20}$ because 10 and 20 are not factors of 24. If we divided 24 by these numbers, our answer would not be a whole number.

3. Let's find the fractions **equivalent** to $\frac{4}{24}$ that have **denominators** of 6, 8 and 12.

$$\frac{4}{24} \overset{\div 4}{=} \frac{1}{6}$$

$$\frac{4}{24} \overset{\div 3}{=} \frac{1.33...}{8}$$

$$\frac{4}{24} \overset{\div 2}{=} \frac{2}{12}$$

Using these calculations, we can rule out **B** and **D.** $\frac{4}{24}$ cannot be simplified into **eighths**, so **B** is incorrect, and **D** has the wrong **numerator** (3 instead of 2).

The correct answer is **A**. Ato has eaten $\frac{1}{6}$ of the chocolate bar.

$$\frac{4}{24} = \frac{1}{6}$$