

Simplifying fractions

Divide the numerator and denominator by their highest common factor to write a fraction in simplest form.



Name _____

Date _____

Highest common factor

To simplify a fraction, find the highest common factor (HCF) of the numerator and denominator, then divide both by it. A fraction is in simplest form when the HCF of its numerator and denominator is 1 – no number bigger than 1 divides both exactly.

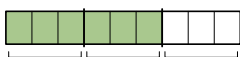
Worked example Simplify $\frac{6}{8}$ using the bar.



The heavy lines bundle the eighths into pairs: eight eighths become four quarters.

$$\frac{6}{8} \div \frac{2}{2} = \frac{3}{4}.$$

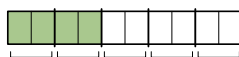
1. What does this bar simplify to?



Solution

$$\frac{6}{9} \div \frac{3}{3} = \frac{2}{3}.$$

2. What does this bar simplify to?



Solution

$$\frac{4}{10} \div \frac{2}{2} = \frac{2}{5}.$$

3. What does “simplify a fraction” mean?

Solution

Writing it with the smallest possible whole numbers, keeping the same value.

4. Simplify $\frac{4}{8}$.

Solution

$$\frac{1}{2}.$$

5. Simplify $\frac{6}{10}$.

Solution

$$\frac{3}{5}.$$

6. Simplify $\frac{9}{12}$.

Solution

$$\frac{3}{4}.$$

7. Simplify $\frac{15}{20}$.

Solution

$$\frac{3}{4}.$$

8. Is $\frac{7}{9}$ already in simplest form?

Solution

Yes – HCF of 7 and 9 is 1.

9. Fill in the blank: $\frac{8}{12} = \frac{2}{\square}$.

Solution

$$\square = 3.$$

Simplifying fractions (continued)



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10. What does this bar simplify to?



Solution

$$\frac{8}{12} \div \frac{4}{4} = \frac{2}{3}.$$

11. Simplify $\frac{21}{28}$.

Solution

$$\frac{3}{4} \text{ (HCF 7).}$$

12. Simplify $\frac{18}{45}$.

Solution

$$\frac{2}{5} \text{ (HCF 9).}$$

13. Is $\frac{16}{24} = \frac{2}{3}$ correct?

Solution

Yes: HCF of 16, 24 is 8, and $16 \div 8 = 2$, $24 \div 8 = 3$.

14. Which is simpler: $\frac{12}{16}$ or $\frac{3}{4}$?

Solution

$\frac{3}{4}$ – it's already fully simplified.

15. Explain how you know $\frac{10}{14}$ is not in simplest form.

Solution

Both 10 and 14 are even, so they share a common factor of 2.

16. Two students simplify $\frac{24}{36}$: one divides by 12; the other divides by 2, then 3, then 2. Show both reach the same result.

Solution

$24 \div 12 = 2$, $36 \div 12 = 3 \rightarrow \frac{2}{3}$.
Also $\frac{24}{36} \rightarrow \frac{12}{18} \rightarrow \frac{4}{6} \rightarrow \frac{2}{3}$. Same answer.

17. Fill in both blanks: $\frac{\square}{15} = \frac{3}{5} = \frac{27}{\square}$.

Solution

$$\square = 9 \text{ and } \square = 45.$$

18. Explain why $\frac{11}{13}$ is already in simplest form.

Solution

11 and 13 are both prime, so their only common factor is 1.