

Equivalent fractions



Decide whether two fractions are equivalent, and find a missing numerator or denominator.

Name _____

Date _____

Same value, different look

Two fractions are equivalent if they represent the same amount. Multiply (or divide) the numerator AND denominator by the same number to find an equivalent fraction – never just one of them. A stacked bar or circle diagram shows this: the same shaded length or area, cut into finer or coarser parts.

Worked example Compare $\frac{1}{2}$ and $\frac{2}{4}$ using the bars. Are they equivalent?



Both bars have the same shaded length.
Yes: $\frac{1}{2} = \frac{2}{4}$ (multiply top and bottom by 2).

1. Are the bars equivalent?



Solution

Yes: $\frac{1}{3} = \frac{2}{6}$.

2. Are the circles equivalent?



Solution

Yes: $\frac{1}{4} = \frac{2}{8}$.

3. What does “equivalent fractions” mean?

Solution

Fractions that represent the same amount, written with different numbers.

4. Write a fraction equivalent to $\frac{3}{4}$.

Solution

E.g. $\frac{6}{8}$ ($\times 2$).

5. Fill in the blank: $\frac{2}{5} = \frac{\square}{10}$.

Solution

$\square = 4$.

6. Fill in the blank: $\frac{3}{7} = \frac{\square}{21}$.

Solution

$\square = 9$.

7. Are $\frac{4}{6}$ and $\frac{2}{3}$ equivalent? Explain.

Solution

Yes: dividing $\frac{4}{6}$ by 2 gives $\frac{2}{3}$.

8. Are $\frac{5}{8}$ and $\frac{15}{24}$ equivalent?

Solution

Yes: $\frac{5}{8} \times \frac{3}{3} = \frac{15}{24}$.

9. Which fraction is equivalent to $\frac{3}{5}$: $\frac{6}{9}$, $\frac{9}{15}$, or $\frac{6}{15}$?

Solution

$\frac{9}{15}$ ($\times 3$).

Equivalent fractions (continued)



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10. Use the bars to confirm $\frac{3}{5} = \frac{6}{10}$.



Solution

Same shaded length: $\frac{3}{5} = \frac{6}{10}$.

11. Fill in the blank: $\frac{4}{9} = \frac{12}{\square}$.

Solution

$\square = 27$.

12. Write two different fractions equivalent to $\frac{5}{6}$.

Solution

E.g. $\frac{10}{12}$, $\frac{15}{18}$.

13. Fill in both blanks: $\frac{\square}{12} = \frac{2}{3} = \frac{16}{\square}$.

Solution

$\square = 8$ and $\square = 24$.

14. A student says $\frac{3}{4}$ and $\frac{9}{16}$ are equivalent because $3 \times 3 = 9$. Are they correct? Explain.

Solution

No – the denominator must also be $\times 3$, giving $\frac{9}{12}$, not $\frac{9}{16}$.

15. Which does not belong: $\frac{2}{3}$, $\frac{4}{6}$, $\frac{6}{9}$, $\frac{8}{10}$? Explain.

Solution

$\frac{8}{10} = \frac{4}{5}$; the others all equal $\frac{2}{3}$.

16. One fraction is $\frac{5}{8}$. Write three different equivalent fractions.

Solution

E.g. $\frac{10}{16}$, $\frac{15}{24}$, $\frac{20}{32}$.

17. Are $\frac{12}{18}$ and $\frac{2}{3}$ equivalent? Justify using a scale factor.

Solution

Yes: $\frac{12}{18} \div \frac{6}{6} = \frac{2}{3}$.

18. Write your own pair of equivalent fractions and explain how you know.

Solution

E.g. $\frac{2}{3}$ and $\frac{4}{6}$: multiplying top and bottom by 2 gives the same value.