

Reciprocals

Find the reciprocal of a fraction or whole number by swapping the numerator and denominator.



Name _____

Date _____

Swap top and bottom

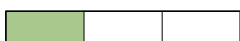
The reciprocal of a fraction swaps its numerator and denominator. To find the reciprocal of a whole number, first write it as a fraction over 1, then swap: the reciprocal of n is $\frac{1}{n}$. A number multiplied by its reciprocal always equals 1.

Worked example Find the reciprocal of $\frac{1}{4}$ using the bar.



Swap the numerator and denominator.
The reciprocal of $\frac{1}{4}$ is 4.

1. This bar shows a fraction. What is its reciprocal?



Solution

The bar shows $\frac{1}{3}$.
Reciprocal: 3.

2. This shows the whole number 3. What is its reciprocal?



Solution

$3 = \frac{3}{1}$.
Reciprocal: $\frac{1}{3}$.

3. Find the reciprocal of $\frac{1}{2}$.

Solution

Swap: reciprocal is $\frac{2}{1} = 2$.

4. Find the reciprocal of $\frac{2}{5}$.

Solution

Swap: reciprocal is $\frac{5}{2} = 2\frac{1}{2}$.

5. Find the reciprocal of $\frac{3}{4}$.

Solution

Swap: reciprocal is $\frac{4}{3} = 1\frac{1}{3}$.

6. Find the reciprocal of 2.

Solution

$2 = \frac{2}{1}$.
Reciprocal: $\frac{1}{2}$.

7. Find the reciprocal of $\frac{7}{8}$.

Solution

Swap: reciprocal is $\frac{8}{7} = 1\frac{1}{8}$.

8. Find the reciprocal of 5.

Solution

$5 = \frac{5}{1}$.
Reciprocal: $\frac{1}{5}$.

9. Fill in the blank: the reciprocal of $\frac{4}{9}$ is $\frac{\square}{\square}$.

Solution

Swap: $\square = 9$, $\square = 4$.

Reciprocals (continued)



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10. Find the reciprocal of $\frac{7}{3}$.

Solution

Swap: reciprocal is $\frac{3}{7}$.

11. Find the reciprocal of 12.

Solution

$12 = \frac{12}{1}$.

Reciprocal: $\frac{1}{12}$.

12. Are $\frac{2}{7}$ and $\frac{7}{2}$ reciprocals?

Solution

Yes: swapping $\frac{2}{7}$ gives $\frac{7}{2}$.

13. Is the reciprocal of 9 equal to $\frac{1}{9}$?

Solution

Yes: $9 = \frac{9}{1}$, swap to get $\frac{1}{9}$.

14. Which is greater: the reciprocal of $\frac{2}{9}$ or the reciprocal of $\frac{2}{7}$?

Solution

Reciprocal of $\frac{2}{9} = \frac{9}{2} = 4\frac{1}{2}$.

Reciprocal of $\frac{2}{7} = \frac{7}{2} = 3\frac{1}{2}$.

The reciprocal of $\frac{2}{9}$ is greater.

15. Explain in one sentence why the reciprocal of 1 is still 1.

Solution

$1 = \frac{1}{1}$, and swapping the numerator and denominator leaves it unchanged.

16. A student says the reciprocal of 6 is 6. Are they correct? Explain.

Solution

No: $6 = \frac{6}{1}$, so the reciprocal is $\frac{1}{6}$, not 6.

17. The reciprocal of a number is $\frac{7}{12}$. What is the number?

Solution

Swap back: the number is $\frac{12}{7}$.

18. If two numbers are reciprocals, what is their product?

Solution

1.