



Recurring Decimals to Fractions

Converting Recurring Decimals to Fractions

Recurring (repeating) decimals can be converted to fractions using the steps below.

$$0.\overline{18} \rightarrow \frac{2}{11}$$

EXAMPLE: Convert $0.\overline{18} \dots$ into a fraction

$$x = 0.181818 \dots$$

$$x = 0.181818 \dots$$

$$x = 18.181818 \dots$$

$$100x = 18.181818 \dots$$

$$99x = 18$$

$$x = 18/99$$

$$x = 2/11$$

STEP ONE: Let x equal the recurring decimal

STEP TWO: Find the recurring group of digits

STEP THREE: Multiply the decimal by the place value of the recurring group to move it left

STEP FOUR: Multiply the x by the same factor

STEP FIVE: Subtract equations (S4- S3) then solve

For decimals with recurring units positioned after non-recurring digits:

EXAMPLE: Convert $0.1\overline{6} \dots$ into a fraction

$$x = 0.166666 \dots$$

$$x = 0.166666 \dots$$

COMPLETE PREVIOUS STEPS ONE & TWO.

$$10x = 1.666666 \dots$$

STEP THREE: Multiply both sides to move all non-recurring digits to the left of the decimal point

$$100x = 16.666666 \dots$$

STEP FOUR: Multiply both sides to move one recurring unit to the left of the decimal point

$$90x = 15$$

$$x = 15/90$$

STEP FIVE: Subtract equations (S4- S3) then solve

$$x = 1/6$$

Instructions: Convert the recurring decimals below to fractions.

1	$0.\overline{7}$	2	$0.\overline{54}$
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3	$0.\overline{90}$	4	$0.\overline{4}$
5	$0.\overline{63}$	6	$0.\overline{12}$
7	$0.\overline{8}$	8	$0.\overline{39}$
9	$0.\overline{2}$	10	$0.\overline{35}$



11	$0.0\overline{4}$	12	$0.9\overline{2}$
13	$0.8\overline{3}$	14	$0.3\overline{4}$
15	$0.29\overline{3}$	16	$0.\overline{145}$
17	$0.5\overline{68}$	18	$0.37\overline{2}$

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STEP ONE: Let x equal the recurring decimal

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STEP THREE: Multiply the decimal by the place value of the recurring group to move it left

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STEP FIVE: Subtract equations (S4- S3) then solve

For decimals with recurring units positioned after non-recurring digits:

EXAMPLE: Convert $0.1\overline{6}$... into a fraction

$$x = 0.166666 \dots$$

$$x = 0.166666 \dots$$

$$10x = 1.666666 \dots$$

$$100x = 16.666666 \dots$$

$$90x = 15$$

$$x = 15/90$$

$$x = 1/6$$

COMPLETE PREVIOUS STEPS ONE & TWO.

STEP THREE: Multiply both sides to move all non-recurring digits to the left of the decimal point

STEP FOUR: Multiply both sides to move one recurring unit to the left of the decimal point

STEP FIVE: Subtract equations (S4- S3) then solve

Instructions: Convert the recurring decimals below to fractions.

1	$0.\overline{52}$	2	$0.\overline{74}$
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3	$0.3\overline{7}$	4	$0.\overline{413}$
5	$0.13\overline{62}$	6	$0.1\overline{48}$
7	$0.1\overline{28}$	8	$0.45\overline{4}$
9	$0.3\overline{61}$	10	$0.81\overline{28}$



11	$1.\overline{4}$	12	$7.\overline{63}$
13	$8.\overline{15}$	14	$13.3\overline{6}$
15	$1.784\overline{2}$	16	$28.9\overline{19}$
17	$1.192\overline{4}$	18	$17.55\overline{63}$