



Example 3 Writing a repeating decimal as a fraction

How do you know that $0.\overline{24} = \frac{24}{99}$?

Max's Solution

$$0.\overline{01} \times 24 = 0.\overline{24}$$

I know that $\frac{1}{99} = 0.\overline{01}$, so $\frac{24}{99}$ is 24 times as much.

I multiplied each $0.\overline{01}$ part by 24.

A Checking

1. Write each decimal as a fraction.

- a) 0.162 b) 0.0777... c) 0.272 727...

2. Write each decimal as a fraction. Then replace each with $<$, $>$, or $=$.

- a) $0.375 = \frac{1}{4}$ b) $0.23 = \frac{1}{7}$ c) $0.844 = \frac{22}{25}$

B Practising

3. Write each decimal as a fraction.

- a) $0.\overline{14}$ c) $0.\overline{0777}$... e) $0.\overline{272 727}$...
b) $0.\overline{273}$ d) $4.\overline{17}$ f) $0.\overline{767}$

4. Replace each $*$ with $<$, $>$, or $=$.

- a) $0.416 * \frac{1}{4}$ c) $0.\overline{6} * \frac{2}{3}$
b) $0.52 * \frac{1}{2}$ d) $0.6 * \frac{2}{3}$

5. Match each fraction with its decimal equivalent.

- A. $\frac{4}{7}$ B. $\frac{7}{13}$ C. $\frac{6}{11}$ D. $\frac{2}{21}$
a) $0.\overline{54}$ b) $0.\overline{095 238}$ c) $0.\overline{571 428}$ d) $0.\overline{538 461}$

6. Explain how you know, without using a calculator, that $0.\overline{45}$ is greater than $\frac{9}{20}$.

7. Describe how to write a terminating decimal as a fraction. Give an example.