

Lesson 15 Practice Problems

1. Elena and Han are discussing how to write the repeating decimal $x = 0.13\overline{7}$ as a fraction. Han says that $0.13\overline{7}$ equals $\frac{13764}{99900}$. "I calculated $1000x = 137.7\overline{77}$ because the decimal begins repeating after 3 digits. Then I subtracted to get $999x = 137.64$. Then I multiplied by 100 to get rid of the decimal: $99900x = 13764$. And finally I divided to get $x = \frac{13764}{99900}$." Elena says that $0.13\overline{7}$ equals $\frac{124}{900}$. "I calculated $10x = 1.3\overline{77}$ because one digit repeats. Then I subtracted to get $9x = 1.24$. Then I did what Han did to get $900x = 124$ and $x = \frac{124}{900}$."

Do you agree with either of them? Explain your reasoning.

2. How are the numbers 0.444 and $0.\overline{4}$ the same? How are they different?

3. a. Write each fraction as a decimal.

i. $\frac{2}{3}$

ii. $\frac{126}{37}$

- b. Write each decimal as a fraction.

i. $0.\overline{75}$

ii. $0.\overline{3}$

4. Write each fraction as a decimal.

a. $\frac{5}{9}$

b. $\frac{5}{4}$

c. $\frac{48}{99}$

d. $\frac{5}{99}$

e. $\frac{7}{100}$

f. $\frac{53}{90}$

5. Write each decimal as a fraction.

a. $0.\overline{7}$

b. $0.\overline{2}$

c. $0.1\overline{3}$

d. $0.1\overline{4}$

e. $0.0\overline{3}$

f. $0.6\overline{38}$

g. $0.5\overline{24}$

h. $0.1\overline{5}$

6. $2.2^2 = 4.84$ and $2.3^2 = 5.29$. This gives some information about $\sqrt{5}$.

Without directly calculating the square root, plot $\sqrt{5}$ on all three number lines using successive approximation.

