Lesson 12 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 $1000x = 137.77\overline{7}$ 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 $10x = 1.37\overline{7}$ 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. $0.\overline{3}$

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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. $0.\overline{14}$

    e. $0.\overline{03}$

    f. $0.6\overline{38}$

    g. $0.52\overline{4}$

    h. $0.1\overline{5}$

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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.

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