Recurring Decimals

1 Fraction to Decimal

Write each of the following as a recurring decimal.

(a) $\frac{2}{3}$ (b) $\frac{4}{9}$ (c) $\frac{2}{7}$ (d) $\frac{1}{6}$

(e) $\frac{7}{11}$ (f) $\frac{2}{15}$ (g) $\frac{7}{44}$ (h) $\frac{3}{26}$

2 Which is recurring?

Which of the following fractions can be written as recurring decimals?

$\frac{3}{5}$ $\frac{1}{7}$ $\frac{2}{9}$ $\frac{3}{8}$ $\frac{5}{6}$

3 Decimal to Fraction

Write each of the following recurring decimals as a fraction.

You should give your answer in its simplest form.

(a) $0.\dot{3}$ (b) $0.\dot{2}\dot{3}$ (c) $0.\dot{4}\dot{1}$ (d) $0.\dot{5}1\dot{8}$

(e) $0.\dot{0}1\dot{7}$ (f) $0.1\dot{6}$ (g) $0.19\dot{5}$ (h) $0.\dot{4}546\dot{4}$

(i) $0.2\dot{3}\dot{4}$ (j) $0.10\dot{5}\dot{4}$ (k) $0.35\dot{7}$ (l) $2.\dot{3}\dot{5}$

4 Calculations

Calculate the answer to the following.

Give each answer as a fraction in its simplest form.

(a) $0.\dot{4} + \frac{1}{3}$ (b) $0.2\dot{5} + \frac{3}{10}$ (c) $0.\dot{2} - 0.0\dot{2}$

(d) $0.8\dot{6} - 0.1\dot{5}$ (e) $0.\dot{5} \times \frac{1}{4}$ (f) $0.2\dot{4} \times 3$

(g) $0.0\dot{6} \times \frac{5}{6}$ (h) $0.\dot{4}\dot{5} \div \frac{2}{3}$

5 *Number Cards*

Tracy has four recurring decimal cards.

She also has four fraction cards.

$0.\dot{3}\dot{9}$	$0.\dot{5}$	$0.\dot{3}\dot{6}$	$0.3\dot{8}$
$\frac{4}{9}$	$\frac{7}{11}$	$\frac{11}{18}$	$\frac{20}{33}$

Can you find four pairs of cards that add up to 1?

6 *Bizarre!!!*

(a) Write $0.\dot{9}$

(b) Write $0.4\dot{9}$ as a decimal

(c) Write $0.24\dot{9}$ as a decimal.

(d) Comment on your answers.

7 *Pattern Spotting*

Use your calculator to write the following sets of fractions as recurring decimals. What patterns do you notice?

Ninths $\frac{1}{9}, \frac{2}{9}, \frac{3}{9}, \frac{4}{9}, \frac{5}{9}, \frac{6}{9}, \frac{7}{9}, \frac{8}{9}$

Sevenths $\frac{1}{7}, \frac{2}{7}, \frac{3}{7}, \frac{4}{7}, \frac{5}{7}, \frac{6}{7}$

Elevenths $\frac{1}{11}, \frac{2}{11}, \frac{3}{11}, \frac{4}{11}, \frac{5}{11}, \frac{6}{11}, \frac{7}{11}, \frac{8}{11}, \frac{9}{11}, \frac{10}{11}$