Recurring and Terminating Decimals Investigation

To write a recurring decimal, put a dot over the repeating digit, or over the first and last number of the repeating phrase.

Examples:

$\frac{5}{16} = 5 \div 16 = \mathbf{0.3125}$	$\frac{11}{15} = 11 \div 15 = 0.73333\ldots = \mathbf{0.7\dot{3}}$	$\frac{8}{11} = 8 \div 11 = 0.727272\ldots = \mathbf{0.\dot{7}\dot{2}}$

Simplify each fraction where possible, then use a calculator to convert into a decimal:

The first two have been done for you.

Fraction	Simplest form	Decimal
$\frac{\mathbf{1}}{\mathbf{12}}$	$\frac{1}{12}$	$1 \div 12 = 0.08\dot{3}$
$\frac{\mathbf{2}}{\mathbf{12}}$	$\frac{1}{6}$	$1 \div 6 = 0.1\dot{6}$
$\frac{\mathbf{3}}{\mathbf{12}}$		
$\frac{\mathbf{4}}{\mathbf{12}}$		
$\frac{\mathbf{5}}{\mathbf{12}}$		
$\frac{\mathbf{6}}{\mathbf{12}}$		
$\frac{\mathbf{7}}{\mathbf{12}}$		
$\frac{\mathbf{8}}{\mathbf{12}}$		
$\frac{\mathbf{9}}{\mathbf{12}}$		
$\frac{\mathbf{10}}{\mathbf{12}}$		
$\frac{\mathbf{11}}{\mathbf{12}}$		
$\frac{\mathbf{12}}{\mathbf{12}}$		

Extension

Make another table, this time for $\frac{1}{7}$, $\frac{2}{7}$, etc.

What do you notice about the decimal versions of these fractions?

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$\frac{\mathbf{2}}{\mathbf{12}}$	$\frac{1}{6}$	$1 \div 6 = 0.1\dot{6}$
$\frac{\mathbf{3}}{\mathbf{12}}$	$\frac{1}{4}$	$1 \div 4 = 0.25$
$\frac{\mathbf{4}}{\mathbf{12}}$	$\frac{1}{3}$	$1 \div 3 = 0.\dot{3}$
$\frac{\mathbf{5}}{\mathbf{12}}$	$\frac{5}{12}$	$5 \div 12 = 0.41\dot{6}$
$\frac{\mathbf{6}}{\mathbf{12}}$	$\frac{1}{2}$	$1 \div 2 = 0.5$
$\frac{\mathbf{7}}{\mathbf{12}}$	$\frac{7}{12}$	$7 \div 12 = 0.58\dot{3}$
$\frac{\mathbf{8}}{\mathbf{12}}$	$\frac{2}{3}$	$2 \div 3 = 0.\dot{6}$
$\frac{\mathbf{9}}{\mathbf{12}}$	$\frac{3}{4}$	$3 \div 4 = 0.75$
$\frac{\mathbf{10}}{\mathbf{12}}$	$\frac{5}{6}$	$5 \div 6 = 0.83\dot{3}$
$\frac{\mathbf{11}}{\mathbf{12}}$	$\frac{11}{12}$	$11 \div 12 = 0.91\dot{6}$
$\frac{\mathbf{12}}{\mathbf{12}}$	1	$1 \div 1 = 1$

Extension

Make another table, this time for $\frac{1}{7}$, $\frac{2}{7}$, etc.

$\frac{1}{7} = 0.142857$ $\frac{2}{7} = 0.285714$ $\frac{3}{7} = 0.428571$ $\frac{4}{7} = 0.571428$ $\frac{5}{7} = 0.714285$ $\frac{6}{7} = 0.857142$ $\frac{7}{7} = 1$

What do you notice about the decimal versions of these fractions? All permutations.