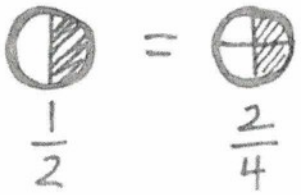
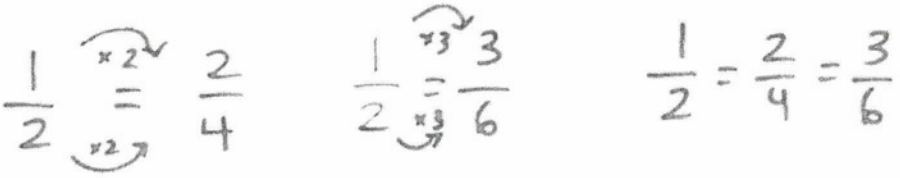
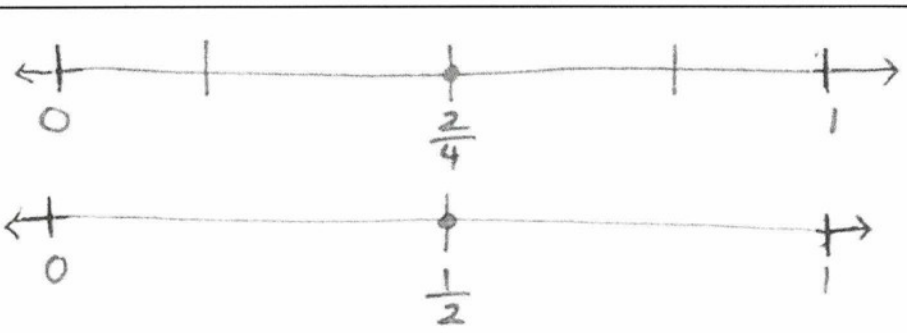
Study Guide for Equivalent Fractions and Percentages

1. Equivalent fractions can be represented pictorially, symbolically, and on a number line.

Pictorially	
Symbolically	
Number line	

2. Equivalent Fractions can be reduced to their simplest form.
   Step 1: Find the factors for the numerator and denominator
   Step 2: Identify the Greatest Common Factor (GCF)
   Step 3: Divide the numerator and denominator by the GCF
   Example:

	Factors	GCF		Simplest Form
$\frac{9}{15}$	9: 1, 3, 9	3	9÷3 = 3	$\frac{3}{5}$
	15: 1, 3, 5, 15		15÷3 = 5	

3. Compare and order fractions
   a. $\frac{2}{7}, \frac{5}{7}, \frac{7}{7}$ - least to greatest. When fractions have like denominators, the fraction with the larger numerator is the larger fraction.
   b. $\frac{3}{8}, \frac{3}{5}, \frac{3}{4}$ - least to greatest. When fractions have like numerators, the fraction with the smaller denominator is the larger fraction. The whole is divided into fewer parts.
   c. Comparing fractions using <, >, and =

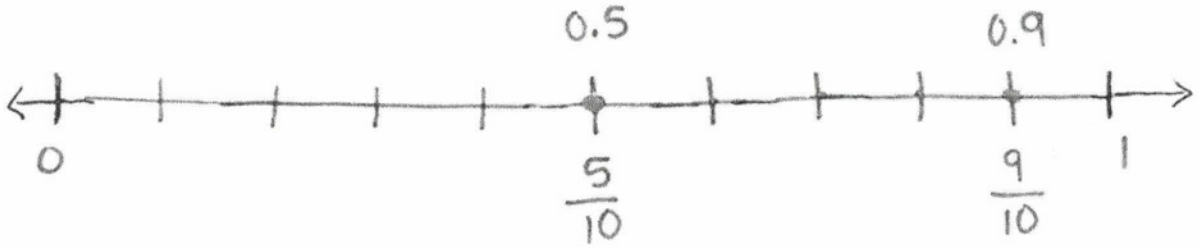
      E.g. $\frac{3}{10} > \frac{1}{5}$ Create fractions with the same denominator. $\frac{1}{5} = \frac{2}{10}$ by multiplying the numerator and denominator by 2. $\frac{3}{10} > \frac{2}{10}$.

      E.g. $\frac{1}{2} = \frac{4}{8}$ Reduce the fraction $\frac{4}{8}$ by dividing the numerator and denominator by 2. $\frac{1}{2} = \frac{1}{2}$
   d. Place the fractions on a number line.

4. Expressing fractions as decimal numbers

   $\frac{4}{10} = 0.4$ $\frac{4}{100} = 0.04$ $\frac{40}{100} = 0.40$

5. Placing fractions and decimals on a number line



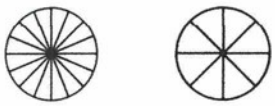
6. Percentages

   Percent means out of 100. A percentage can be written as a fraction and a decimal as well. The denominator must be either 10 or 100 for a percentage to be generated. If the denominator is not 10 or 100, an equivalent fraction must be created from which a percentage can be written.

   $\frac{89}{100} = 0.89 = 89\%$ $\frac{4 \times 5}{20 \times 5} = \frac{20}{100} = 0.20 = 20\%$

Practice Questions

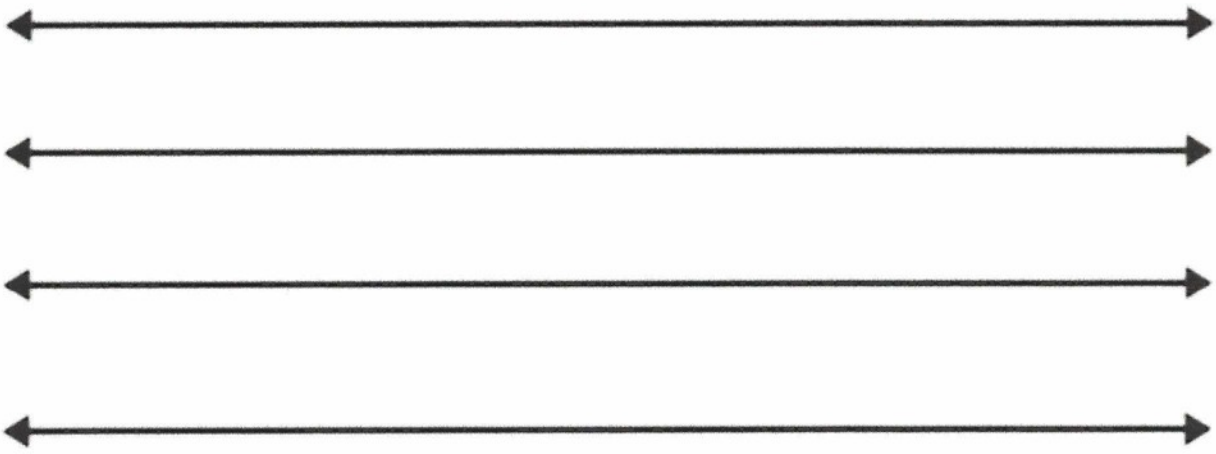
1. Colour the fraction in each circle to prove they are equivalent.

1 a.  $\frac{6}{15} = \frac{2}{5}$	1 b.  $\frac{2}{12} = \frac{1}{6}$
2 a.  $\frac{2}{10} = \frac{1}{5}$	2 b.  $\frac{10}{12} = \frac{5}{6}$
3 a.  $\frac{10}{16} = \frac{5}{8}$	3 b.  $\frac{12}{14} = \frac{6}{7}$

2. Create at least 2 equivalent fractions for the following fractions:

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

3. Place each of the equivalent fractions you created in question 2 on a number line. You will need to partition the line appropriately.



4. Write the following fractions in their simplest form.

$\frac{8}{16}$ $\frac{15}{20}$ $\frac{15}{18}$ $\frac{8}{10}$

5. Write the following fractions from greatest to least: $\frac{1}{6}$, $\frac{1}{3}$, $\frac{1}{10}$

6. Order the fractions from least to greatest: $\frac{3}{4}, \frac{3}{8}, \frac{3}{5}, \frac{3}{10}$

7. Compare the fractions using <, >, or =.

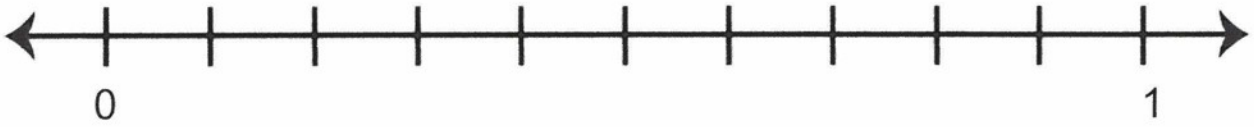
$\frac{1}{2}$ ____ $\frac{3}{6}$ $\frac{2}{3}$ ____ $\frac{5}{6}$ $\frac{1}{2}$ ____ $\frac{1}{6}$

8. Write the fraction as a decimal.

$\frac{2}{10}$ $\frac{2}{5}$ $\frac{3}{10}$ $\frac{6}{20}$ $\frac{8}{50}$

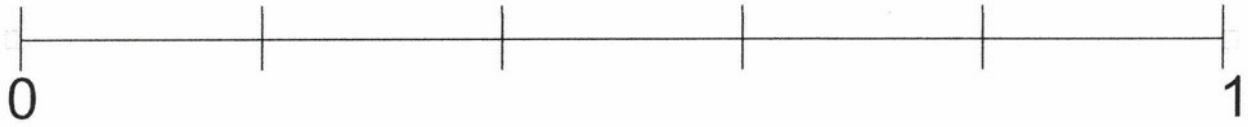
9. Place the fractions and decimals on the number line.

$\frac{1}{100}$ $\frac{10}{100}$ $\frac{100}{100}$ 1.00 0.10 0.01



Place the fractions and decimals on the number line.

$\frac{3}{5}$ $\frac{2}{5}$ 0.4 0.6



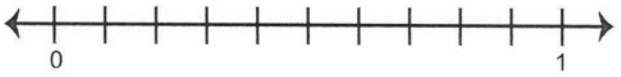
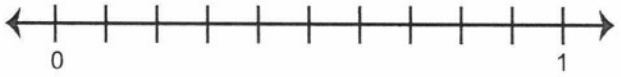
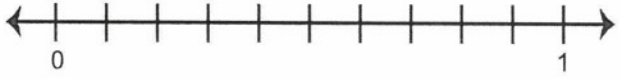
10. Complete the chart.

Fraction	Decimal	Percent
$\frac{6}{10}$		
$\frac{67}{100}$		
$\frac{2}{20}$		
$\frac{3}{5}$		

9.0 Review of Equivalent Fractions and Decimal Numbers

Name: _____

Complete the table below.

Picture	Fraction in Simplest Form	Fraction	Equivalent Fraction	Equivalent Decimal Number	Number line (Place the decimal number and an equivalent fraction)
	$\frac{\square}{5}$	$\frac{12}{20}$			
		$\frac{10}{25}$	$\frac{\square}{100}$		
		$\frac{10}{50}$		$0.\square$	

Practice Questions KEY

1. Colour the fraction in each circle to prove they are equivalent.

1 a.  $\frac{6}{15} = \frac{2}{5}$	1 b.  $\frac{2}{12} = \frac{1}{6}$
2 a.  $\frac{2}{10} = \frac{1}{5}$	2 b.  $\frac{10}{12} = \frac{5}{6}$
3 a.  $\frac{10}{16} = \frac{5}{8}$	3 b.  $\frac{12}{14} = \frac{6}{7}$

2. Create at least 2 equivalent fractions for the following fractions: Answers may vary.

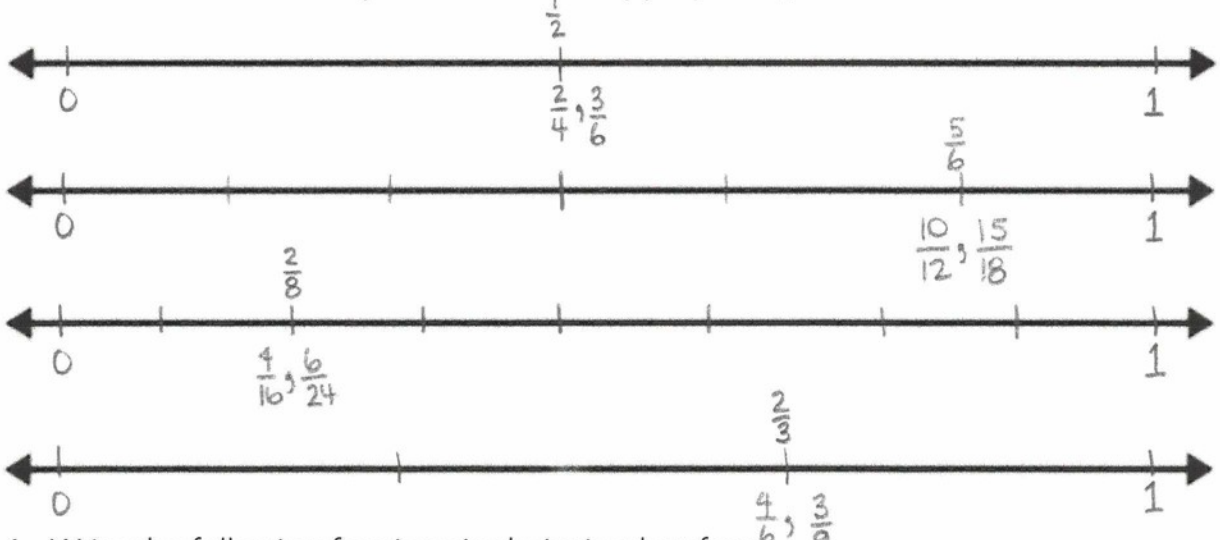
$\frac{1}{2}$: $\frac{1\times2}{2\times2} = \frac{2}{4}$, $\frac{1\times3}{2\times3} = \frac{3}{6}$

$\frac{5}{6}$: $\frac{5\times2}{6\times2} = \frac{10}{12}$, $\frac{5\times3}{6\times3} = \frac{15}{18}$

$\frac{2}{8}$: $\frac{2\times2}{8\times2} = \frac{4}{16}$, $\frac{2\times3}{8\times3} = \frac{6}{24}$

$\frac{2}{3}$: $\frac{2\times2}{3\times2} = \frac{4}{6}$, $\frac{2\times3}{3\times3} = \frac{6}{9}$

3. Place each of the equivalent fractions you created in question 2 on a number line. You will need to partition the line appropriately.



4. Write the following fractions in their simplest form.

$\frac{8}{16} \div 8 = \frac{1}{2}$ (8: 1, 2, 4, 8; 16: 1, 2, 4, 8, 16)

$\frac{15}{20} \div 5 = \frac{3}{4}$ (15: 1, 3, 5, 15; 20: 1, 2, 4, 5, 10, 20)

$\frac{15}{18} \div 3 = \frac{5}{6}$ (15: 1, 3, 5, 15; 18: 1, 2, 3, 6, 9, 18)

$\frac{8}{10} \div 2 = \frac{4}{5}$ (8: 1, 2, 4, 8; 10: 1, 2, 5, 10)

5. Write the following fractions from greatest to least: $\frac{1}{6}, \frac{1}{3}, \frac{1}{10}$ = $\frac{1}{3}, \frac{1}{6}, \frac{1}{10}$

6. Order the fractions from least to greatest: $\frac{3}{4}, \frac{3}{8}, \frac{3}{5}, \frac{3}{10}$ $\frac{3}{10}, \frac{3}{8}, \frac{3}{5}, \frac{3}{4}$

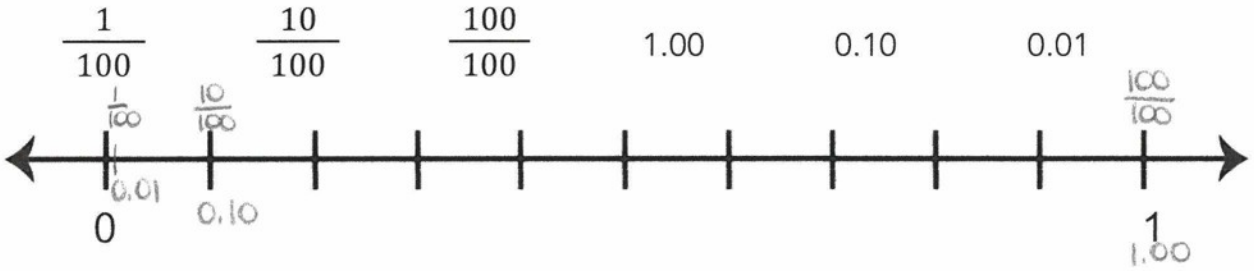
7. Compare the fractions using <, >, or =.

$\frac{3}{6} \overset{3\times}{\underset{3\times}{}} \frac{1}{2} = \frac{3}{6}$ $\frac{4}{6} \overset{2\times}{=} \frac{2}{3} < \frac{5}{6}$ $\frac{3}{6} \overset{3\times}{=} \frac{1}{2} > \frac{1}{6}$

8. Write the fraction as a decimal.

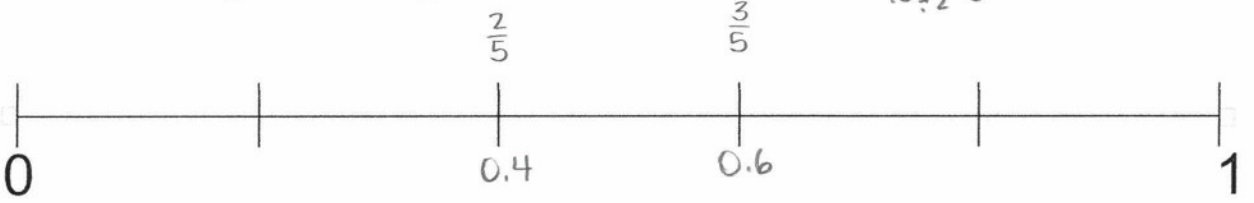
$\frac{2}{10} = 0.2$ $\frac{2}{5} \overset{\times 2}{=} \frac{4}{10} = 0.4$ $\frac{3}{10} = 0.3$ $\frac{6}{20} \overset{\times 5}{=} \frac{30}{100} = 0.30$ $\frac{8}{50} \overset{\times 2}{=} \frac{16}{100} = 0.16$

9. Place the fractions and decimals on the number line.



Place the fractions and decimals on the number line.

$\frac{3}{5}$ $\frac{2}{5}$ $0.4 = \frac{4}{10} \overset{\div 2}{=} \frac{2}{5}$ $0.6 = \frac{6}{10} \overset{\div 2}{=} \frac{3}{5}$



10. Complete the chart.

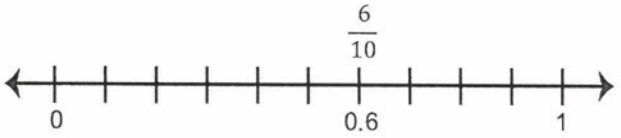
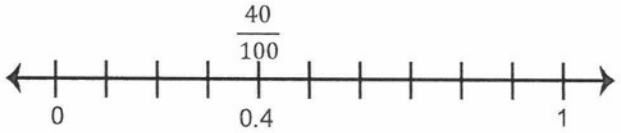
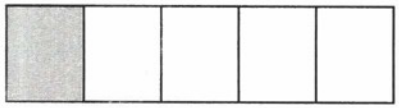
Fraction	Decimal	Percent
$\frac{6}{10} \overset{\times 10}{=} \frac{60}{100}$	0.6 OR 0.60	60%
$\frac{67}{100}$	0.67	67%
$\frac{2}{20} \overset{\times 5}{=} \frac{10}{100}$	0.10	10%
$\frac{3}{5} \overset{\times 20}{=} \frac{60}{100}$	0.60	60%

9.0 Review of Equivalent Fractions and Decimal Numbers

Name: _____

Complete the table below.

Answer Key

Picture	Fraction in Simplest Form	Fraction	Equivalent Fraction	Equivalent Decimal Number	Number line (Place the decimal number and an equivalent fraction)
	$\frac{3}{5}$	$\frac{12}{20}$	$\frac{6}{10}$ $\frac{60}{100}$	0.6	
	$\frac{2}{5}$	$\frac{10}{25}$	$\frac{40}{100}$	0.4	
	$\frac{1}{5}$	$\frac{10}{50}$	$\frac{2}{10}$ $\frac{20}{100}$	0 . 2