Manipulative Mathematics **Name**_____

Model Improper Fractions and Mixed Numbers

1) Use fraction circles to make wholes, if possible, with the following pieces. Draw a sketch to show your result.

(a) 2 halves (b) 6 sixths (c) 4 fourths (d) 5 fifths

2) Use fraction circles to make wholes, if possible, with the following pieces. Draw a sketch to show your result.

(a) 3 halves (b) 5 fourths

(c) 8 fifths (d) 7 thirds

When a fraction has the numerator smaller than the denominator, it is called a **proper** fraction. Its value is less than one. Fractions like $\frac{1}{2}$, $\frac{3}{7}$, and $\frac{11}{18}$ are proper fractions.

A fraction like $\frac{5}{4}, \frac{3}{2}, \frac{8}{5}$, or $\frac{7}{3}$ is called an **improper** fraction. Its numerator is greater than its denominator. Its value is greater than one.

Proper and Improper Fractions

The fraction $\frac{a}{b}$ is: $(b \neq 0)$

proper if $a < b$ or **improper** if $a \geq b$

3) Write as improper fractions.

(a) 3 halves_____ (b) 5 fourths _____ (c) 8 fifths_____ (d) 7 thirds_____

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4) Look back at your models in Exercise 2 and the improper fractions in Exercise 3. Which improper fraction in Exercise 3 could also be written as $1\frac{1}{4}$? _____

The number $1\frac{1}{4}$ called a **mixed number**; it consists of a whole number and a proper fraction.

Mixed Number

A **mixed number** is written $a\frac{b}{c}$ $c \neq 0$

A mixed number consists of a whole number *a* and a proper fraction $\frac{b}{c}$.

The model shows that $\frac{5}{4}$ has the same value as $1\frac{1}{4}$.

$\frac{5}{4} = 1\frac{1}{4}$

5) Write each improper fraction as a mixed number. You may want to refer to your models in Exercise 2.

(a) $\frac{3}{2}$ _____ (b) $\frac{5}{4}$ _____ (c) $\frac{8}{5}$ _____ (d) $\frac{7}{3}$ _____

6) Rewrite the improper fraction $\frac{11}{6}$ as a mixed number. Use fraction circles to find the result.

(a) Draw a sketch to show your answer. (b) $\frac{11}{6} =$ _____

7) Rewrite the improper fraction $\frac{17}{5}$ as a mixed number. Use fraction circles to find the result.

(a) Draw a sketch to show your answer. (b) $\frac{17}{5} =$ _____

8) Explain how you convert an improper fraction as a mixed number.

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9) Rewrite the mixed number $1\frac{2}{3}$ as an improper fraction.

(a) Draw a sketch to show your answer. (b) $1\frac{2}{3} =$ _____

10) Rewrite the mixed number $2\frac{1}{4}$ as an improper fraction.

(a) Draw a sketch to show your answer. (b) $2\frac{1}{4} =$ ____

11) Explain how you convert a mixed number to an improper fraction.

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