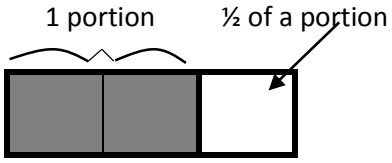
Name: _____ Date:_____

What is a **RECIPROCAL**?

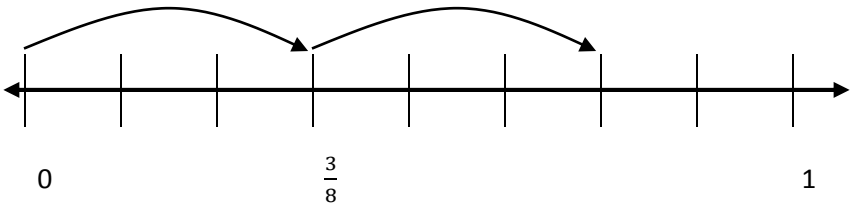
1. What number multiplied by $\frac{1}{2} = 1$? In other words, how many "halves" equal one whole? _____
   Draw a diagram to justify your answer.

2. What number multiplied by $\frac{1}{5} = 1$? In other words, how many "fifths" equal one whole? _____
   Draw a diagram to justify your answer.

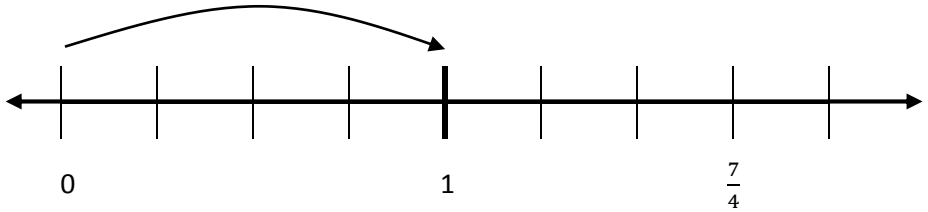
3. What number multiplied by $\frac{2}{3} = 1$?
   How many $\frac{2}{3}$ portions are in 1 whole? _____
   Use the diagram to interpret the answer.
   Now write the mixed number as an improper fraction. _____



4. What number multiplied by $\frac{3}{8} = 1$?
   How many $\frac{3}{8}$ portions are in 1 whole?
   _____
   Use the number line diagram to interpret the answer.
   Now write the mixed number as an improper fraction. _____



5. What number multiplied by $\frac{7}{4}$ = 1?
   Use the number line diagram to interpret the answer.
   How far along the number line is 1 in relation to $\frac{7}{4}$? _____



6. What do you notice about reciprocals?

7. What is the reciprocal of $\frac{8}{11}$?

8. What is the reciprocal of 35?

9. What is the reciprocal of $2\frac{3}{5}$?

10. Give an example of two numbers (not in this packet) that are reciprocals:

11. Give an example of two numbers that are not reciprocals:

Rewrite the expression using reciprocals.

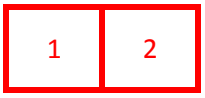
	Expression	Multiplication Equations Using Reciprocals	Solution
1	$\frac{2}{8} \div \frac{5}{6}$	**Think:** $? \bullet \frac{5}{6} = \frac{2}{8}$ *and* $? \bullet \frac{5}{6} = 1$ $? \bullet \_ \bullet \frac{5}{6} = \frac{2}{8} \bullet \_$ $? = \frac{2}{8} \bullet \_$	
2	$\frac{2}{7} \div \frac{4}{7}$	**Think:** $? \bullet \frac{4}{7} = \frac{2}{7}$ *and* $? \bullet \frac{4}{7} = 1$ $? \bullet \_ \bullet \frac{4}{7} = \frac{2}{7} \bullet \_$ $? = \frac{2}{7} \bullet \_$	
3	$\frac{4}{5} \div \frac{3}{8}$	**Think:** $? \bullet \frac{3}{8} = \frac{4}{5}$ *and* $? \bullet \frac{3}{8} = 1$ $? \bullet \_ \bullet \frac{3}{8} = \frac{4}{5} \bullet \_$ $? = \_ \bullet \_$	
4	$\frac{3}{6} \div \frac{2}{5}$	**Think:** $? \bullet \frac{2}{5} = \frac{3}{6}$ *and* $? \bullet \frac{2}{5} = 1$ $? \bullet \_ \bullet \frac{2}{5} = \frac{3}{6} \bullet \_$ $? = \_ \bullet \_$	
5	$\frac{3}{10} \div \frac{6}{9}$	**Think:** $? \bullet \frac{5}{6} = \frac{2}{8}$ *and* $? \bullet \frac{5}{6} = 1$ $? \bullet \_ \bullet \_ = \_ \bullet \_$ $? = \_ \bullet \_$	

What do you notice about the last step in each problem?

TEACHER NOTES

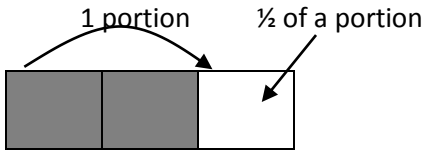
What is a **RECIPROCAL**? It is what you multiply a number by to get 1.

1. What number multiplied by $\frac{1}{2} = 1$? In other words, how many "halves" equal one whole? __2___
   Draw a diagram to justify your answer.

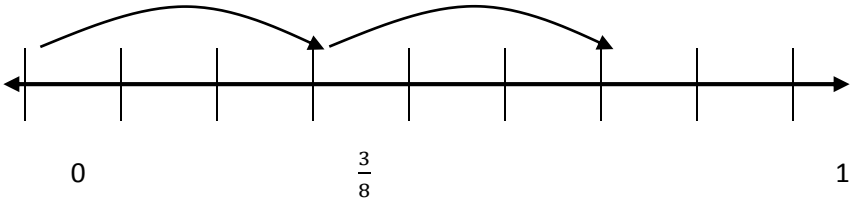


2. What number multiplied by $\frac{1}{5} = 1$? In other words, how many "fifths" equal one whole? __5___
   Draw a diagram to justify your answer.

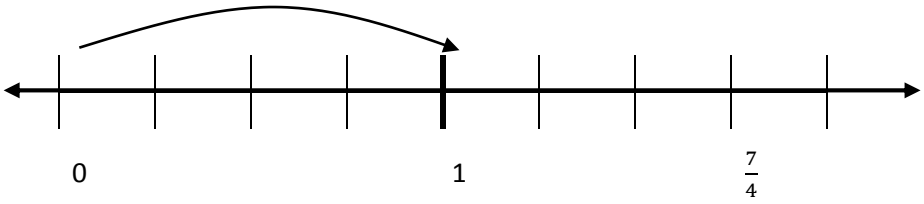
3. What number x $\frac{2}{3} = 1$?
   How many $\frac{2}{3}$ portions are in 1 whole? __$1\frac{1}{2}$___
   Use the diagram to interpret the answer.
   Now write the mixed number as an improper fraction. _$\frac{3}{2}$_____



4. What number x $\frac{3}{8} = 1$?
   How many $\frac{3}{8}$ portions are in 1 whole?
   _$2\frac{2}{3}$____
   Use the number line diagram to interpret the answer.
   Now write the mixed number as an improper fraction. __$\frac{8}{3}$___



5. What number x $\frac{7}{4}$ = 1?
   Use the number line diagram to interpret the answer.
   How far along the number line is 1 in relation to $\frac{7}{4}$? _$\frac{4}{7}$____



6. What do you notice about reciprocals? The numerator of a fraction is the denominator of its reciprocal and the denominator of the number is the numerator of the reciprocal. It is what a multiply by to get 1.
7. What is the reciprocal of $\frac{8}{11}$? $\frac{11}{8}$
8. What is the reciprocal of 35? $\frac{1}{35}$

9. What is the reciprocal of $2\frac{3}{5}$? $\frac{5}{13}$

10. Give an example of two numbers (not in this packet) that are reciprocals: Answers will vary.
11. Give an example of two numbers that are not reciprocals: Answers will vary.

TEACHER NOTES

Rewrite the expression using reciprocals.

	Expression	Multiplication Equations Using Reciprocals	Solution
1	$\frac{2}{8} \div \frac{5}{6}$	**Think:** $? \bullet \frac{5}{6} = \frac{2}{8}$ *and* $? \bullet \frac{5}{6} = 1$ $? \bullet \frac{6}{5} \bullet \frac{5}{6} = \frac{2}{8} \bullet \frac{6}{5}$ $? = \frac{2}{8} \bullet \frac{6}{5}$	$\frac{12}{40}$ *or* $\frac{3}{10}$
2	$\frac{2}{7} \div \frac{4}{7}$	**Think:** $? \bullet \frac{4}{7} = \frac{2}{7}$ *and* $? \bullet \frac{4}{7} = 1$ $? \bullet \frac{7}{4} \bullet \frac{4}{7} = \frac{2}{7} \bullet \frac{7}{4}$ $? = \frac{2}{7} \bullet \frac{7}{4}$	$\frac{14}{28}$ *or* $\frac{1}{2}$
3	$\frac{4}{5} \div \frac{3}{8}$	**Think:** $? \bullet \frac{3}{8} = \frac{4}{5}$ *and* $? \bullet \frac{3}{8} = 1$ $? \bullet \frac{8}{3} \bullet \frac{3}{8} = \frac{4}{5} \bullet \frac{8}{3}$ $? = \frac{4}{5} \bullet \frac{8}{3}$	$\frac{32}{15}$ *or* $2\frac{2}{15}$
4	$\frac{3}{6} \div \frac{2}{5}$	**Think:** $? \bullet \frac{2}{5} = \frac{3}{6}$ *and* $? \bullet \frac{2}{5} = 1$ $? \bullet \frac{5}{2} \bullet \frac{2}{5} = \frac{3}{6} \bullet \frac{5}{2}$ $? = \frac{3}{6} \bullet \frac{5}{2}$	$\frac{15}{12}$ *or* $\frac{5}{4}$ *or* $1\frac{1}{4}$
5	$\frac{3}{10} \div \frac{6}{9}$	**Think:** $? \bullet \frac{6}{9} = \frac{3}{10}$ *and* $? \bullet \frac{6}{9} = 1$ $? \bullet \frac{9}{6} \bullet \frac{6}{9} = \frac{3}{10} \bullet \frac{9}{6}$ $? = \frac{3}{10} \bullet \frac{9}{6}$	$\frac{27}{60}$ *or* $\frac{9}{20}$