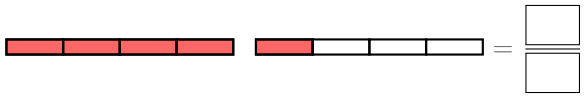
FRACTIONS

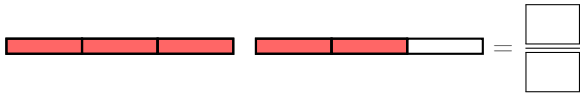
A DEFINITIONS

A.1 FINDING FRACTIONS

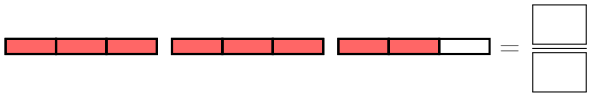
Ex 1: A bar represents 1. Find the fraction that represents the shaded part:



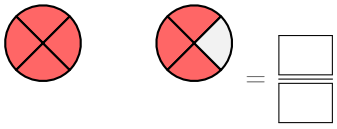
Ex 2: A bar represents 1. Find the fraction that represents the shaded part:



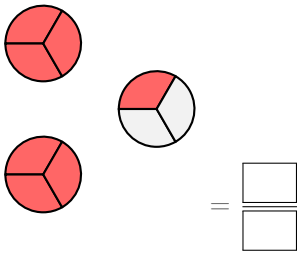
Ex 3: A bar represents 1. Find the fraction that represents the shaded part:



Ex 4: A circle represents 1. Find the fraction that represents the shaded part:



Ex 5: A circle represents 1. Find the fraction that represents the shaded part:



A.2 WRITING FRACTIONS FROM WORDS

Ex 6: Write as fraction:

one over four =

Ex 7: Write as fraction:

three over five =

Ex 8: Write as fraction:

three quarters =

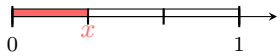
Ex 9: Write as fraction:

six over hundred =

B ON THE NUMBER LINE

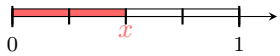
B.1 FINDING FRACTIONS WITH BAR FRACTION MODEL

Ex 10: Find the value of x



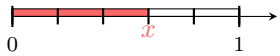
$x =$

Ex 11: Find the value of x



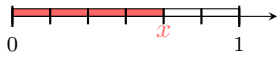
$x =$

Ex 12: Find the value of x



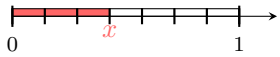
$x =$

Ex 13: Find the value of x



$x =$

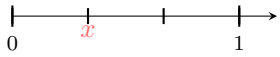
Ex 14: Find the value of x



$x =$

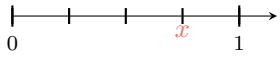
B.2 FINDING FRACTIONS

Ex 15: Find the value of x



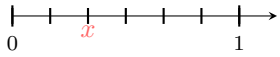
$x =$

Ex 16: Find the value of x



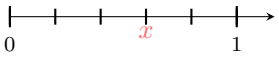
$x =$

Ex 17: Find the value of x



$x =$

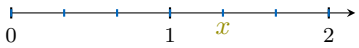
Ex 18: Find the value of x



$x = \frac{\square}{\square}$

B.3 FINDING FRACTIONS GREATER THAN 1

Ex 19: Find the value of x

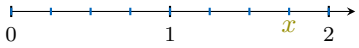


$x = \frac{\square}{\square}$

Ex 20: Find the value of x

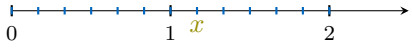
$x = \frac{\square}{\square}$

Ex 21: Find the value of x



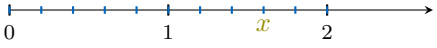
$x = \frac{\square}{\square}$

Ex 22: Find the value of x



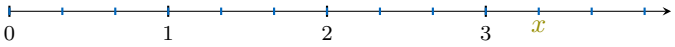
$x = \frac{\square}{\square}$

Ex 23: Find the value of x



$x = \frac{\square}{\square}$

Ex 24: Find the value of x



$x = \frac{\square}{\square}$

C EQUIVALENT FRACTIONS

C.1 FINDING THE MISSING NUMERATOR

Ex 25:

$$\frac{2}{4} = \frac{\square}{2}$$

Ex 26:

$$\frac{9}{6} = \frac{\square}{2}$$

Ex 27:

$$\frac{5}{10} = \frac{\square}{2}$$

Ex 28:

$$\frac{16}{12} = \frac{\square}{3}$$

Ex 29:

$$\frac{4}{10} = \frac{\square}{5}$$

C.2 FINDING THE MISSING NUMERATOR

Ex 30:

$$\frac{1}{2} = \frac{\square}{4}$$

Ex 31:

$$\frac{4}{3} = \frac{\square}{15}$$

Ex 32:

$$\frac{3}{4} = \frac{\square}{12}$$

Ex 33:

$$\frac{5}{6} = \frac{\square}{12}$$

Ex 34:

$$\frac{7}{8} = \frac{\square}{32}$$

C.3 FINDING THE MISSING DENOMINATOR

Ex 35:

$$\frac{4}{10} = \frac{2}{\square}$$

Ex 36:

$$\frac{6}{12} = \frac{1}{\square}$$

Ex 37:

$$\frac{9}{6} = \frac{3}{\square}$$

Ex 38:

$$\frac{12}{10} = \frac{6}{\square}$$

C.4 FINDING THE MISSING DENOMINATOR

Ex 39:

$$\frac{2}{5} = \frac{6}{\square}$$

Ex 40:

$$\frac{2}{3} = \frac{8}{\square}$$

Ex 41:

$$\frac{3}{5} = \frac{9}{\square}$$

Ex 42:

$$\frac{4}{7} = \frac{12}{\square}$$

Ex 43:

$$\frac{5}{9} = \frac{20}{\square}$$

D SIMPLIFICATION

D.1 SIMPLIFYING FRACTIONS

Ex 44: Simplify:

$$\frac{4}{6} = \frac{\square}{\square}$$

Ex 45: Simplify:

$$\frac{2}{4} = \frac{\square}{\square}$$

Ex 46: Simplify:

$$\frac{10}{8} = \frac{\square}{\square}$$

Ex 47: Simplify:

$$\frac{6}{9} = \frac{\square}{\square}$$

D.2 SIMPLIFYING FRACTIONS

Ex 48: Simplify:

$$\frac{4}{6} = \frac{\square}{\square}$$

Ex 49: Simplify:

$$\frac{24}{16} = \frac{\square}{\square}$$

Ex 50: Simplify:

$$\frac{12}{20} = \frac{\square}{\square}$$

Ex 51: Simplify:

$$\frac{30}{100} = \frac{\square}{\square}$$

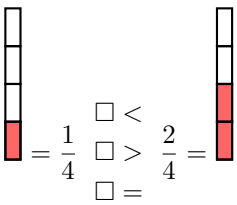
Ex 52: Simplify:

$$\frac{25}{100} = \frac{\square}{\square}$$

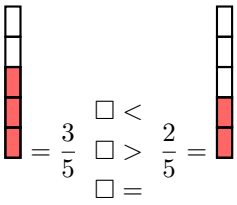
E ORDERING FRACTIONS

E.1 COMPARING WITH SAME DENOMINATOR WITH BAR MODELS

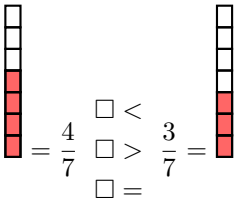
Ex 53: Compare using $>, <, =$:



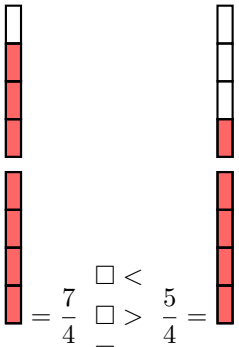
Ex 54: Compare using $>, <, =$:



Ex 55: Compare using $>, <, =$:

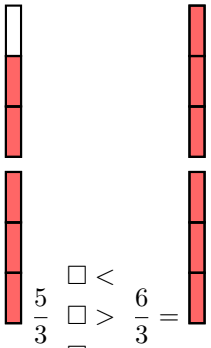


Ex 56: Compare using $>, <, =$:



$\frac{7}{4} \begin{matrix}\square < \\ \square > \\ \square =\end{matrix} \frac{5}{4}$

Ex 57: Compare using $>, <, =$:



$\frac{5}{3} \begin{matrix}\square < \\ \square > \\ \square =\end{matrix} \frac{6}{3}$

E.2 COMPARING WITH SAME DENOMINATOR

Ex 58: Compare using $>, <, =$:

$$\frac{7}{3} \begin{matrix}\square < \\ \square > \\ \square =\end{matrix} \frac{6}{3}$$

Ex 59: Compare using $>, <, =$:

$$\frac{5}{4} \begin{matrix}\square < \\ \square > \\ \square =\end{matrix} \frac{3}{4}$$

Ex 60: Compare using $>, <, =$:

$$\frac{2}{6} \begin{matrix}\square < \\ \square > \\ \square =\end{matrix} \frac{4}{6}$$

Ex 61: Compare using $>, <, =$:

$$\frac{7}{5} \begin{matrix}\square < \\ \square > \\ \square =\end{matrix} \frac{3}{5}$$

Ex 62: Compare using $>, <, =$:

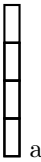
$$\frac{3}{8} \begin{matrix}\square < \\ \square > \\ \square =\end{matrix} \frac{6}{8}$$

E.3 COMPARING FRACTIONS WITH DIFFERENT DENOMINATORS

Ex 63: Compare using $>, <, =$:

$$\frac{3}{4} \begin{matrix}\square < \\ \square > \\ \square =\end{matrix} \frac{1}{2}$$

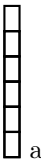
Hint: color the bars below to help you compare the fractions.

$\frac{3}{4} =$  and $\frac{1}{2} =$ 

Ex 64: Compare using $>, <, =$:

$$\frac{5}{6} \begin{matrix}\square < \\ \square > \\ \square =\end{matrix} \frac{2}{3}$$

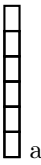
Hint: color the bars below to help you compare the fractions.

$\frac{5}{6} =$  and $\frac{2}{3} =$ 

Ex 65: Compare using $>, <, =$:

$$\frac{5}{6} \begin{matrix}\square < \\ \square > \\ \square =\end{matrix} \frac{1}{2}$$

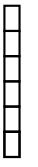
Hint: color the bars below to help you compare the fractions.

$\frac{5}{6} =$  and $\frac{1}{2} =$ 

Ex 66: Compare using $>, <, =$:

$$\frac{7}{6} \begin{matrix}\square < \\ \square > \\ \square =\end{matrix} \frac{4}{3}$$

Hint: color the bars below to help you compare the fractions.

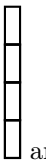


$\frac{7}{6} =$  and $\frac{4}{3} =$ 

Ex 67: Compare using $>, <, =$:

$$\frac{3}{4} \begin{matrix} \square < \\ \square > \\ \square = \end{matrix} \frac{7}{8}$$

Hint: color the bars below to help you compare the fractions.

$\frac{3}{4} =$  and $\frac{7}{8} =$ 

E.4 COMPARING FRACTIONS TO REAL-WORLD PROBLEMS

MCQ 68: Hugo spends $\frac{3}{8}$ of his money on Pokemon cards and $\frac{1}{4}$ of his money to buy a tennis racket. On which does he spend more money?

☐ Pokemon cards

☐ Tennis racquet

MCQ 69: Sophie spends $\frac{1}{2}$ of her money on clothes and $\frac{3}{8}$ of her money on books. On which does she spend more money?

☐ Clothes

☐ Books

MCQ 70: For her cake recipe, Sarah uses $\frac{2}{5}$ of a cup of butter and $\frac{3}{10}$ of a cup of sugar. Which ingredient does she use more of?

☐ Butter

☐ Sugar

MCQ 71: In Class A, $\frac{6}{10}$ of the students are girls, and in Class B, $\frac{13}{20}$ of the students are girls. In which class is the proportion of girls higher?

☐ Class A

☐ Class B

E.5 COMPARING FRACTIONS WITH UNLIKE DENOMINATORS

Ex 72:

$$\frac{3}{4} \begin{matrix} \square < \\ \square > \\ \square = \end{matrix} \frac{5}{6}$$

Ex 73:

$$\frac{7}{8} \begin{matrix} \square < \\ \square > \\ \square = \end{matrix} \frac{9}{10}$$

Ex 74:

$$\frac{4}{5} \begin{matrix} \square < \\ \square > \\ \square = \end{matrix} \frac{2}{3}$$

Ex 75:

$$\frac{2}{3} \begin{matrix} \square < \\ \square > \\ \square = \end{matrix} \frac{3}{4}$$

F ADDITION AND SUBTRACTION WITH COMMON DENOMINATORS

F.1 ADDING FRACTIONS WITH COMMON DENOMINATORS

Ex 76:

$$\frac{1}{4} + \frac{2}{4} = \frac{\square}{\square}$$

Ex 77:

$$\frac{3}{5} + \frac{1}{5} = \frac{\square}{\square}$$

Ex 78:

$$\frac{2}{6} + \frac{3}{6} = \frac{\square}{\square}$$

Ex 79:

$$\frac{2}{3} + \frac{2}{3} = \frac{\square}{\square}$$

Ex 80:

$$\frac{4}{5} + \frac{2}{5} = \frac{\square}{\square}$$

F.2 SUBTRACTING FRACTIONS WITH COMMON DENOMINATORS

Ex 81:

$$\frac{3}{4} - \frac{2}{4} = \frac{\square}{\square}$$

Ex 82:

$$\frac{4}{5} - \frac{3}{5} = \frac{\square}{\square}$$

Ex 83:

$$\frac{3}{4} - \frac{1}{4} = \frac{\square}{\square}$$

Ex 84:

$$\frac{4}{3} - \frac{2}{3} = \frac{\square}{\square}$$

Ex 85:

$$\frac{7}{6} - \frac{2}{6} = \frac{\square}{\square}$$

G ADDITION AND SUBTRACTION WITH DIFFERENT DENOMINATORS

G.1 ADDING FRACTIONS

Ex 86:

$$\frac{2}{5}+\frac{3}{10}=\frac{\square}{\square}$$

Ex 87:

$$\frac{1}{4}+\frac{3}{8}=\frac{\square}{\square}$$

Ex 88:

$$\frac{2}{3}+\frac{1}{6}=\frac{\square}{\square}$$

Ex 89:

$$\frac{3}{5}+\frac{2}{15}=\frac{\square}{\square}$$

Ex 90:

$$\frac{3}{10}+\frac{2}{5}=\frac{\square}{\square}$$

Ex 91:

$$\frac{3}{8}+\frac{1}{2}=\frac{\square}{\square}$$

G.2 SUBTRACTING FRACTIONS

Ex 92:

$$\frac{2}{5}-\frac{3}{10}=\frac{\square}{\square}-\frac{\square}{\square}=\frac{\square}{\square}$$

Ex 93:

$$\frac{7}{6}-\frac{1}{3}=\frac{\square}{\square}-\frac{\square}{\square}=\frac{\square}{\square}$$

Ex 94:

$$\frac{7}{8}-\frac{3}{4}=\frac{\square}{\square}-\frac{\square}{\square}=\frac{\square}{\square}$$

Ex 95:

$$\frac{5}{3}-\frac{5}{9}=\frac{\square}{\square}-\frac{\square}{\square}=\frac{\square}{\square}$$

Ex 96:

$$\frac{7}{2}-\frac{7}{4}=\frac{\square}{\square}-\frac{\square}{\square}=\frac{\square}{\square}$$

G.3 SOLVING REAL-WORLD PROBLEMS

Ex 97: Louis has a whole cake. He cuts it into 8 equal slices and eats 3 slices. What fraction of the whole cake remains?

$\frac{\square}{\square}$ of the cake

Ex 98: Today, Louis eats $\frac{1}{2}$ of a croissant. Then, Louis eats $\frac{1}{4}$ of another croissant. How much croissant did Louis eat in total?

$\frac{\square}{\square}$ of a croissant

Ex 99: At the beginning, there are $\frac{5}{6}$ of a cake. After eating, there are $\frac{2}{3}$ of the cake. What quantity of cake did Louis eat?

$\frac{\square}{\square}$ of the cake

Ex 100: At the beginning, there are $\frac{7}{8}$ of a pizza. After eating, there are $\frac{3}{4}$ of the pizza. What quantity of pizza did Louis eat?

$\frac{\square}{\square}$ of the pizza

Ex 101: Louis read $\frac{2}{5}$ of his book on Saturday and $\frac{3}{10}$ of his book on Sunday. How much of his book did Louis read in total?

$\frac{\square}{\square}$ of the book

G.4 ADDING FRACTIONS WITH UNLIKE DENOMINATORS

Ex 102: Calculate and simplify:

$$\frac{2}{3}+\frac{3}{5}=\frac{\square}{\square}$$

Ex 103: Calculate and simplify:

$$\frac{1}{2} + \frac{2}{3} = \frac{\square}{\square}$$

Ex 104: Calculate and simplify:

$$\frac{3}{2} + \frac{4}{5} = \frac{\square}{\square}$$

Ex 105: Calculate and simplify:

$$\frac{3}{4} + \frac{5}{6} = \frac{\square}{\square}$$

Ex 106: Calculate and simplify:

$$\frac{7}{8} + \frac{11}{6} = \frac{\square}{\square}$$

H FRACTION AS QUOTIENT

H.1 CONVERTING DIVISION TO FRACTIONS

Ex 107: Write as a fraction:

$$3 \div 2 = \frac{\square}{\square}$$

Ex 108: Write as a fraction:

$$2 \div 5 = \frac{\square}{\square}$$

Ex 109: Write as a fraction:

$$3 \div 4 = \frac{\square}{\square}$$

Ex 110: Write as a fraction:

$$5 \div 3 = \frac{\square}{\square}$$

H.2 CONVERTING FRACTIONS TO DIVISION EXPRESSIONS

Ex 111: Convert the fraction into a division expression:

$$\frac{2}{5} = \square \div \square$$

Ex 112: Convert the fraction into a division expression:

$$\frac{4}{7} = \square \div \square$$

Ex 113: Convert the fraction into a division expression:

$$\frac{3}{8} = \square \div \square$$

Ex 114: Convert the fraction into a division expression:

$$\frac{6}{9} = \square \div \square$$

H.3 CONVERTING FRACTIONS TO WHOLE NUMBERS

Ex 115: Convert the fraction into a whole number:

$$\frac{4}{2} = \square$$

Ex 116: Convert the fraction into a whole number:

$$\frac{9}{3} = \square$$

Ex 117: Convert the fraction into a whole number:

$$\frac{8}{4} = \square$$

Ex 118: Convert the fraction into a whole number:

$$\frac{5}{5} = \square$$

H.4 FINDING FRACTIONS IN WORD PROBLEMS

Ex 119: Four friends share 3 cakes equally. What fraction does each friend get?

$\frac{\square}{\square}$ of a cake

Ex 120: Five friends share 2 pizzas equally. What fraction does each friend get?

$\frac{\square}{\square}$ of a pizza

Ex 121: A couple shares 5 chocolate bars equally. What fraction of a chocolate bar does each person get?

$\frac{\square}{\square}$ of a chocolate bar

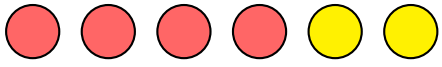
Ex 122: Six family members share 2 apple pies equally. What fraction of a pie does each family member get?

$\frac{\square}{\square}$ of a pie

I FRACTION AS RATIO

I.1 IDENTIFYING FRACTIONS IN REAL-LIFE CONTEXTS

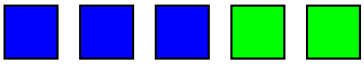
Ex 123:



What fraction of the circles are red?

$\frac{\square}{\square}$ of the circles are red.

Ex 124:



What fraction of the squares are blue?

$\frac{\square}{\square}$ of the squares are blue.

Ex 125:

What fraction of the children are girls?

$\frac{\square}{\square}$ of the children are girls.

Ex 126:

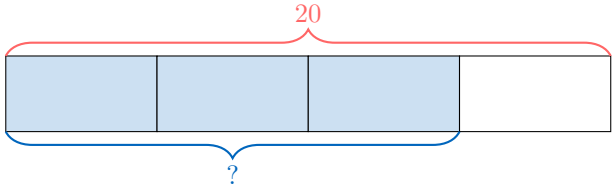
What fraction of the children raised their hand?

$\frac{\square}{\square}$ of the children raised their hand.

I.2 CALCULATING FRACTIONS OF A WHOLE

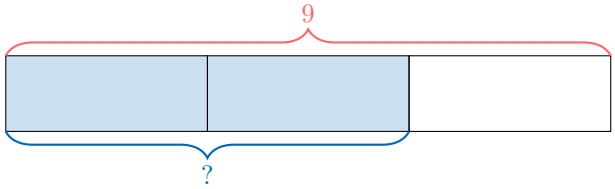
Ex 127:

$\frac{3}{4}$ of 20 = $\square$



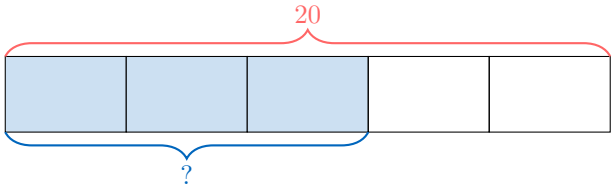
Ex 128:

$\frac{2}{3}$ of 9 = $\square$



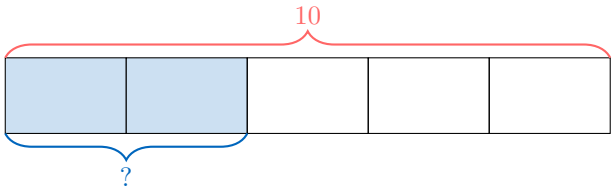
Ex 129:

$\frac{3}{5}$ of 20 = $\square$



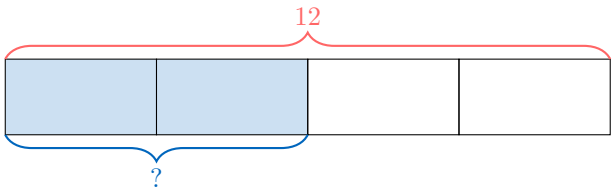
Ex 130:

$\frac{2}{5}$ of 10 = $\square$



Ex 131:

$\frac{2}{4}$ of 12 = $\square$



I.3 APPLYING FRACTIONS TO REAL-WORLD PROBLEMS

Ex 132: In a class of 9 students, $\frac{2}{3}$ of the students are girls. How many of the students are girls?

$\square$ girls

Ex 133: In a group of 16 fruits, $\frac{3}{4}$ of them are apples. How many of the fruits are apples?

$\square$ apples

Ex 134: In a collection of 15 books, $\frac{2}{5}$ of them are novels. How many of the books are novels?

$\square$ novels

Ex 135: For a refreshing drink recipe, the mixture consists of $\frac{1}{3}$ lemon and $\frac{2}{3}$ water for a total of 18 cl. How much lemon and water are used in the drink?

$\square$ cl of lemon

$\square$ cl of water

J FRACTION AS DECIMAL NUMBER

J.1 CONVERTING FRACTIONS TO DECIMALS

Ex 136: Convert to a decimal number:

$$\frac{3}{4} = \square$$

Ex 137: Convert to a decimal number:

$$\frac{2}{5} = \square$$

Ex 138: Convert to a decimal number:

$$\frac{3}{20} = \square$$

Ex 139: Convert to a decimal number:

$$\frac{40}{50} = \square$$

J.2 CONVERTING DECIMALS TO FRACTIONS

Ex 140: Convert to a fraction:

$$1.3 = \frac{\square}{\square}$$

Ex 141: Convert 0.3 to a fraction:

$$0.3 = \frac{\square}{\square}$$

Ex 142: Convert 10.7 to a fraction:

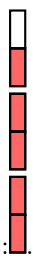
$$10.7 = \frac{\square}{\square}$$

Ex 143: Convert 0.99 to a fraction:

$$0.99 = \frac{\square}{\square}$$

K PROPER AND IMPROPER FRACTIONS

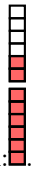
K.1 SOLVING REAL-WORLD PROBLEMS

Ex 144: I eat $\frac{5}{2}$ of a pain au chocolat:  .

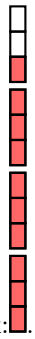
So I eat $\square$ whole pains au chocolat and $\frac{\square}{\square}$ of another pain au chocolat.

Ex 145: I eat $\frac{5}{4}$ of a pizza:   .

So I eat $\square$ whole pizza and $\frac{\square}{\square}$ of another pizza.

Ex 146: I have $\frac{8}{6}$ of a ribbon:  .

So I have $\square$ whole ribbon and $\frac{\square}{\square}$ of another ribbon.

Ex 147: I have $\frac{10}{3}$ of a wood plank:  .

So I have $\square$ whole wood planks and $\frac{\square}{\square}$ of another wood plank.

K.2 FINDING MIXED NUMBERS FROM BAR MODELS

Ex 148: Write the mixed number shown in the diagram:

 $= \square \frac{\square}{\square}$

Ex 149: Write the mixed number shown in the diagram:

 $= \square \frac{\square}{\square}$

Ex 150: Write the mixed number shown in the diagram:

 $= \square \frac{\square}{\square}$

Ex 151: Write the mixed number shown in the diagram:

 $= \square \frac{\square}{\square}$

Ex 152: Write the mixed number shown in the diagram:

 $= \square + \frac{\square}{\square}$

K.3 FINDING FRACTIONS FROM MIXED NUMBERS

Ex 153: Convert into improper fraction:

$$2\frac{1}{3} = \frac{\square}{\square}$$

Ex 154: Convert into an improper fraction:

$$3\frac{2}{5} = \frac{\square}{\square}$$

Ex 155: Convert into an improper fraction:

$$2\frac{3}{4} = \frac{\square}{\square}$$

Ex 156: Convert into an improper fraction:

$$4\frac{1}{2} = \frac{\square}{\square}$$

K.4 FINDING MIXED NUMBERS FROM FRACTIONS

Ex 157: Convert into mixed number:

$$\frac{3}{2} = \square\ \frac{\square}{\square}$$

Ex 158: Convert into a mixed number:

$$\frac{7}{3} = \square\ \frac{\square}{\square}$$

Ex 159: Convert into a mixed number:

$$\frac{9}{2} = \square\ \frac{\square}{\square}$$

Ex 160: Convert into a mixed number:

$$\frac{13}{5} = \square\ \frac{\square}{\square}$$