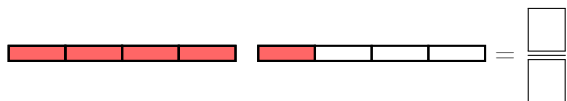


FRACTIONS

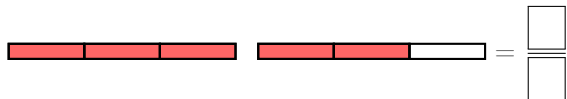
A DEFINITIONS

A.1 FINDING FRACTIONS

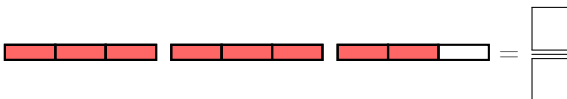
Ex 1: A bar represents 1. Find the fraction that represents the shaded part:



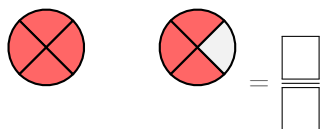
Ex 2: A bar represents 1. Find the fraction that represents the shaded part:



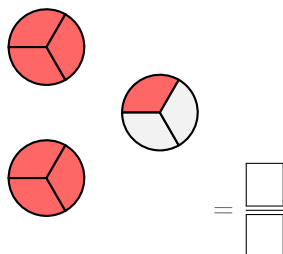
Ex 3: A bar represents 1. Find the fraction that represents the shaded part:



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 = $\frac{\boxed{}}{\boxed{}}$

Ex 7: Write as fraction:

three over five = $\frac{\boxed{}}{\boxed{}}$

Ex 8: Write as fraction:

three quarters = $\frac{\boxed{}}{\boxed{}}$

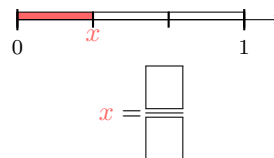
Ex 9: Write as fraction:

six over hundred = $\frac{\boxed{}}{\boxed{}}$

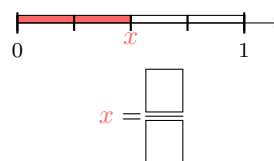
B ON THE NUMBER LINE

B.1 FINDING FRACTIONS WITH BAR FRACTION MODEL

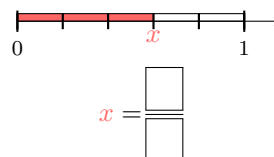
Ex 10: Find the value of x



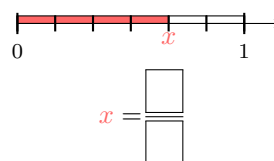
Ex 11: Find the value of x



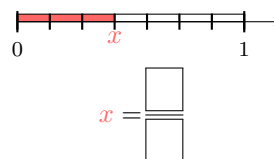
Ex 12: Find the value of x



Ex 13: Find the value of x

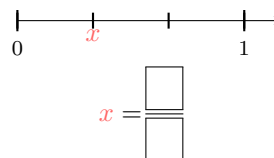


Ex 14: Find the value of x

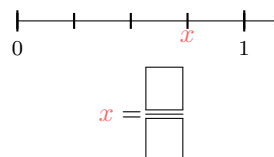


B.2 FINDING FRACTIONS

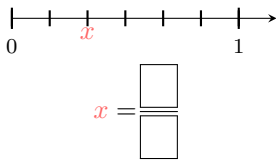
Ex 15: Find the value of x



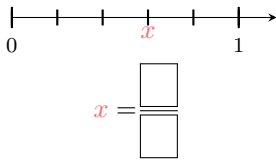
Ex 16: Find the value of x



Ex 17: Find the value of x

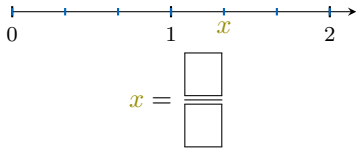


Ex 18: Find the value of x

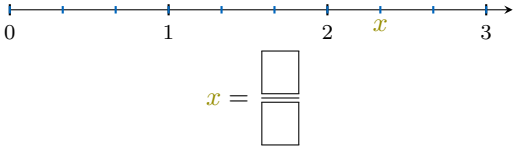


B.3 FINDING FRACTIONS GREATER THAN 1

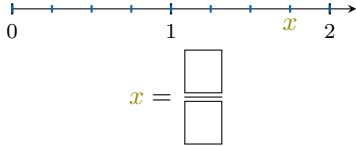
Ex 19: Find the value of x



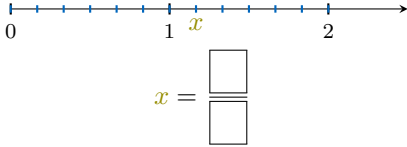
Ex 20: Find the value of x



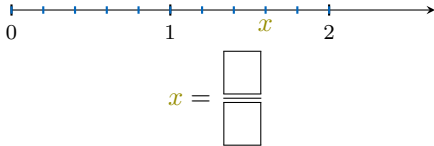
Ex 21: Find the value of x



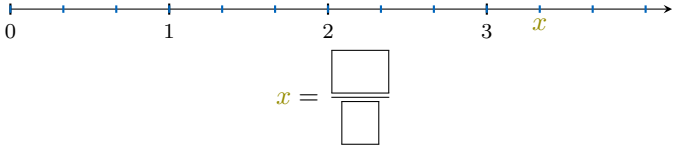
Ex 22: Find the value of x



Ex 23: Find the value of x



Ex 24: Find the value of x



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:

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

Ex 36:

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

Ex 37:

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

Ex 38:

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

C.4 FINDING THE MISSING DENOMINATOR

Ex 39:

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

Ex 40:

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

Ex 41:

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

Ex 42:

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

Ex 43:

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

D SIMPLIFICATION

D.1 SIMPLIFYING FRACTIONS

Ex 44: Simplify:

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

Ex 45: Simplify:

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

Ex 46: Simplify:

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

Ex 47: Simplify:

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

D.2 SIMPLIFYING FRACTIONS

Ex 48: Simplify:

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

Ex 49: Simplify:

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

Ex 50: Simplify:


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

Ex 51: Simplify:


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

E CROSS MULTIPLICATION


E.1 SOLVING PROPORTIONS USING CROSS-MULTIPLICATION

Ex 52:  Solve x for $\frac{12}{4} = \frac{x}{6}$:


$$x = \boxed{}$$

Ex 53:  Solve x for $\frac{11}{10} = \frac{x}{5}$:

$$x = \boxed{}$$

Ex 54:  Solve x for $\frac{12}{10} = \frac{18}{x}$:

$$x = \boxed{}$$

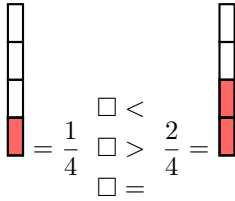
Ex 55:  Solve x for $\frac{27}{x} = \frac{30}{10}$:

$$x = \boxed{}$$

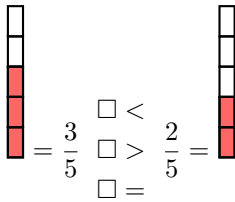
F ORDERING FRACTIONS

F.1 COMPARING WITH SAME DENOMINATOR WITH BAR MODELS

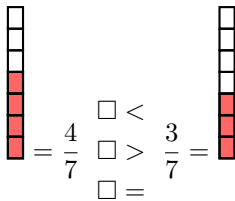
Ex 56: Compare using $>$, $<$, $=$:



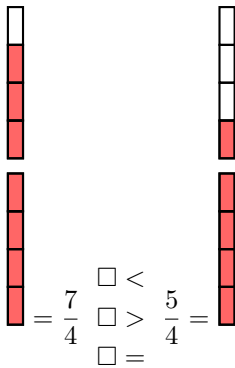
Ex 57: Compare using $>$, $<$, $=$:



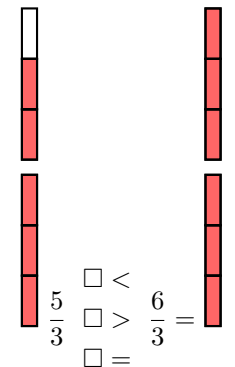
Ex 58: Compare using $>$, $<$, $=$:



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



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



F.2 COMPARING WITH SAME DENOMINATOR

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

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

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

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

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

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

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

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

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

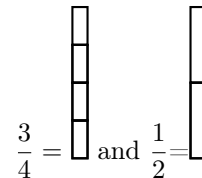
$$\frac{3}{8} \begin{matrix} \square < \\ \square > \\ \square = \end{matrix} \frac{6}{8}$$

F.3 COMPARING FRACTIONS WITH DIFFERENT DENOMINATORS

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

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

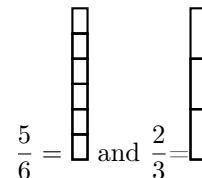
Hint: color the bars below to help you compare the fractions.



Ex 67: 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.



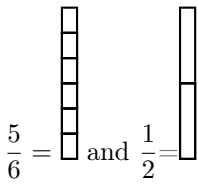
Ex 68: Compare using >, <, =:

☐ <

$\frac{5}{6}$ ☐ > $\frac{1}{2}$

☐ =

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



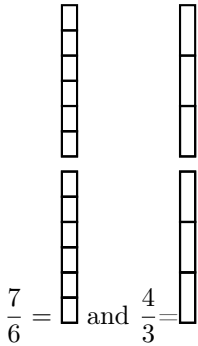
Ex 69: Compare using >, <, =:

☐ <

$\frac{7}{6}$ ☐ > $\frac{4}{3}$

☐ =

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



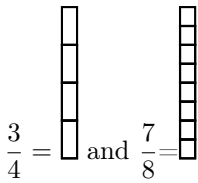
Ex 70: Compare using >, <, =:

☐ <

$\frac{3}{4}$ ☐ > $\frac{7}{8}$

☐ =

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



F.4 COMPARING FRACTIONS TO REAL-WORLD PROBLEMS

MCQ 71: 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 72: 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 73: 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 74: 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

F.5 COMPARING FRACTIONS WITH UNLIKE DENOMINATORS

Ex 75:

☐ <

$\frac{3}{4}$ ☐ > $\frac{5}{6}$

☐ =

Ex 76:

☐ <

$\frac{7}{8}$ ☐ > $\frac{9}{10}$

☐ =

Ex 77:

☐ <

$\frac{4}{5}$ ☐ > $\frac{2}{3}$

☐ =

Ex 78:

☐ <

$\frac{2}{3}$ ☐ > $\frac{3}{4}$

☐ =

G ADDITION AND SUBTRACTION WITH COMMON DENOMINATORS

G.1 ADDING FRACTIONS WITH COMMON DENOMINATORS

Ex 79:

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

Ex 80:

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

Ex 81:



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

Ex 82:

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

Ex 83:

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

G.2 SUBTRACTING FRACTIONS WITH COMMON DENOMINATORS

Ex 84:

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

Ex 85:

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

Ex 86:

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

Ex 87:

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

Ex 88:

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

H ADDITION AND SUBTRACTION WITH DIFFERENT DENOMINATORS

H.1 ADDING FRACTIONS

Ex 89:

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

Ex 90:

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

Ex 91:

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

Ex 92:

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

Ex 93:

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

Ex 94:

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

H.2 SUBTRACTING FRACTIONS

Ex 95:

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

Ex 96:

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

Ex 97:

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

Ex 98:

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

Ex 99:

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

H.3 SOLVING REAL-WORLD PROBLEMS

Ex 100: Louis has a whole cake. He cuts it into 8 equal slices and eats 3 slices. What fraction of the whole cake remains?

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

Ex 101: 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?

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

Ex 102: 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?

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

Ex 103: 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?

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

Ex 104: 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?

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

H.4 ADDING FRACTIONS WITH UNLIKE DENOMINATORS

Ex 105: Calculate and simplify:

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

Ex 106: Calculate and simplify:

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

Ex 107: Calculate and simplify:

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

Ex 108: Calculate and simplify:

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

Ex 109: Calculate and simplify:

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

I FRACTION AS QUOTIENT

I.1 CONVERTING DIVISION TO FRACTIONS

Ex 110: Write as a fraction:

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

Ex 111: Write as a fraction:

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

Ex 112: Write as a fraction:

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

Ex 113: Write as a fraction:

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

I.2 CONVERTING FRACTIONS TO DIVISION EXPRESSIONS

Ex 114: Convert the fraction into a division expression:

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

Ex 115: Convert the fraction into a division expression:

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

Ex 116: Convert the fraction into a division expression:

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

Ex 117: Convert the fraction into a division expression:

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

I.3 CONVERTING FRACTIONS TO WHOLE NUMBERS

Ex 118: Convert the fraction into a whole number:

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

Ex 119: Convert the fraction into a whole number:

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

Ex 120: Convert the fraction into a whole number:

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

Ex 121: Convert the fraction into a whole number:

$$\frac{5}{5} = \boxed{}$$

I.4 FINDING FRACTIONS IN WORD PROBLEMS

Ex 122: Four friends share 3 cakes equally. What fraction does each friend get?

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

Ex 123: Five friends share 2 pizzas equally. What fraction does each friend get?

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

Ex 124: A couple shares 5 chocolate bars equally. What fraction of a chocolate bar does each person get?

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

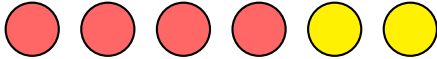
Ex 125: Six family members share 2 apple pies equally. What fraction of a pie does each family member get?

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

J FRACTION AS RATIO

J.1 IDENTIFYING FRACTIONS IN REAL-LIFE CONTEXTS

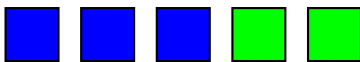
Ex 126:



What fraction of the circles are red ? (Simplify your answer.)

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

Ex 127:



What fraction of the squares are blue? (Simplify your answer.)

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

Ex 128:



What fraction of the children are girls? (Simplify your answer.)

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

Ex 129:



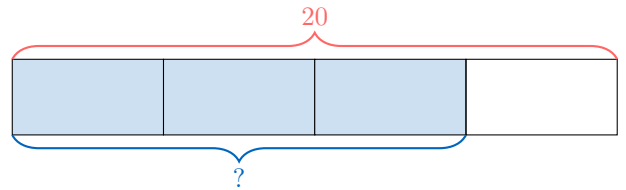
What fraction of the children raised their hand? (Simplify your answer.)

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

J.2 CALCULATING FRACTIONS OF A WHOLE

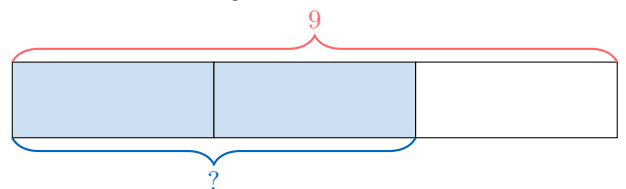
Ex 130:

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



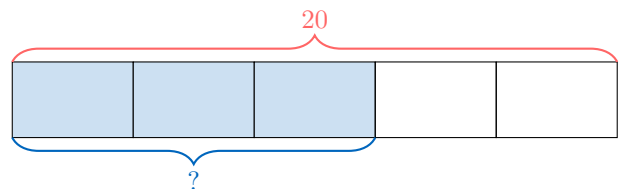
Ex 131:

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



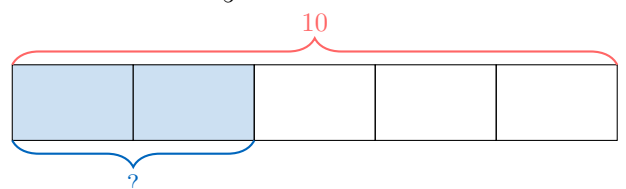
Ex 132:

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

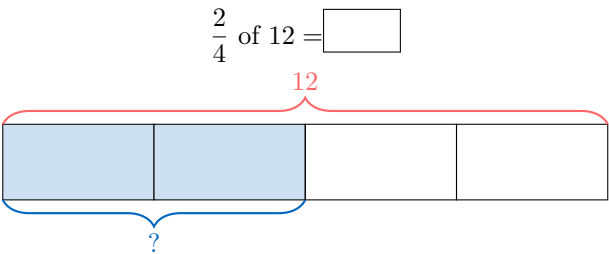


Ex 133:

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



Ex 134:



J.3 APPLYING FRACTIONS TO REAL-WORLD PROBLEMS

Ex 135: In a class of 9 students, $\frac{2}{3}$ of the students are girls. How many of the students are girls?

girls

Ex 136: In a group of 16 fruits, $\frac{3}{4}$ of them are apples. How many of the fruits are apples?

apples

Ex 137: In a collection of 15 books, $\frac{2}{5}$ of them are novels. How many of the books are novels?

novels

Ex 138: 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?

cl of lemon
 cl of water

K FRACTION AS DECIMAL NUMBER

K.1 CONVERTING FRACTIONS TO DECIMALS

Ex 139: Convert to a decimal number:
 $\frac{3}{4}$ =

Ex 140: Convert to a decimal number:
 $\frac{2}{5}$ =

Ex 141: Convert to a decimal number:
 $\frac{3}{20}$ =

Ex 142: Convert to a decimal number:
 $\frac{40}{50}$ =

K.2 CONVERTING DECIMALS TO FRACTIONS

Ex 143: Convert to a fraction:

1.3 =

Ex 144: Convert 0.3 to a fraction:

0.3 =

Ex 145: Convert 10.7 to a fraction:

10.7 =

Ex 146: Convert 0.99 to a fraction:

0.99 =

L PROPER AND IMPROPER FRACTIONS

L.1 SOLVING REAL-WORLD PROBLEMS

Ex 147: I eat $\frac{5}{2}$ of a pain au chocolat:
So I eat whole pains au chocolat and of another pain au chocolat.

Ex 148: I eat $\frac{5}{4}$ of a pizza:
So I eat whole pizza and of another pizza.

Ex 149: I have $\frac{11}{6}$ of a ribbon:
So I have whole ribbon and of another ribbon.



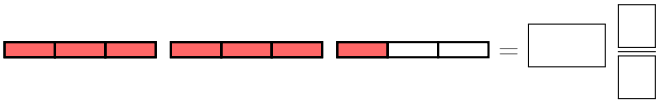


Ex 150: I have $\frac{10}{3}$ of a wood plank:

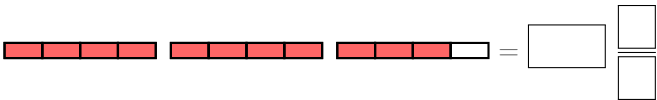
So I have whole wood planks and of another wood plank.

L.2 FINDING MIXED NUMBERS FROM BAR MODELS

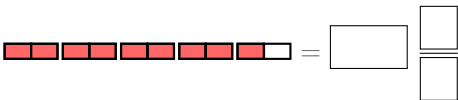
Ex 151: Write the mixed number shown in the diagram:



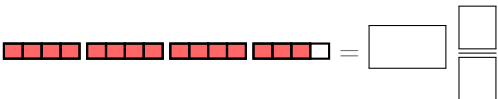
Ex 152: Write the mixed number shown in the diagram:



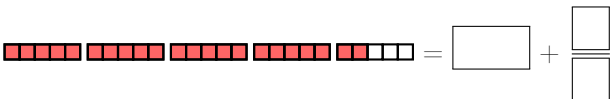
Ex 153: Write the mixed number shown in the diagram:



Ex 154: Write the mixed number shown in the diagram:



Ex 155: Write the mixed number shown in the diagram:



L.3 FINDING FRACTIONS FROM MIXED NUMBERS

Ex 156: Convert into improper fraction:

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

Ex 157: Convert into an improper fraction:

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

Ex 158: Convert into an improper fraction:

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

Ex 159: Convert into an improper fraction:

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

L.4 FINDING MIXED NUMBERS FROM FRACTIONS

Ex 160: Convert into mixed number:

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

Ex 161: Convert into a mixed number:

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

Ex 162: Convert into a mixed number:

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

Ex 163: Convert into a mixed number:

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

