



Warm Up Grade 8

JANUARY 17, 2017



1) Reduce the following fractions

$$\begin{array}{l} \text{a) } \frac{36}{48} \xrightarrow{\div 2} \frac{18}{24} \xrightarrow{\div 2} \frac{9}{12} \xrightarrow{\div 3} \frac{3}{4} \\ \text{b) } \frac{250}{300} \xrightarrow{\div 10} \frac{25}{30} \xrightarrow{\div 5} \frac{5}{6} \end{array}$$

2) Rewrite the following as an improper fraction $3\frac{4}{9} = \frac{31}{9}$

3) Rewrite the following as a mixed fraction in lowest terms $\frac{124}{10}$

$$12\frac{4}{10} \xrightarrow{\text{Reduce}} 12\frac{2}{5}$$

Sheet 173

1a) $\frac{9}{8} = 1\frac{1}{8}$

b) $\frac{14}{3} = 4\frac{2}{3}$

c) $\frac{15}{8} = 1\frac{7}{8}$

d) $\frac{21}{5} = 4\frac{1}{5}$

e) $\frac{21}{8} = 2\frac{5}{8}$

f) $\frac{13}{4} = 3\frac{1}{4}$

2) $\frac{33}{10} = 3\frac{3}{10}$

h) $\frac{103}{100} = 1\frac{3}{100}$

2a) $1\frac{1}{3} = \frac{4}{3}$

b) $3\frac{1}{4} = \frac{13}{4}$

c) $5\frac{1}{2} = \frac{11}{2}$

d) $2\frac{3}{10} = \frac{23}{10}$

e) $3\frac{7}{8} = \frac{31}{8}$

f) $2\frac{7}{6} = \frac{19}{6}$

g) $1\frac{1}{100} = \frac{101}{100}$

h) $4 = \frac{20}{5}$

3a) $\frac{6}{4} = 1\frac{2}{4}$ or $1\frac{1}{2}$

b) $\frac{18}{12} = 1\frac{6}{12}$ or $1\frac{1}{2}$

c) $\frac{28}{8} = 3\frac{4}{8}$ or $3\frac{1}{2}$

d) $\frac{38}{10} = 3\frac{8}{10}$ or $3\frac{4}{5}$

e) $\frac{170}{100} = 1\frac{70}{100}$ or $1\frac{7}{10}$

f) $\frac{64}{6} = 10\frac{4}{6}$ or $10\frac{2}{3}$

g) $\frac{60}{15} = 4$

h) $\frac{138}{20} = 6\frac{18}{20}$ or $6\frac{9}{10}$

$$5. \quad \frac{55}{4} = 13\frac{3}{4} \text{ games of football}$$

$$b. \quad \frac{10}{3} = 3\frac{1}{3} \text{ games of hockey}$$

$$10. \quad a) \quad \frac{230}{690} = \frac{23}{69} \text{ or } \frac{1}{3}$$

$$b) \quad \frac{345}{690} = \frac{69}{138} = \frac{23}{46} = \frac{1}{2}$$

$$c) \quad \frac{460}{690} = \frac{46}{69} = \frac{2}{3}$$

$$d) \quad \frac{805}{690} = \frac{161}{138} \quad \text{or } \frac{23}{138}$$

$$11. \quad a) \quad \frac{30}{60} = \frac{1}{2}$$

$$b) \quad \frac{20}{60} = \frac{10}{30} = \frac{1}{3}$$

$$c) \quad \frac{45}{60} = \frac{9}{12} = \frac{3}{4}$$

$$d) \quad \frac{75}{60} = \frac{15}{12} = \frac{5}{4} \text{ or } 1\frac{1}{4}$$

$$e) \quad \frac{90}{60} = \frac{9}{6} = \frac{3}{2} \text{ or } 1\frac{1}{2} \quad f) \quad \frac{140}{60} = \frac{14}{6} = \frac{7}{3} \text{ or } 2\frac{1}{3}$$

Adding & Subtracting Fraction

same denominators

-When adding fractions WITH COMMON denominators, just add the numerators (leave the denominator the same)ALWAYS REDUCE solution

$$\frac{5}{12} + \frac{3}{12} = \frac{8}{12} \text{ Reduce } \begin{matrix} \div 4 \\ \div 4 \end{matrix} = \frac{2}{3}$$

-When subtracting fractions WITH COMMON denominators, just subtract the numerators (leave the denominator the same)ALWAYS REDUCE solution

$$\frac{19}{21} - \frac{9}{21} = \frac{10}{21}$$

Modelling

Adding Fractions

a) $\frac{2}{5} + \frac{1}{5}$

model 1st fraction: A bar divided into 5 equal parts, with 2 parts shaded green.

model 2nd fraction: A bar divided into 5 equal parts, with 1 part shaded blue.

model answer fraction: A bar divided into 5 equal parts, with 3 parts shaded (2 green, 1 blue).

$= \frac{3}{5}$

Handwritten notes: "2/5" is written below the first fraction. Blue arrows show the 2 green parts from the first bar and the 1 blue part from the second bar being combined into the 3 parts of the answer bar.

b) $2\frac{1}{2} + 1\frac{1}{2}$

Handwritten notes: "Integer" is written in blue next to the whole numbers. Below the fractions, $\frac{1}{2} + \frac{1}{2} = 1$ is written in red.

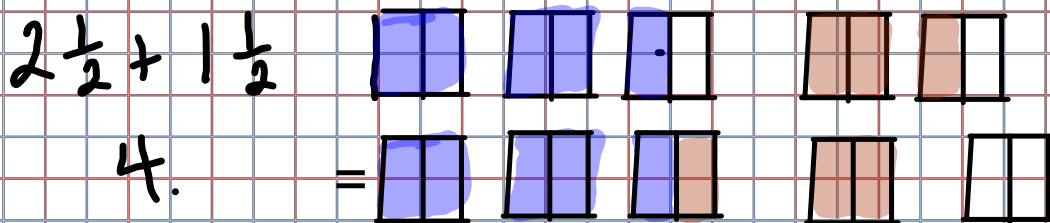
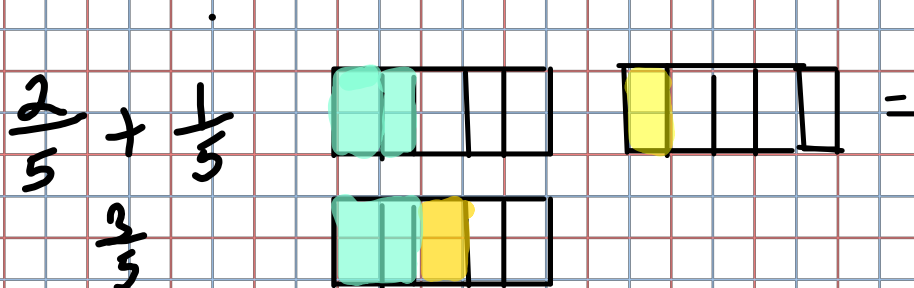
Modeling $2\frac{1}{2}$: Two boxes, each divided into 2 parts, with 1 part shaded green. A third box, divided into 2 parts, with 1 part shaded green. Labeled $2\frac{1}{2}$.

Modeling $1\frac{1}{2}$: One box, divided into 2 parts, with 1 part shaded blue. Labeled $1\frac{1}{2}$.

Modeling the sum: Four boxes, each divided into 2 parts. The first three boxes have 1 green part each, and the fourth box has 2 blue parts. Labeled $=$ followed by the four boxes.

Solutions

Adding Fraction

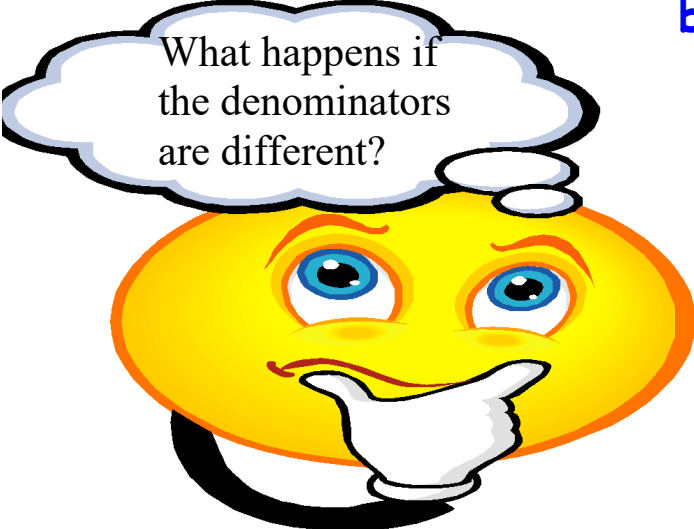


Adding & Subtracting Fraction

DIFFERENT denominators

You can add or subtract fraction with different denominators **as long as you find equivalent fractions with the same denominators first**. Then simply add (or subtract) the numerators and the denominators will stay the same.*Find common denominators

Find a
by determining the LCM.



What happens if
the denominators
are different?

L owest

C ommon

M ultiple

$$\frac{3_{x3}}{4_{x3}} + \frac{5_{x2}}{6_{x2}}$$

Find the LCM first!



$$= \frac{9}{12} + \frac{10}{12}$$

Multiples of 4 and 6:

4	4, 8, 12, 16, 20, 24, 28...
6	6, 12, 18, 24, ...

$$= \frac{19}{12} \leftarrow \text{Improper}$$

$$= 1\frac{7}{12} \leftarrow \text{Mixed}$$

$$\text{LCM}(4,6) = 12$$

This is C.D.

When subtracting fractions you must have a ...

Common Denominator

Ex) $\frac{13}{7} - \frac{4}{7} = \frac{9}{7} = 1\frac{2}{7}$

Same Denominators

This look similar to adding Fraction



You try ...

(Remember to write all solution in simplest form)

$$\frac{11}{4} - \frac{5}{4} = \frac{6}{4} \begin{array}{l} \div 2 \\ \div 2 \end{array} = \frac{3}{2} \xrightarrow{\text{Mixed}} 1\frac{1}{2}$$

Oh, what to do when the denominators are different???



I Know this one!!!!





When denominators are different
you have to find a "common
denominator"



How

By determining the **LCM**

Lowest **C**ommon **M**ultiple
(of the denominators)

Subtract the following rational numbers



$$\frac{3 \times 13}{3 \times 7} - \frac{4 \times 7}{3 \times 7}$$

$$\frac{39}{21} - \frac{28}{21}$$

$$= \frac{11}{21}$$

Look at the multiples of each denominator

Find the LCM

7

$$1 \times 7 = 7$$

$$2 \times 7 = 14$$

$$3 \times 7 = 21$$

$$4 \times 7 = 28$$

21 → LCD

3

$$1 \times 3 = 3$$

$$2 \times 3 = 6$$

$$3 \times 3 = 9$$

$$4 \times 3 = 12$$

$$5 \times 3 = 15$$

$$6 \times 3 = 18$$

$$7 \times 3 = 21$$

Thus the LCM is 21

Your Turn

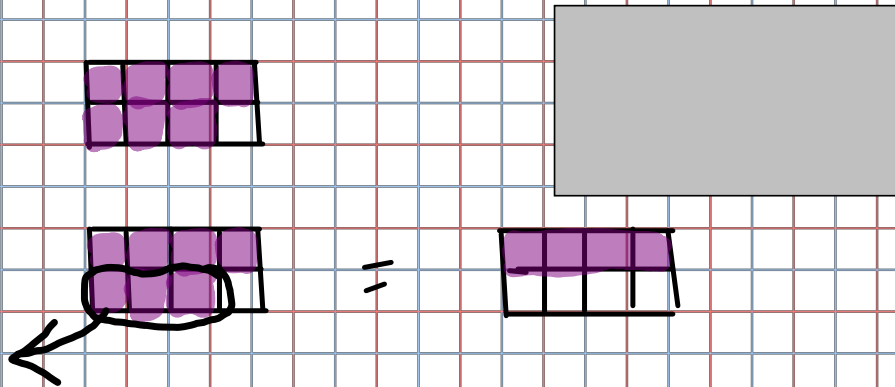
$$\begin{aligned} 1) & \quad \overset{3 \times 17}{\frac{3}{3} \times \frac{17}{12}} - \frac{4 \times 4}{9 \times 4} \\ & = \frac{51}{36} - \frac{16}{36} \\ & = \frac{35}{36} \end{aligned}$$

$$\begin{aligned} 2) & \quad \overset{4 \times 2}{\frac{4}{4} \times \frac{2}{7}} - \frac{5}{28} \\ & = \frac{8}{28} - \frac{5}{28} \\ & = \frac{3}{28} \end{aligned}$$

Modeling Subtracting Fraction

c) $\frac{7}{8} - \frac{3}{8}$

$$\begin{array}{r} \frac{7}{8} - \frac{3}{8} \\ \hline \frac{4}{8} \end{array}$$



Adding Fractions with Unlike Denominators

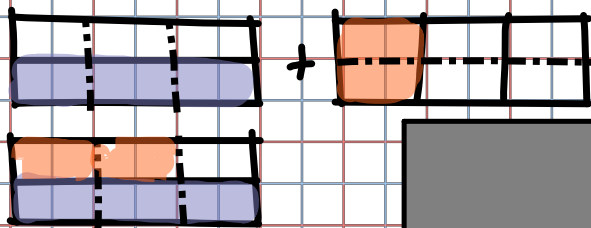
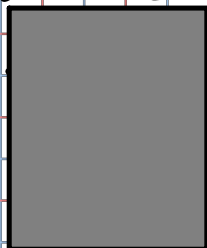
a) $\frac{1}{2} + \frac{1}{3}$

b) $\frac{1}{6} + \frac{1}{3}$

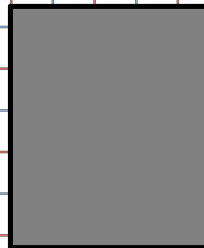
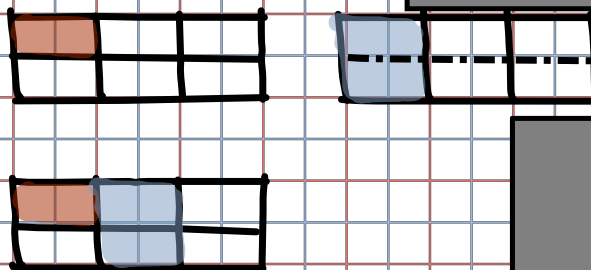
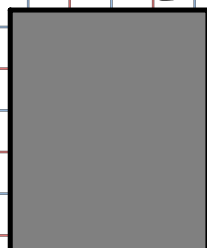
c) $\frac{9}{10} - \frac{1}{2}$

Adding Fractions with Unlike Denominators

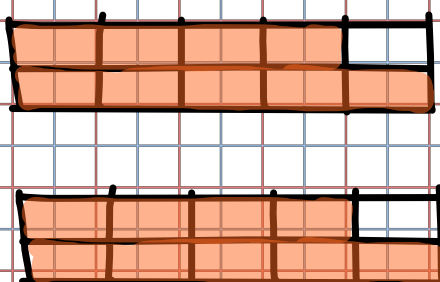
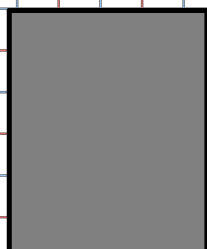
$$\frac{1}{2} + \frac{1}{3}$$



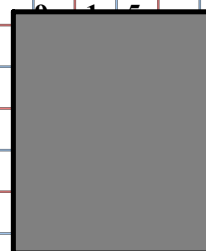
$$\frac{1}{6} + \frac{1}{3}$$



$$\frac{9}{10} - \frac{1}{2}$$



$$\frac{9}{10} - \frac{1}{2}$$



You try

$$a) \frac{2}{3} + \frac{4}{9}$$

No modelling

$$b) \frac{5}{8} + \frac{1}{6}$$

$$c) \frac{9}{10} - \frac{2}{3}$$

$$d) \frac{2}{9} + \frac{5}{6}$$

You try

$$a) \frac{2}{3} + \frac{4}{9}$$

$$\frac{6}{9} + \frac{4}{9} = \frac{10}{9}$$

$$b) \frac{5}{8} + \frac{1}{6}$$

$$\frac{15}{24} + \frac{4}{24} = \frac{19}{24}$$

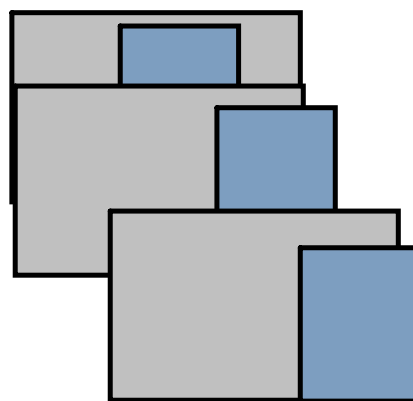
$$d) \frac{2}{9} + \frac{5}{6}$$

$$\frac{4}{18} + \frac{15}{18} = \frac{19}{18}$$

No modelling

$$c) \frac{9}{10} - \frac{2}{3}$$

$$\frac{27}{30} - \frac{20}{30} = \frac{7}{30}$$



Homework

Sheet 151 #1-6
 Draw #1 b, d, f, g
 #2 b, d, g

Class/Homework

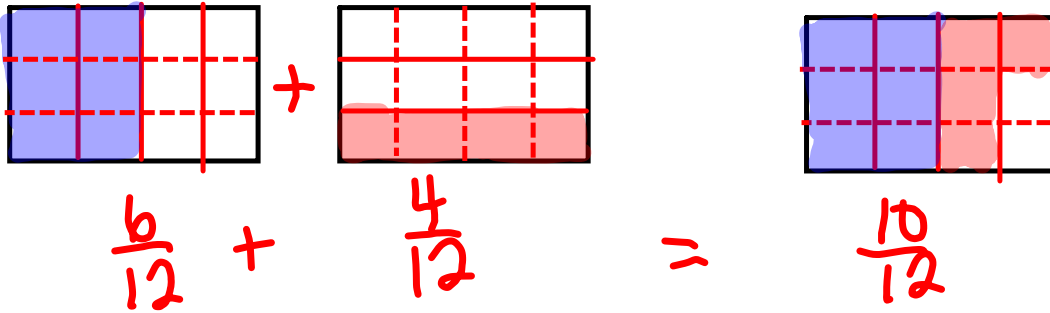
Sheet 151 # 1 to #6

(only model #1b, #2bd)



1 abc
2 abc
3 ab
4 ab
5 6

$$\frac{2}{4} + \frac{1}{3}$$



Sheet-Daffy Definitions

1. $\frac{15}{2} = 7\frac{1}{2}$

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

3. $\frac{21}{5} = 4\frac{1}{5}$

4) $\frac{9}{3} = 3$

5) $\frac{14}{3} = 4\frac{2}{3}$

6) $\frac{10}{2} = 5$

7) $\frac{22}{7} = 3\frac{1}{7}$

8) $\frac{36}{8} = 4\frac{4}{8}$ or $4\frac{1}{2}$

9) $\frac{13}{9} = 1\frac{4}{9}$

10) $\frac{22}{6} = 3\frac{4}{6}$ or $3\frac{2}{3}$

11) $\frac{72}{8} = 9$

12) $\frac{100}{50} = 2$

13) $\frac{43}{7} = 6\frac{1}{7}$

14) $\frac{34}{5} = 6\frac{4}{5}$

15) $\frac{33}{10} = 3\frac{3}{10}$

16) $\frac{22}{16} = 1\frac{6}{16}$ or $1\frac{3}{8}$

17) $\frac{42}{15} = 2\frac{12}{15}$ or $2\frac{4}{5}$

18) $\frac{31}{10} = 3\frac{1}{10}$

Grade 8 Sheet 151 Adding_Subtracting Fractions.pdf