

# FRACTIONS

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# What is fraction?

- A part of whole – a whole is divided into same parts.



1 part of 2 equal parts

$$\frac{1}{2}$$

One-half



3 parts of 4 equal parts

$$\frac{3}{4}$$

Three-fourths



7 parts of 16 equal parts

$$\frac{7}{16}$$

Seven-sixteenths

# Parts of fraction

2

**NUMERATOR**

—

3

**DENOMINATOR**

**DENOMINATOR**

- We could read:
- two over three
  - two-thirds

# How to read fractions?

$$\frac{1}{2}$$

**one half**  
one over two

$$\frac{5}{11}$$

**five elevenths**  
five over eleven

$$\frac{2}{5}$$

**two fifths**  
two over five

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

**one and two thirds**  
one over two

$$\frac{3}{7}$$

**three sevenths**  
three over seven

$$\frac{24}{26}$$

**twenty-four twenty-sixths**  
Twenty-four over twenty-six

# Activity 1: Is fraction smaller or bigger than 1?

$$\frac{9}{10}$$

$$\frac{21}{20}$$

$$\frac{15}{15}$$

$$\frac{17}{12}$$

$$\frac{23}{24}$$

$$\frac{120}{100}$$

$$\frac{200}{200}$$

less than 1

$$\frac{9}{10}$$

$$\frac{23}{24}$$

same as 1

$$\frac{15}{15}$$

$$\frac{200}{200}$$

greater than 1

$$\frac{21}{20}$$

$$\frac{17}{12}$$

$$\frac{120}{100}$$



# Comparison of fractions with same denominators

$$\frac{2}{5} < \frac{3}{5}$$



# Comparison of fractions with different denominators

$$\frac{2}{3} < \frac{3}{4}$$

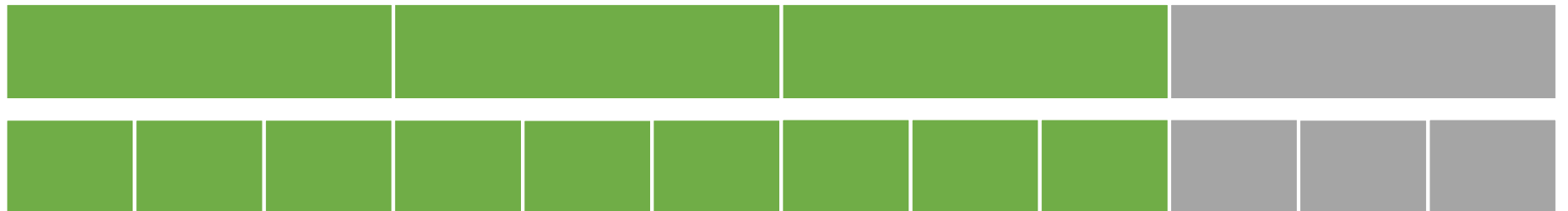
Whole is divided into the parts of different sizes.

Let's try dividing them into smaller parts that will each be the same.

$$\frac{2}{3}$$



$$\frac{3}{4}$$



# Comparison of fractions with different denominators

How to find same denominator? → by lowest common multiplier

$$\frac{2}{3} < \frac{3}{4}$$

**3** → 6 → 9 → **12** → 15 → 18 → 21 → **24** → 27 → ...

**4** → 8 → **12** → 16 → 20 → **24** → 28 → ...

$$\frac{2}{3} = \frac{2 \cdot 4}{3 \cdot 4} = \frac{8}{12}$$



$$\frac{3}{4} = \frac{3 \cdot 3}{4 \cdot 3} = \frac{9}{12}$$





## Activity 2: Comparison of fractions

$\frac{1}{2}$   $<$   $=$   $>$   $\frac{3}{5}$

HELP

$\frac{2}{7}$   $<$   $=$   $>$   $\frac{7}{15}$

HELP

$\frac{3}{5}$   $<$   $=$   $>$   $\frac{6}{9}$

HELP

$\frac{9}{12}$   $<$   $=$   $>$   $\frac{3}{4}$

HELP

$\frac{6}{15}$   $<$   $=$   $>$   $\frac{5}{13}$

HELP

# Adding fractions

- Fractions with same denominators
  - In this situation we only add the numerators

$$\frac{2}{5} + \frac{1}{5} = \frac{2 + 1}{5} = \frac{3}{5}$$



# Adding fractions

- Fractions with different denominators
  - In this situation we must expand the fractions to same denominator.

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





# Adding fractions

- Fractions with different denominators
  - In this situation we must expand the fractions to same denominator.

Why 6?

**2** → 4 → **6** → 8 → ...

**3** → **6** → 9 → 12 → ...

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



# Activity 3: Adding fractions



0

0

0

CONTINUE

## Activity 3: Adding fractions



$$\frac{32}{125} + \frac{23}{75} =$$

Lowest common multiplier of 16 and 12: 48

(125 – 250 – 375 – 500 ... ; 75 – 150 – 225 – 300 – 375 ...)

$$\frac{32}{125} + \frac{23}{75} = \frac{32 \cdot 3}{125 \cdot 3} + \frac{23 \cdot 5}{75 \cdot 5} = \frac{96 + 115}{375} = \frac{43}{48}$$

CONTINUE



## Activity 3: Adding fractions



$$\frac{8}{9} + \frac{5}{21} =$$

Lowest common multiplier of 16 and 12: 48

(9 – 18 – 27 – 36 – 45 – 54 – 63 ... ; 21 – 42 – 63 ...)

$$\frac{8}{9} + \frac{5}{21} = \frac{8 \cdot 7}{9 \cdot 7} + \frac{5 \cdot 3}{21 \cdot 3} = \frac{56 + 15}{63} = \frac{71}{63} = 1 \frac{8}{63}$$

CONTINUE

## Activity 3: Adding fractions



$$\frac{5}{16} + \frac{1}{12} =$$

Lowest common multiplier of 16 and 12: 48  
(16 – 32 – 48... ; 12 – 24 – 36 – 48 ...)

$$\frac{5}{16} + \frac{1}{12} = \frac{5 \cdot 3}{16 \cdot 3} + \frac{1 \cdot 4}{12 \cdot 4} = \frac{15 + 4}{48} = \frac{19}{48}$$

CONTINUE

## Activity 3: Adding fractions



$$\frac{5}{11} + \frac{3}{4} =$$

Lowest common multiplier of 11 and 4:  $11 \cdot 4 = 44$

(if two numbers hasn't got any common divisor, the lowest common multiplier is the product of these numbers.)

$$\frac{5}{11} + \frac{3}{4} = \frac{5 \cdot 4}{11 \cdot 4} + \frac{3 \cdot 11}{4 \cdot 11} = \frac{20 + 33}{44} = \frac{53}{44} = 1 \frac{9}{44}$$

CONTINUE



## Activity 3: Adding fractions



$$\frac{4}{9} + \frac{7}{8} =$$

Lowest common multiplier of 8 and 9:  $9 \cdot 8 = 72$

(if two numbers hasn't got any common divisor, the lowest common multiplier is the product of these numbers.)

$$\frac{4}{9} + \frac{7}{8} = \frac{4 \cdot 8}{9 \cdot 8} + \frac{7 \cdot 9}{8 \cdot 9} = \frac{32 + 63}{72} = \frac{95}{72} = 1 \frac{23}{72}$$

CONTINUE

## Activity 3: Adding fractions



$$\frac{5}{6} + \frac{1}{5} =$$

Lowest common multiplier of 5 and 6:  $5 \cdot 6 = 30$

(if two numbers hasn't got any common divisor, the lowest common multiplier is the product of these numbers.)

$$\frac{5}{6} + \frac{1}{5} = \frac{5 \cdot 5}{6 \cdot 5} + \frac{1 \cdot 6}{5 \cdot 6} = \frac{25 + 6}{30} = \frac{31}{30} = 1 \frac{1}{30}$$

CONTINUE

## Activity 3: Adding fractions



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

$$\frac{3}{8} + \frac{1}{8} = = \frac{3 + 1}{8} = \frac{4}{8} = \frac{1}{2}$$

CONTINUE

## Activity 3: Adding fractions



$$\frac{2}{15} + \frac{13}{15} =$$

$$\frac{2}{15} + \frac{13}{15} = \frac{2 + 13}{15} = \frac{15}{15} = \frac{1}{1} = 1$$

CONTINUE



## Activity 3: Adding fractions



$$\frac{9}{14} + \frac{6}{28} =$$

$$\frac{9}{14} + \frac{6}{28} = \frac{9}{14} + \frac{3}{14} = \frac{12}{14} = \frac{6}{7}$$

CONTINUE

## Activity 3: Adding fractions

10

$$\frac{13}{15} + \frac{8}{30} =$$

$$\frac{13}{15} + \frac{8}{30} = \frac{13}{15} + \frac{4}{15} = \frac{13 + 4}{15} = \frac{17}{15} = 1\frac{2}{15}$$

CONTINUE

## Activity 3: Adding fractions

11

$$\frac{5}{19} + \frac{7}{19} =$$

$$\frac{5}{19} + \frac{7}{19} = \frac{5 + 7}{19} = \frac{12}{19}$$

CONTINUE

## Activity 3: Adding fractions

12

$$\frac{7}{11} + \frac{3}{11} =$$

$$\frac{7}{11} + \frac{3}{11} = \frac{7 + 3}{11} = \frac{10}{11}$$

CONTINUE



## Activity 3: Adding fractions

13

$$\frac{14}{23} + \frac{7}{23} =$$

$$\frac{14}{23} + \frac{7}{23} = \frac{21}{23}$$

CONTINUE

## Activity 3: Adding fractions

14

$$\frac{3}{7} + \frac{2}{7} =$$

$$\frac{3}{7} + \frac{2}{7} = \frac{3 + 2}{7} = \frac{5}{7}$$

CONTINUE

## Activity 3: Adding fractions

15

$$\frac{8}{15} + \frac{5}{15} =$$

$$\frac{8}{15} + \frac{5}{15} = \frac{13}{15}$$

CONTINUE

**Thank you for your attention!**

# **FRACTIONS**

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