Dear Parents / Students

Due to the unprecedented situation, Knowledgeplus Training center is mobilized and will keep accompanying and supporting our students through this difficult time. Our Staff will be continuously, sending notes and exercises on a weekly basis through what's app and email. Students are requested to copy the notes and do the exercises on their copybooks. The answers to the questions below will be made available on our website on knowledgeplus.mu/support.php. Please note that these are extra work and notes that we are providing our students and all classes will be replaced during the winter vacation. We thank you for your trust and are convinced that, together, we will overcome these troubled times.

Knowledgeplus Training Center

Mathematics

Garde 7

Week 4

Notes and Exercise

Note:(All the Notes, Examples and Exercise are on the photos and Note:(Please copy all the Notes, Examples and Exercises on your copy book).

Mathematics Grade 7 week 8
Fractions and Decimals.

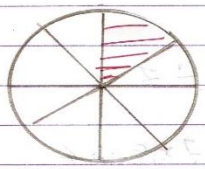
Fractions in real life

Fractions are used different situations everyday. For example, we use fractions to find the amount of fuel to read and write time, to share food and so on.

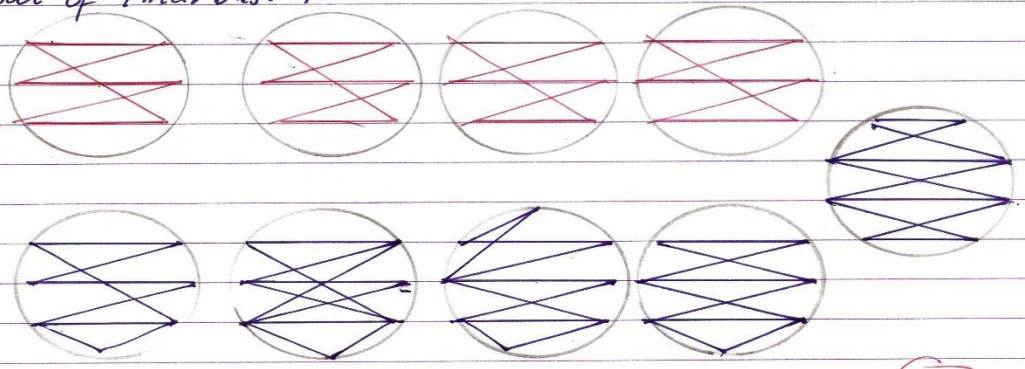
Representing Fractions

1. Fractions are used to express parts of whole. For example: the cake below represents a whole divided into 8 equal parts.

1 Part is represent as $\frac{1}{8}$



2. Fractions are used to represent parts of a group. The fraction $\frac{4}{9}$ represents 4 red marbles out of 9 marbles.



Types of Fraction

Proper Fractions: $\frac{1}{2}, \frac{3}{5}, \frac{5}{9}, \frac{11}{12}$.

Improper Fraction: $\frac{3}{2}, \frac{5}{4}, \frac{17}{9}, \frac{8}{8}, \frac{12}{12}$

Mixed Numbers: $1\frac{1}{2}, 3\frac{1}{4}, 17\frac{1}{6}$

Converting an Improper Fraction into a Mixed Number.
A fraction $\frac{a}{b}$ can also be expressed as a division: "a" divided by "b" $(a \div b)$.

Example
Convert $\frac{62}{7}$ into mixed numbers.

Solution

$\frac{62}{7}$ is the same as $62 \div 7$

$$7 \overline{)62} \quad 8\frac{6}{7}$$

$7 \times 8 = 56$

$62 - 56 = 6 \rightarrow$ Numerator of proper fraction

$\therefore \frac{62}{7} = 8\frac{6}{7}$

Converting a Mixed Number into an Improper Fraction

Example

Convert the following mixed numbers into improper fraction:

(a) $3\frac{1}{4}$ (b) $8\frac{17}{20}$

Solution

(a) $3\frac{1}{4} = \frac{(4\times3)+1}{4}$

$= \frac{13}{4}$

(b) $8\frac{17}{20} = \frac{(20\times8)+17}{20}$

$= \frac{177}{20}$

Exercise 1

Convert the following improper fraction into mixed numbers:

(a) $\frac{7}{2}$ (b) $\frac{10}{3}$ (c) $\frac{5}{4}$ (d) $\frac{11}{8}$ (e) $\frac{14}{11}$

(f) $\frac{16}{5}$ (g) $\frac{13}{12}$ (h) $\frac{21}{10}$ (i) $\frac{43}{25}$ (j) $\frac{83}{8}$

Exercise 2

Convert the following mixed numbers into improper fraction

(a) $1\frac{1}{2}$ (b) $3\frac{3}{4}$ (c) $5\frac{2}{5}$ (d) $2\frac{3}{7}$

(e) $8\frac{5}{9}$ (f) $7\frac{8}{11}$ (g) $23\frac{3}{10}$ (h) $3\frac{17}{25}$

Reducing a fraction to its lowest terms

Example

Reduce the following to its lowest term

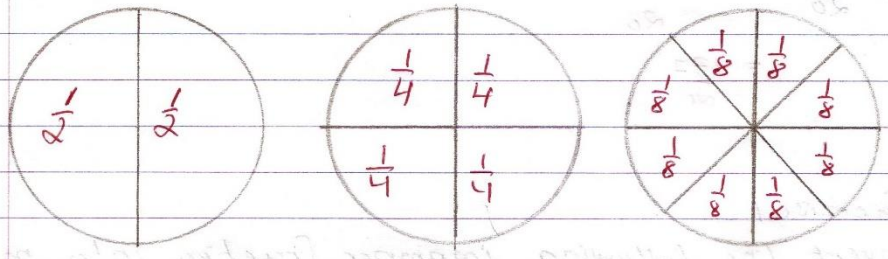
(a) $\frac{16}{24}$ (b) $\frac{12}{48}$

Solution

(a) $\frac{16}{24} = \frac{16\div2}{24\div2} = \frac{8\div2}{12\div2} = \frac{4\div2}{6\div2} = \frac{2}{3}$

(b) $\frac{12}{48} = \frac{\cancel{12}^{6}}{\cancel{48}_{24}} = \frac{\cancel{6}^{3}}{\cancel{24}_{12}} = \frac{\cancel{3}}{\cancel{12}_{4}} = \frac{1}{4}$

Equivalent fraction



Example

Complete the following to find the equivalent fractions:

(a) $\frac{2}{5} = \frac{\square}{15}$ (b) $\frac{12}{32} = \frac{\square}{8}$ (c) $\frac{\square}{9} = \frac{3}{27} = \frac{6}{\square}$

Solution

(a) $\frac{2}{3} \xrightarrow{\times3} \frac{6}{15}$ (check: $\times3$)

(b) $\frac{12}{32} \xrightarrow{\div4} \frac{3}{8}$ (check: $\div4$)

(c) $\frac{1}{9} \xrightarrow{\times3} \frac{3}{27} \xrightarrow{\times2} \frac{6}{54}$ (check: $\div3$, $\times2$)

Exercise

1. Reduce each of the following fractions to its lowest terms:

(a) $\frac{8}{12}$ (b) $\frac{4}{20}$ (c) $\frac{3}{42}$ (d) $\frac{18}{30}$

(e) $\frac{24}{42}$

2. Express each of the following mixed numbers in its simplest form: The first had been done for you, continue the ~~rest~~ other excercise.

(a) $\frac{18}{16} = 1\frac{2}{16} = \frac{(16 \times 1)+2}{16}$

$= \frac{18}{16}$

$= \frac{9}{8}$

$= \frac{3}{2}$

$2 \overline{)3}$ $3-2=1$ ← Remainder.

$1\frac{1}{2}$

(b) $1\frac{4}{10}$ (c) $3\frac{5}{15}$ (d) $2\frac{3}{12}$ (e) $4\frac{15}{18}$

3. Copy and complete the following equivalent fraction:

(a) $\frac{4}{5} = \frac{\square}{25}$ (b) $\frac{2}{3} = \frac{8}{\square}$ (c) $\frac{5}{6} = \frac{\square}{36}$

(d) $\frac{16}{18} = \frac{\square}{9}$ (e) $\frac{21}{28} = \frac{3}{\square}$ (f) $\frac{45}{100} = \frac{\square}{20}$

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Comparing and ordering fraction

Example1

Which fraction is greater $\frac{5}{12}$ or $\frac{11}{16}$?

Solution

$\frac{5}{12} \times \frac{4}{4} = \frac{20}{48}$

$12 \times 4 = 48$

$\frac{11}{16} \times \frac{3}{3} = \frac{33}{48}$

$16 \times 3 = 48$

Now we compare the numerators 33 and 20;

$33 > 20$

$\therefore \frac{11}{16} > \frac{5}{12}$

first find the LCM of 12 and 16

2 | 12	2 | 16
2 | 6	2 | 8
3 | 3	2 | 4
1	2 | 2
	1

$\therefore 12 = 2 \times 2 \times 3$

$16 = 2 \times 2 \times 2 \times 2$

$\therefore$ LCM of 12 and 16 $= 2 \times 2 \times 2 \times 2 \times 3$

$= 48$

Example2

Arrange $\frac{5}{6}, \frac{7}{8}$ and $\frac{2}{3}$ in ascending order.

Solution

First find the LCM of 6, 8, 3

L.C.M of 3, 6, 8 = 24

$\frac{5}{6} \times \frac{4}{4} = \frac{20}{24}$

$6 \times 4 = 24$

$\frac{7}{8} \times \frac{3}{3} = \frac{21}{24}$

$8 \times 3 = 24$

$\frac{2}{3} \times \frac{8}{8} = \frac{16}{24}$

$3 \times 8 = 24$

Now put it in ascending order for small to $<$

$\frac{16}{24}, \frac{20}{24}, \frac{21}{24}$

$\therefore$ the answer will be $= \frac{2}{3}, \frac{5}{6}, \frac{7}{8}$

Exercise1

1. Arrange the following franction in ascending order:

(a) $\frac{1}{3}, \frac{1}{2}$ and $\frac{1}{5}$ (b) $\frac{5}{12}, \frac{3}{8}$ and $\frac{1}{16}$

(c) $\frac{3}{10}, \frac{7}{15}$ and $\frac{5}{6}$

2. Arrange the following fractions in descending order:

(a) $\frac{3}{4}, \frac{1}{6}$ and $\frac{6}{7}$ (b) $\frac{2}{5}, \frac{5}{8}$ and $\frac{7}{10}$

(c) $\frac{17}{24}, \frac{10}{16}$ and $\frac{5}{6}$

3. For each of the given pairs, determine which fraction is greater:

(a) $\frac{5}{6}$ or $\frac{3}{4}$ (b) $\frac{3}{5}$ or $\frac{4}{7}$ (c) $\frac{2}{7}$ or $\frac{2}{9}$

(d) $\frac{3}{10}$ or $\frac{4}{5}$ (e) $\frac{5}{8}$ or $\frac{11}{16}$ (f) $\frac{15}{16}$ or $\frac{21}{24}$

4. Fill in the blanks with "<" or ">"

(a) $\frac{3}{4}$ __ $\frac{7}{8}$ (b) $\frac{5}{8}$ __ $\frac{4}{9}$ (c) $\frac{13}{16}$ __ $\frac{15}{24}$

(d) $\frac{5}{6}$ __ $\frac{6}{7}$

Addition and Subtraction of Fractions:

Example.

Evaluate

(a) $\frac{5}{7} + \frac{1}{7}$ (b) $\frac{1}{3} + \frac{1}{4}$ (c) $\frac{5}{6} - \frac{11}{15}$

(d) $\frac{3}{4} - \frac{2}{3} + \frac{1}{8}$

Solution

(a) $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$

(b) $\frac{1}{3} + \frac{1}{4} = \frac{1\times4}{3\times4} + \frac{1\times3}{4\times3}$

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

$= \frac{7}{12}$

First do the LCM of 3 and 4

∴ LCM of 3 and 4 = 12.

(c) $\frac{5}{6} - \frac{11}{15} = \frac{5\times5}{6\times5} - \frac{11\times2}{15\times2}$

$= \frac{25}{30} - \frac{22}{30}$

$= \frac{3}{30}$

$= \frac{1}{10}$

∴ LCM of 6 an 15 is 30

(d) $\frac{3}{4} - \frac{2}{3} + \frac{1}{8} = \frac{3}{4} \times \frac{6}{6} - \frac{2}{3} \times \frac{8}{8} + \frac{1}{8} \times \frac{3}{3}$ ∴ Lcm of 4, 3, 8 = 24

$= \frac{18}{24} - \frac{16}{24} + \frac{3}{24}$

$= \frac{18-16+3}{24}$ → Simplify the numerator from left to right.

$= \frac{5}{24}$

Exercise 1

Evaluate the following, giving your answer in its simplest form:

(a) $\frac{3}{7} + \frac{2}{7}$ (b) $\frac{10}{21} - \frac{4}{21}$ (c) $\frac{13}{18} - \frac{11}{18} + \frac{7}{18}$

(d) $\frac{5}{36} + \frac{11}{36} - \frac{7}{36}$

2. Evaluate the following giving your answer in its simplest form:

(a) $\frac{1}{4} + \frac{2}{7}$ (b) $\frac{2}{5} + \frac{3}{8}$ (c) $\frac{7}{8} - \frac{3}{5}$

(d) $\frac{11}{12} - \frac{5}{8}$ (e) $\frac{1}{3} + \frac{1}{4} + \frac{1}{5}$ (f) $\frac{3}{4} + \frac{1}{2} - \frac{5}{12}$

Additions and subtraction of Mixed Numbers

Example

Evaluate:

(a) $5\frac{4}{9} - 1\frac{1}{6}$ (b) $2\frac{1}{3} + 3\frac{1}{4} - 1\frac{5}{18}$

Solution

(a) $5\frac{4}{9} - 1\frac{1}{6} = \frac{49}{9} - \frac{7}{6}$ LCM of 9 and 6 = 18

$= \frac{49 \times 2}{9 \times 2} - \frac{7 \times 3}{6 \times 3}$

$= \frac{98}{18} - \frac{21}{18}$

$= \frac{77}{18}$

$= 4\frac{5}{18}$

(b) $2\frac{1}{3} + 3\frac{1}{4} - 1\frac{5}{18} = \frac{7}{3} + \frac{13}{4} - \frac{23}{18}$ LCM of 3, 4, 18 = 36

$= \frac{7 \times 12}{3 \times 12} + \frac{13 \times 9}{4 \times 9} - \frac{23 \times 2}{18 \times 2}$

$= \frac{84}{36} + \frac{117}{36} - \frac{46}{36}$

$= \frac{84 + 117 - 46}{36}$

$= \frac{155}{36}$

$= 4\frac{11}{36}$

Exercise

Evaluate the following, giving your answer in its simplest form:

(a) $2\frac{1}{5} + 1\frac{3}{5}$ (b) $5\frac{5}{8} - 3\frac{1}{6}$

(c) $2\frac{4}{7} + \frac{1}{4}$ (d) $3\frac{1}{6} + 1\frac{5}{9} - 2\frac{5}{12}$

Multiplication of fraction

Example.

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

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

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

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

Multiplication of a fraction by another fraction.

Example

Evaluate

(a) $\frac{2}{5} \times \frac{15}{16}$ (b) $\frac{4}{15} \times \frac{9}{14} \times \frac{7}{12}$

Solution

(a) $\frac{2}{5} \times \frac{15}{16} = \frac{\cancel{2}^{1}}{\cancel{8}} \times \frac{\cancel{15}^{3}}{\cancel{16}_{8}} \rightarrow \left(\frac{1 \times 3}{1 \times 8}\right)$

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

(b) $\frac{4}{15} \times \frac{9}{14} \times \frac{7}{12} = \frac{\cancel{4}^{2}}{\cancel{15}_{5}} \times \frac{\cancel{9}^{3}}{\cancel{14}_{7}} \times \frac{\cancel{7}^{1}}{\cancel{12}_{4}}$

$= \frac{1 \times 1 \times 1}{5 \times 1 \times 2}$

$= \frac{1}{10}$

Multiplication involving mixed numbers

Example

Evaluate:

(a) $1\frac{3}{5} \times \frac{15}{7}$ (b) $1\frac{1}{10} \times 2\frac{2}{5} \times 1\frac{1}{6}$

Solution

(a) $1\frac{3}{5} \times \frac{15}{17} = \frac{8}{\cancel{5}_{1}} \times \frac{\cancel{15}^{3}}{17}$

$= \frac{8 \times 3}{1 \times 17}$

$= \frac{24}{17}$

$= 1\frac{7}{17}$

(b) $1\frac{1}{10} \times 2\frac{2}{5} \times 1\frac{1}{6} = \frac{11}{\cancel{10}_{5}} \times \frac{\cancel{12}^{2}}{5} \times \frac{7}{\cancel{6}_{1}}$

$= \frac{11 \times 1 \times 7}{5 \times 5 \times 1}$

$= \frac{77}{25} = 3\frac{2}{25}$

Reciprocal of a fraction

Fraction	Reciprocal
$\frac{2}{7}$	$\frac{7}{2}$
$5 = \frac{5}{1}$	$\frac{1}{5}$
$3 = \frac{1}{3}$	$\frac{5}{1} = 3$

Division of Fraction

Example

Evaluate:

(a) $\frac{3}{5} \div \frac{9}{20}$ (b) $\frac{6}{11} \div 3$ (c) $2\frac{4}{5} \div 1\frac{2}{15}$

Solution

(a) $\frac{3}{5} \div \frac{9}{20} = \frac{\cancel{3}^{1}}{\cancel{5}_{1}} \times \frac{\cancel{20}^{4}}{\cancel{9}_{3}}$

$= \frac{1 \times 4}{1 \times 3}$

$= \frac{4}{3}$

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

(b) $\frac{6}{11} \div 3 = \frac{\cancel{6}^{2}}{11} \times \frac{1}{\cancel{3}_{1}}$

$= \frac{2 \times 1}{11 \times 1}$

$= \frac{2}{11}$

(c) $2\frac{4}{5} \div 1\frac{2}{15} = \frac{14}{5} \div \frac{17}{15}$

$= \frac{14}{8} \times \frac{15^{3}}{17}$

$= \frac{14 \times 3}{1 \times 17}$

$= \frac{42}{17}$

$= 2\frac{8}{17}$

Exercise

1. Evaluate

(a) $\frac{1}{3} \times \frac{3}{4}$ (b) $\frac{4}{9} \times \frac{5}{8}$ (c) $\frac{3}{4} \times \frac{15}{16}$

(d) $\frac{1}{3} \times 6$ (e) $1\frac{1}{8} \times \frac{15}{27}$ (f) $7 \times \frac{1}{2}$

(g) $\frac{2}{3} \times \frac{6}{13} \times 2\frac{8}{9}$ (h) $\frac{19}{24} \times \frac{15}{38} \times \frac{5}{6}$

(i) $\frac{1}{2} \div \frac{5}{2}$ (j) $\frac{3}{7} \div \frac{16}{35}$ (k) $\frac{49}{160} \div \frac{63}{140}$

(l) $\frac{5}{6} \div 6$ (m) $\frac{7}{11} \div 1\frac{3}{4}$ (n) $4\frac{1}{5} \div \frac{3}{10}$

(o) $2\frac{3}{4} \div 1\frac{5}{12}$