



The National
Orthodox School
Shmaisani

Grade Eight CS

Working with fractions

Adding and subtracting fractions

Student Name: _____

I. Before you start

Simplify the following fractions (Choose two):

a) $\frac{28}{70} \stackrel{\div 2}{=} \frac{14}{35} \stackrel{\div 7}{=} \frac{2}{5}$

b) $\frac{8}{96} \stackrel{\div 8}{=} \frac{1}{12}$

c) $\frac{18}{162} \stackrel{\div 18}{=} \frac{1}{9}$

d) $\frac{15}{75} \stackrel{\div 15}{=} \frac{1}{5}$

Convert the following improper fractions into mixed numbers:

a) $\frac{18}{5} = 3 \frac{3}{5}$

b) $\frac{43}{20} = 2 \frac{3}{20}$

Convert the following mixed numbers into improper fractions:

a) $9 \frac{1}{4} = \frac{37}{4}$

b) $16 \frac{2}{3} = \frac{50}{3}$

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II. Ready to start

Work out the following. Simplify your answer!

$$a) \quad \frac{3}{14} + \frac{11}{14} = \frac{14}{14} = 1$$

$$b) \quad \frac{13}{16} + \frac{11}{16} = \frac{24}{16} \div 8 = \frac{3}{2} = 1\frac{1}{2}$$

$$c) \quad \frac{13}{21} - \frac{10}{21} = \frac{3}{21} \div 3 = \frac{1}{7}$$

$$d) \quad \frac{6}{40} - \frac{1}{10} = \frac{6}{40} - \frac{1 \times 4}{10 \times 4} = \frac{6}{40} - \frac{4}{40} = \frac{2}{40} \div 2 = \frac{1}{20}$$

$$e) \quad 6\frac{3}{5} + 4\frac{1}{2} = \frac{2 \times 33}{2 \times 5} + \frac{9 \times 5}{2 \times 5} = \frac{66}{10} + \frac{45}{10} = \frac{111}{10}$$

$$f) \quad 4\frac{1}{5} - 2\frac{2}{3} = \frac{3 \times 21}{3 \times 5} - \frac{8 \times 5}{3 \times 5} = \frac{63}{15} - \frac{40}{15} = \frac{23}{15} = 1\frac{8}{15}$$

III. Do you know what does a UNIT Fraction mean?

Unit Fraction:

A fraction whose numerator is 1.

Examples:

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

IV. Real Life Applications (Choose Two)

- a) A plank of wood is 4 m in length. How long will it be if I cut $\frac{5}{8}$ m of wood from it?

$$4 - \frac{5}{8} = \frac{8 \times 4}{8 \times 1} - \frac{5}{8} = \frac{32}{8} - \frac{5}{8} = \frac{27}{8} = 3 \frac{3}{8} \text{ m}$$

- b) Haya spent $\frac{7}{18}$ of her money on Sunday. She spent $\frac{1}{3}$ of her money on Monday. What fraction of money did she spend on Sunday and Monday? What fraction of money did she have left?

I) $\frac{7}{18} + \frac{1}{3} \times \frac{6}{6} = \frac{13}{18}$

II) $\frac{15}{18}$

- c) A container holds $3 \frac{1}{2}$ litres of juice. How much juice is left in the container if Yasma drinks $\frac{1}{4}$ litres?

$$3 \frac{1}{2} - \frac{1}{4} = \frac{2 \times 7}{2 \times 2} - \frac{1}{4} = \frac{13}{4} = 3 \frac{1}{4} \text{ Litres}$$

V. Think... Pair... Share

- a) **Puzzle 1:** I'm equivalent to $\frac{128}{208}$ and my denominator is a prime number. What am I?

$$\frac{128}{208} \div 2 = \frac{64}{104} \div 2 = \frac{32}{52} \div 2 = \frac{16}{26} \div 2$$

$$= \frac{8}{13} \leftarrow \text{Answer}$$

- b) **Puzzle 2:** I'm equivalent to $1\frac{8}{9}$ and as an improper fraction the sum of my numerator and denominator is 52. What am I?

$$1\frac{8}{9} = \frac{17}{9} \times 2 = \frac{34}{18}$$

check: $34 + 18 = 52$ ✓

VI. How do you feel about this lesson?

Do you need extra help?

VII. Can you solve one more? (Optional)

Find the value of the letter in the following:

$$1\frac{a}{5} + 3\frac{3}{10} = 5\frac{1}{10}$$

$$\frac{5+a}{5} + \frac{33}{10} = \frac{51}{10}$$

$$\frac{5+a}{5} + \frac{33}{10} - \frac{33}{10} = \frac{51}{10} - \frac{33}{10}$$

$$\left\{ \begin{aligned} \frac{5+a}{5} &= \frac{18}{10} \\ 5+a &= \frac{18}{10} \times 5 = 9 \\ 5+a &= 9 \\ a &= 9-5 \end{aligned} \right.$$

$$\boxed{a=4}$$

Thank you!

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