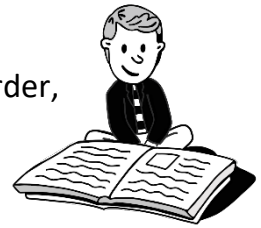
Essentials (routine)

Exercise 6

Solutions on p. A110

2. Given: $\frac{3}{4}$, $\frac{5}{6}$ and $\frac{7}{8}$



2.1 Find the LCM of 4, 6 and 8.

2.2 Write the fractions in ascending order, separating the fractions with

2.2.1 semi-colons (;)

2.2.2 the appropriate > or < signs.

Food for Thought *Solutions on p. A111*

Why can $\frac{3}{4}$, $\frac{5}{6}$ and $\frac{7}{8}$ be arranged in order of size without any calculations?

Exercise 10

Solutions on p. A115

Simplify each of the following expressions.

1. $\frac{4}{5} + \frac{2}{3} - \frac{1}{2}$

2. $\frac{5}{6} - \frac{5}{12} + \frac{3}{5}$

5. $2 + \frac{1}{10} - \frac{1}{2} - \frac{2}{3}$

6. $1\frac{1}{4} - 2\frac{2}{3} + 3\frac{1}{2}$

Elevation (complex)

Exercise 14 (multiplying more than 2 fractions)

Solutions on p. A122

Fully simplify each of the following.

1. $\frac{14}{15} \times \frac{25}{16} \times \frac{8}{21}$

2. $\frac{4}{15} \times \frac{5}{12} \times \frac{9}{13}$

9. $7\frac{3}{7} \times 1\frac{9}{26}$

14. $5\frac{3}{5} \times 2\frac{1}{2} \times \frac{5}{21}$

Reminder

1. change mixed fractions to improper fractions
2. cancel HCF between numerators and denominators
3. multiply numerators by numerators and denominators by denominators
4. check that the answer is in its simplest form

Extension (problem solving)

Exercise 31

link to video

Solutions on p. 147

1. A water tank was 65% full. After another 960 litres had been used, it was only 25% full. How many litres of water does the tank hold when it is full?

Essentials (routine)

Exercise 6

Learner Book Part 1, p. 113

2.1 The LCM of 4, 6 and 8 is 24.

2.2 $\frac{3}{4} \times \frac{6}{6} = \frac{18}{24}$

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

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

2.2.1 Ascending order:

$\frac{18}{24}$; $\frac{20}{24}$; $\frac{21}{24}$ (comparing 24^{ths})

$\frac{3}{4}$; $\frac{5}{6}$; $\frac{7}{8}$ (comparing simplified fractions)

2.2.2 $\frac{3}{4} < \frac{5}{6} < \frac{7}{8}$

Food for Thought — *Learner Book Part 1, p. 113*

Each fraction is only missing one part.

The smaller the missing part is,
the bigger the amount is that remains.

Eighths are smaller than sixths,
and both are smaller than quarters.

The largest fraction is $\frac{7}{8}$, the smallest fraction is $\frac{3}{4}$ and $\frac{5}{6}$ lies between them.

This is the solution to the last question on the worksheet.

Extension (problem solving)

Exercise 31 Solutions

Learner Book Part 1, p. 144

1. 65% – 25% = 40%

40% of the tank = 960 ℓ of water

1% of the tank = 960 ÷ 40 = 24 ℓ of water

100% of the tank = 100 × 24 = 2 400 ℓ of water.

∴ the tank holds 2 400 ℓ of water when it is full.

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Exercise 10 Solutions

Learner Book Part 1, p. 118

1. The LCM of 2, 3 and 5 is 30.

$$\frac{4}{5} + \frac{2}{3} - \frac{1}{2}$$

$$= \frac{4}{5} \times \frac{6}{6} + \frac{2}{3} \times \frac{10}{10} - \frac{1}{2} \times \frac{15}{15}$$

$$= \frac{24}{30} + \frac{20}{30} - \frac{15}{30}$$

$$= \frac{(44 - 15)}{30}$$

$$= \frac{29}{30}$$

2. The LCM of 5, 6 and 12 is 60.

$$\frac{5}{6} - \frac{5}{12} + \frac{3}{5}$$

$$= \frac{5}{6} \times \frac{10}{10} - \frac{5}{12} \times \frac{5}{5} + \frac{3}{5} \times \frac{12}{12}$$

$$= \frac{50}{60} - \frac{25}{60} + \frac{36}{60}$$

$$= \frac{(25 + 36)}{60}$$

$$= \frac{61}{60}$$

(Only give the answer as $1\frac{1}{60}$ if you are told to give the answer as a mixed fraction)

5. The LCM of 2, 3 and 10 is 30.

$$2 + \frac{1}{10} - \frac{1}{2} - \frac{2}{3}$$

$$= \frac{2}{1} \times \frac{30}{30} + \frac{1}{10} \times \frac{3}{3} - \frac{1}{2} \times \frac{15}{15} - \frac{2}{3} \times \frac{10}{10}$$

$$= \frac{60}{30} + \frac{3}{30} - \frac{15}{30} - \frac{20}{30}$$

$$= \frac{(63 - 35)}{30}$$

$$= \frac{28 \div 2}{30 \div 2} \text{ (simplify further)}$$

$$= \frac{14}{15}$$

Take Note

You **add the positives**, **add the negatives**, then **work out the difference** between them.

6. The LCM of 2, 3 and 4 is 12.

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

$$= \frac{5}{4} - \frac{8}{3} + \frac{7}{2}$$

$$= \frac{5}{4} \times \frac{3}{3} - \frac{8}{3} \times \frac{4}{4} + \frac{7}{2} \times \frac{6}{6}$$

$$= \frac{15}{12} - \frac{32}{12} + \frac{42}{12}$$

$$= \frac{(57 - 32)}{12}$$

$$= \frac{25}{12}$$

(Only give the answer as $2\frac{1}{12}$ if you are told to give the answer as a mixed fraction)

Take Note

Change mixed fractions to improper fractions first, then find the LCM of the denominators

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Exercise 14 Solutions

Learner Book Part 1, p. 121

	Cross-cancel one pair of numbers at a time	Cross-cancel in fewer steps
1.	$\frac{14}{15} \times \frac{25}{16} \times \frac{8}{21}$	$\frac{14}{15} \times \frac{25}{16} \times \frac{8}{21}$
	$= \frac{{}^{2}\cancel{14}}{15} \times \frac{25}{16} \times \frac{8}{{}^{3}\cancel{21}}$ (divide 7 into 14 & 21)	$= \frac{{}^{1}\cancel{2}\cancel{14}}{{}^{3}\cancel{15}} \times \frac{{}^{5}\cancel{25}}{{}^{1}\cancel{2}\cancel{16}} \times \frac{{}^{1}\cancel{8}}{{}^{3}\cancel{21}}$
	$= \frac{2}{{}^{3}\cancel{15}} \times \frac{{}^{5}\cancel{25}}{16} \times \frac{8}{3}$ (divide 5 into 15 & 25)	$= \frac{5}{9}$
	$= \frac{2}{3} \times \frac{5}{{}^{2}\cancel{16}} \times \frac{{}^{1}\cancel{8}}{3}$ (divide 8 into 8 & 16)	
	$= \frac{{}^{1}\cancel{2}}{3} \times \frac{5}{{}^{1}\cancel{2}} \times \frac{1}{3}$ (cancel the 2s)	
	$= \frac{5}{9}$	
2.	$\frac{4}{15} \times \frac{5}{12} \times \frac{9}{13}$	$\frac{4}{15} \times \frac{5}{12} \times \frac{9}{13}$
	$= \frac{{}^{1}\cancel{4}}{15} \times \frac{5}{{}^{3}\cancel{12}} \times \frac{9}{13}$ (divide 4 into 4 & 12)	$= \frac{{}^{1}\cancel{4}}{{}^{1}\cancel{3}\cancel{15}} \times \frac{{}^{1}\cancel{5}}{{}^{1}\cancel{3}\cancel{12}} \times \frac{{}^{1}\cancel{3}\cancel{9}}{13}$
	$= \frac{1}{{}^{3}\cancel{15}} \times \frac{{}^{1}\cancel{5}}{3} \times \frac{9}{13}$ (divide 5 into 5 & 15)	$= \frac{1}{13}$
	$= \frac{1}{3} \times \frac{1}{{}^{1}\cancel{3}} \times \frac{{}^{3}\cancel{9}}{13}$ (divide 3 into 3 & 9)	
	$= \frac{1}{{}^{1}\cancel{3}} \times \frac{1}{1} \times \frac{{}^{1}\cancel{3}}{13}$ (cancel the 3s)	
	$= \frac{1}{13}$	

	Cross-cancel one pair of numbers at a time	Cross-cancel in fewer steps
9.	$7\frac{3}{7} \times 1\frac{9}{26}$	$7\frac{3}{7} \times 1\frac{9}{26}$
	$= \frac{{}^{2}\cancel{52}}{7} \times \frac{35}{{}^{1}\cancel{26}}$ (divide 26 into 26 & 52)	$= \frac{52}{7} \times \frac{35}{26}$
	$= \frac{2}{{}^{1}\cancel{7}} \times \frac{{}^{5}\cancel{35}}{1}$ (divide 7 into 7 & 35)	$= \frac{{}^{2}\cancel{52}}{{}^{1}\cancel{7}} \times \frac{{}^{5}\cancel{35}}{{}^{1}\cancel{26}}$
	$= \frac{10}{1}$	$= \frac{10}{1}$
	$= 10$	$= 10$
14.	$5\frac{3}{5} \times 2\frac{1}{2} \times \frac{5}{21}$	$5\frac{3}{5} \times 2\frac{1}{2} \times \frac{5}{21}$
	$= \frac{{}^{4}\cancel{28}}{5} \times \frac{5}{2} \times \frac{5}{{}^{3}\cancel{21}}$ (divide 7 into 21 & 28)	$= \frac{28}{5} \times \frac{5}{2} \times \frac{5}{21}$
	$= \frac{4}{{}^{1}\cancel{5}} \times \frac{{}^{1}\cancel{5}}{2} \times \frac{5}{3}$ (cancel one pair of 5s)	$= \frac{{}^{2}\cancel{4}\cancel{28}}{{}^{1}\cancel{5}} \times \frac{{}^{1}\cancel{5}}{{}^{1}\cancel{2}} \times \frac{5}{{}^{3}\cancel{21}}$
	$= \frac{{}^{2}\cancel{4}}{1} \times \frac{1}{{}^{1}\cancel{2}} \times \frac{5}{3}$ (divide 2 into 2 & 4)	$= \frac{10}{3}$
	$= \frac{10}{3}$	