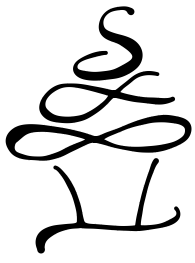
Practice Booklet

MYP 1 · Year 7 Mathematics

Unit 7.5 · Fractions

Name: _____

7.5.1 · 7.5.2	Equivalent fractions · Simplest form · Questions 1–13
7.5.3 · 7.5.4	Mixed numbers · Compare and order · Questions 14–26
7.5.5	Add and subtract fractions · Questions 27–39
7.5.6	Multiply and divide fractions · Questions 40–52
7.5.7 · 7.5.8	Percentages · Percentage and fraction of a quantity · Questions 53–65
7.5.9	Fractions, decimals and percentages · Questions 66–78
Homework	Homework page and checking record
Answers	For checking and correcting in green pen



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How to use this booklet and your homework

READ THIS FIRST

Choosing your level

Every part of the unit has four levels. Start where you feel comfortable and move between them freely. Most questions ask you to explain as well as answer, because being able to say *why* is what makes a method stick.

Learning
Small numbers, with counters or a diagram beside you.

Practising
The standard question, with your reasoning written out.

Challenging
Working backwards, and finding what is wrong with someone else's thinking.

Mastery
Explaining why a rule must be true, and testing it on new cases.

Working on your homework

Pens and setting out

- Answers in blue or black non-erasable pen, or in pencil.
- Colour and highlighters are for annotating your work and showing the steps of a method.
- Never erase a mistake. Rework it underneath so you can see what changed.

Green pen is for checking. When you finish, use the answers at the back to check your work.

- **Got it wrong?** Circle the question number, then make your correction and write your error analysis in green pen.
- **Still can't work out how to solve it?** Put a star ★ next to the question number, so we know to go over it in class.

Each sheet

- Your name goes on every sheet, because they are handed in one at a time.
- Each question is worth up to 3 marks. If a question has parts (a, b, c...), each part is marked out of 3. At the end of each level, write your score out of the total for that level.
- Questions are numbered 1, 2, 3... all the way through the booklet, so we can say exactly which ones to do.
- If you are stuck after trying, ask for help. Showing me what you tried is a good start.

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7.5.1 Equivalent fractions · 7.5.2 Simplest form

LEARNING · PRACTISING

Name:

Key vocabulary

Word	Meaning	Example
equivalent fractions	fractions that name the same amount	$\frac{1}{2} = \frac{2}{4}$
the big one	a fraction equal to 1 that you multiply or divide by	$\frac{2}{2}$ or $\frac{5}{5}$
simplest form	no common factor left except 1	$\frac{6}{8} = \frac{3}{4}$
HCF	highest common factor: the biggest number that divides both	HCF of 12 and 18 is 6

The value does not change but how it is written does: 1/2 = 2/4 = 3/6.

Learning

1 The bars show the same whole. Are $\frac{1}{2}$, $\frac{2}{4}$ and $\frac{4}{8}$ equal? Explain how you know



2 Multiply $\frac{1}{3}$ by the big one $\frac{2}{2}$ and by the big one $\frac{3}{3}$. Write the two equivalent fractions

3 Fill in the missing number: a) $\frac{1}{2} = \frac{\quad}{6}$ b) $\frac{2}{3} = \frac{\quad}{12}$ c) $\frac{3}{4} = \frac{9}{\quad}$

4 Simplify: a) $\frac{4}{8}$ b) $\frac{6}{9}$

Learning score _____ **/ 21**

Practising

5 Find the missing number: a) $\frac{5}{6} = \frac{\quad}{24}$ b) $\frac{14}{21} = \frac{2}{\quad}$ c) $\frac{9}{15} = \frac{\quad}{5}$

6 Write $\frac{18}{24}$ in its simplest form. Show the common factor you divide by

7 Which of these are equivalent to $\frac{2}{5}$? $\frac{4}{10}$, $\frac{6}{12}$, $\frac{8}{20}$, $\frac{10}{25}$

Practising score _____ **/ 15**

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Name:

Challenging

8 Simplify: a) $\frac{20}{50}$ b) $\frac{28}{42}$ c) $\frac{45}{60}$

9 Find the HCF of 36 and 48. Use it to simplify $\frac{36}{48}$ in one step

10 Write a fraction that is equivalent to $\frac{3}{7}$ and has denominator 42

11 **Find and describe the mistake.** Ben simplifies $\frac{12}{18}$ by subtracting 6 from the numerator and the denominator. He gets $\frac{6}{12} = \frac{1}{2}$

Challenging score _____ **/ 18**

Mastery

12 Explain why $\frac{7}{10}$ cannot be simplified. Then give another fraction that cannot be simplified

13 A fraction is equivalent to $\frac{2}{3}$. Its numerator and denominator add up to 35. Find the fraction

Mastery score _____ **/ 6**

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7.5.3 Mixed numbers · 7.5.4 Compare and order

LEARNING · PRACTISING

Name:

Key vocabulary

Word	Meaning	Example
improper fraction	numerator bigger than or equal to the denominator	$\frac{7}{4}$
mixed number	a whole number and a fraction	$1\frac{3}{4}$
compare	decide which is bigger or smaller	$\frac{3}{4} > \frac{2}{3}$
common denominator	the same denominator for two fractions	$\frac{1}{2}$ and $\frac{1}{3}$ become $\frac{3}{6}$ and $\frac{2}{6}$

A fraction is a number, so it has a size and can be put in order.

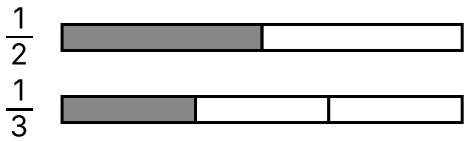
Learning

14 Write as a mixed number: a) $\frac{7}{4}$ b) $\frac{11}{3}$

15 Write as an improper fraction: a) $1\frac{1}{2}$ b) $2\frac{1}{4}$

16 Which is bigger, $\frac{3}{8}$ or $\frac{5}{8}$? How do you know?

17 Which is bigger, $\frac{1}{2}$ or $\frac{1}{3}$? Use the bars to explain



Learning score _____ **/ 18**

Practising

18 a) Write $\frac{17}{5}$ as a mixed number b) Write $4\frac{2}{7}$ as an improper fraction c) Write $3\frac{3}{8}$ as an improper fraction

19 Write >, < or = in each gap: a) $\frac{3}{4}$ ___ $\frac{2}{3}$ b) $\frac{5}{6}$ ___ $\frac{7}{8}$ c) $\frac{4}{5}$ ___ $\frac{8}{10}$

20 Put in order, smallest first: $\frac{2}{3}$, $\frac{5}{12}$, $\frac{3}{4}$, $\frac{1}{2}$

Practising score _____ **/ 21**

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7.5.3 Mixed numbers · 7.5.4 Compare and order

CHALLENGING · MASTERY

Name:

Challenging

21 Put in order, smallest first: $1\frac{1}{4}$, $\frac{9}{8}$, $1\frac{1}{3}$

22 Write $\frac{100}{7}$ as a mixed number

23 Write a fraction that is between $\frac{2}{5}$ and $\frac{1}{2}$

24 **Find and describe the mistake.** Amy writes $2\frac{3}{4}$ as the improper fraction $\frac{23}{4}$

Challenging score _____ / 12

Mastery

25 Explain why $\frac{1}{9}$ is bigger than $\frac{1}{10}$, even though 10 is bigger than 9

26 Which is bigger, $\frac{7}{9}$ or $\frac{8}{10}$? Find out by seeing how far each is from 1, not by using a common denominator

Mastery score _____ / 6

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7.5.5 Add and subtract fractions

LEARNING · PRACTISING

Name:

Key vocabulary

Word	Meaning	Example
common denominator	the same denominator for both fractions	$\frac{1}{3}$ and $\frac{1}{4}$ become $\frac{4}{12}$ and $\frac{3}{12}$
equivalent fractions	fractions that name the same amount	$\frac{1}{2} = \frac{3}{6}$
mixed number	a whole number and a fraction	$2\frac{1}{4}$

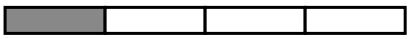
Add or subtract the numerators only. The denominator tells us the size of the parts, so it stays the same.

Learning

27 Work out: a) $\frac{2}{7} + \frac{3}{7}$ b) $\frac{5}{9} - \frac{2}{9}$. Give b) in simplest form

28 Use the bars to work out $\frac{1}{2} + \frac{1}{4}$

$\frac{2}{4}$ 

$\frac{1}{4}$ 

$\frac{3}{4}$ 

29 Sam eats $\frac{1}{4}$ of a pizza and Mia eats $\frac{2}{4}$ of it. How much of the pizza do they eat altogether?

30 Work out $\frac{2}{5} + \frac{1}{10}$

Learning score _____ **/ 15**

Practising

31 Work out: a) $\frac{1}{3} + \frac{1}{4}$ b) $\frac{5}{6} - \frac{1}{2}$ c) $\frac{2}{3} + \frac{1}{5}$

32 Work out $1\frac{1}{2} + 2\frac{1}{4}$

33 Work out $3\frac{1}{3} - 1\frac{1}{2}$

Practising score _____ **/ 15**

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7.5.5 Add and subtract fractions

Name:

Challenging

34 A recipe uses $\frac{3}{4}$ cup of flour and $\frac{2}{3}$ cup of sugar. How much is that altogether?

35 Work out $2\frac{3}{4} + 1\frac{5}{6}$

36 A ribbon is 5 m long. A tailor uses $1\frac{2}{3}$ m and then $2\frac{1}{2}$ m. How much ribbon is left?

37 **Find and describe the mistake.** Tom works out $\frac{1}{3} + \frac{1}{4} = \frac{2}{7}$

Challenging score _____ **/ 12**

Mastery

38 Two fractions add up to $1\frac{1}{6}$. One of them is $\frac{1}{2}$. Find the other and show your method

39 $\frac{1}{2} = \frac{1}{4} + \frac{1}{4}$. Find two different unit fractions (fractions with 1 on the numerator) that add up to $\frac{1}{2}$

Mastery score _____ **/ 6**

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7.5.6 Multiply and divide fractions

LEARNING · PRACTISING

Name:

Key vocabulary

Word	Meaning	Example
of	means multiply	$\frac{1}{2}$ of 12 = $\frac{1}{2} \times 12$
multiply	find a number of equal groups	$\frac{2}{3} \times 9$
divide	share into equal groups	$\frac{3}{4} \div 3$
product	the answer to a multiplication	$\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

To multiply fractions: numerator × numerator and denominator × denominator.

Learning

40 Work out: a) $\frac{1}{2}$ of 12 b) $\frac{1}{3}$ of 15 c) $\frac{3}{4}$ of 20

41 Work out $3 \times \frac{1}{4}$

42 Work out $\frac{1}{2} \times \frac{1}{2}$. Draw a picture to show it

43 Half a pizza is shared equally between two people. What fraction of the whole pizza does each person get?

Learning score _____ **/ 18**

Practising

44 Work out: a) $\frac{2}{3} \times 9$ b) $\frac{3}{5} \times 4$ c) $5 \times \frac{2}{7}$

45 Work out: a) $\frac{2}{3} \times \frac{3}{4}$ b) $\frac{5}{6} \times \frac{3}{10}$ c) $\frac{1}{2} \times \frac{4}{5}$

46 Work out: a) $\frac{3}{4} \div 3$ b) $\frac{6}{7} \div 2$ c) $\frac{4}{5} \div 4$

47 $\frac{3}{4}$ kg of rice is shared equally between 6 people. How much does each person get?

Practising score _____ **/ 30**

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7.5.6 Multiply and divide fractions

Name:

Challenging

48 Work out: a) $3 \div \frac{1}{2}$ b) $2 \div \frac{1}{3}$. Say what each question is asking

49 Work out $1\frac{1}{2} \times \frac{2}{3}$

50 **Find and describe the mistake.** Zoe adds the numerators and adds the denominators to get $\frac{2}{3} \times \frac{3}{5} = \frac{5}{8}$

Challenging score _____ **/ 12**

Mastery

51 Explain why multiplying by $\frac{1}{2}$ gives the same answer as dividing by 2. Use an example

52 A tank is $\frac{3}{4}$ full. $\frac{2}{3}$ of the water is used. What fraction of the whole tank is used, and what fraction is left?

Mastery score _____ **/ 6**

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7.5.7 Percentages · 7.5.8 Percentage and fraction of a quantity

Name:

Key vocabulary

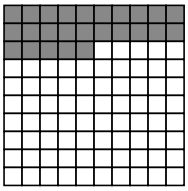
Word	Meaning	Example
percentage	a number out of 100	35% = 35 out of 100
per cent	out of every 100	1% = $\frac{1}{100}$
benchmark	an easy percentage to use as a stepping stone	50%, 25%, 10%
quantity	an amount of something	CHF 80
discount	an amount taken off a price	20% off

Find 10% by dividing by 10 and 1% by dividing by 100, then build up the percentage you need.

Learning

53 Write as percentages: a) $\frac{17}{100}$ b) $\frac{3}{100}$ c) $\frac{50}{100}$

54 The hundred square has 25 squares shaded. What percentage is shaded?



55 Find: a) 10% of 50 b) 50% of 30

56 Find $\frac{1}{4}$ of 20

Learning score _____ **/ 21**

Practising

57 Find: a) 10% of 240 b) 25% of 80 c) 5% of 60

58 Find: a) 15% of 200 b) 30% of 90 c) 35% of 40

59 Find $\frac{3}{5}$ of 45

60 A jacket costs CHF 80. It is sold with 20% off. What is the sale price?

Practising score _____ **/ 24**

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7.5.7 Percentages · 7.5.8 Percentage and fraction of a quantity

Name:

Challenging

61 Find 10%, 1% and then 13% of 350

62 Kai scored 36 out of 40 in a test. Write his score as a percentage

63 **Find and describe the mistake.** Ali says that 20% of 60 is 20 because 20% means 20

Challenging score _____ **/ 9**

Mastery

64 Explain why 50% of 80 is the same as $\frac{1}{2}$ of 80 and 80 ÷ 2

65 A coat costs CHF 120. It has 15% off. Find the sale price

Mastery score _____ **/ 6**

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7.5.9 Fractions, decimals and percentages

LEARNING · PRACTISING

Name:

Key vocabulary

Word	Meaning	Example
convert	change how a number is written without changing its value	$\frac{1}{2}$ = 0.5 = 50%
decimal	a number with a decimal point	0.25
percentage	out of 100	25%
terminating decimal	a decimal that stops	$\frac{1}{8}$ = 0.125
recurring decimal	a decimal with digits that repeat forever	$\frac{1}{3}$ = 0.333...

Fraction to decimal: divide the numerator by the denominator. Decimal to percentage: multiply by 100.

Learning

66 Write as decimals: a) $\frac{1}{2}$ b) $\frac{1}{4}$ c) $\frac{3}{4}$

67 Write as percentages: a) 0.5 b) 0.25 c) 0.07

68 Write 40% as a decimal and as a fraction in simplest form

69 Complete: $\frac{1}{5}$ = ___ = ___%

Learning score _____ **/ 24**

Practising

70 Write as decimals: a) $\frac{3}{8}$ b) $\frac{7}{20}$ c) $\frac{2}{3}$ (to 2 decimal places)

71 Write as percentages: a) $\frac{3}{5}$ b) $\frac{7}{25}$ c) 0.46

72 Write as fractions in simplest form: a) 35% b) 0.6 c) 12%

73 Put in order, smallest first: 0.6, 55%, $\frac{5}{8}$, 0.58

Practising score _____ **/ 30**

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7.5.9 Fractions, decimals and percentages

CHALLENGING · MASTERY

Name:

Challenging

74 **Find and describe the mistake.** Eva says that $\frac{1}{4}$ = 14%

75 Put in order, smallest first: $\frac{7}{10}$, 65%, 0.7, $\frac{3}{5}$. Which two are equal?

76 Maya scores $\frac{17}{20}$, Leo scores 82% and Zoe scores 0.8 in a quiz. Who scored the highest?

Challenging score _____ **/ 9**

Mastery

77 Explain why 0.5, $\frac{1}{2}$ and 50% are the same amount even though they look different

78 One shop takes $\frac{1}{5}$ off a CHF 50 item. Another shop takes 15% off the same item. Which gives the bigger saving, and by how much?

Mastery score _____ **/ 6**

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Homework and checking record

HAND THIS PAGE IN WITH YOUR SHEETS

Name:

Your teacher will tell you which sheet and questions to do. Choose your level, set out your work in pen or pencil, then check it with the answers at the back using a **green pen**: circle wrong question numbers, and star ★ any you still cannot solve.

Sheet	Questions	Which ones I did	Checked in green ✓	Teacher
7.5.1 Equivalent fractions · 7.5.2 Simplest form	Q1–13			
7.5.3 Mixed numbers · 7.5.4 Compare and order	Q14–26			
7.5.5 Add and subtract fractions	Q27–39			
7.5.6 Multiply and divide fractions	Q40–52			
7.5.7 Percentages · 7.5.8 Percentage and fraction of a quantity	Q53–65			
7.5.9 Fractions, decimals and percentages	Q66–78			

Error analysis

Circle the number of any question you got wrong. Star ★ it if you still cannot solve it after correcting. Then write the questions you need to rework, and what you will do differently:

One thing I understand better now

Score: Parent / guardian signature:

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Answers

CHECK IN GREEN PEN

7.5.1 Equivalent fractions · 7.5.2 Simplest form

Learning	**1**	Yes. The same amount of each bar is shaded, so $\frac{1}{2} = \frac{2}{4} = \frac{4}{8}$. The value does not change but how it is written does
	2	$\frac{1}{3} \times \frac{2}{2} = \frac{2}{6}$ and $\frac{1}{3} \times \frac{3}{3} = \frac{3}{9}$. The big one equals 1, so the value does not change
	3	a) 3 b) 8 c) 12
	4	a) $\frac{1}{2}$ (divide by the big one $\frac{4}{4}$) b) $\frac{2}{3}$ (divide by the big one $\frac{3}{3}$)
Practising	**5**	a) 20 (× 4) b) 3 (÷ 7) c) 3 (÷ 3)
	6	The HCF of 18 and 24 is 6. 18 ÷ 6 = 3 and 24 ÷ 6 = 4, so $\frac{18}{24} = \frac{3}{4}$
	7	$\frac{4}{10}$, $\frac{8}{20}$ and $\frac{10}{25}$ ($\frac{6}{12}$ simplifies to $\frac{1}{2}$)
Challenging	**8**	a) $\frac{2}{5}$ b) $\frac{2}{3}$ c) $\frac{3}{4}$
	9	The HCF is 12. 36 ÷ 12 = 3 and 48 ÷ 12 = 4, so $\frac{36}{48} = \frac{3}{4}$
	10	42 ÷ 7 = 6, so multiply by $\frac{6}{6}$: $\frac{3}{7} = \frac{18}{42}$
	11	Subtracting does not keep the fraction equal. We must divide (or multiply) both numbers by the same number. $\frac{12}{18} \div \frac{6}{6} = \frac{2}{3}$
Mastery	**12**	The only common factor of 7 and 10 is 1, so $\frac{7}{10}$ is already in simplest form. For example $\frac{5}{9}$
	13	$\frac{2}{3}$ has 2 + 3 = 5 parts in total. 35 ÷ 5 = 7, so multiply by $\frac{7}{7}$: $\frac{14}{21}$

7.5.3 Mixed numbers · 7.5.4 Compare and order

Learning	**14**	a) $1\frac{3}{4}$ b) $3\frac{2}{3}$
	15	a) $\frac{3}{2}$ b) $\frac{9}{4}$
	16	$\frac{5}{8}$. The denominators are the same, so compare the numerators: 5 is more than 3
	17	$\frac{1}{2}$. When the whole is split into 2 equal parts, each part is bigger than when it is split into 3
Practising	**18**	a) $3\frac{2}{5}$ b) $\frac{30}{7}$ (4 × 7 + 2) c) $\frac{27}{8}$ (3 × 8 + 3)
	19	a) > ($\frac{9}{12}$ and $\frac{8}{12}$) b) < ($\frac{20}{24}$ and $\frac{21}{24}$) c) = ($\frac{4}{5} \times \frac{2}{2} = \frac{8}{10}$)
	20	Write as twelfths: $\frac{8}{12}$, $\frac{5}{12}$, $\frac{9}{12}$, $\frac{6}{12}$. Order: $\frac{5}{12}$, $\frac{1}{2}$, $\frac{2}{3}$, $\frac{3}{4}$
Challenging	**21**	$\frac{9}{8} = 1\frac{1}{8}$. Order: $\frac{9}{8}$, $1\frac{1}{4}$, $1\frac{1}{3}$
	22	100 ÷ 7 = 14 remainder 2, so $14\frac{2}{7}$
	23	$\frac{2}{5} = \frac{8}{20}$ and $\frac{1}{2} = \frac{10}{20}$, so $\frac{9}{20}$ is between them
	24	She wrote the 2 and the 3 side by side. 2 wholes = $\frac{8}{4}$, so $2\frac{3}{4} = \frac{8}{4} + \frac{3}{4} = \frac{11}{4}$
Mastery	**25**	The denominator tells us how many equal parts the whole is split into. 10 parts are smaller than 9 parts, so one part ($\frac{1}{10}$) is smaller than $\frac{1}{9}$
	26	$\frac{7}{9}$ is $\frac{2}{9}$ away from 1 and $\frac{8}{10}$ is $\frac{2}{10}$ away from 1. $\frac{2}{10}$ is smaller than $\frac{2}{9}$, so $\frac{8}{10}$ is closer to 1 and is bigger

7.5.5 Add and subtract fractions

Learning

27 a) $\frac{5}{7}$ b) $\frac{3}{9} = \frac{1}{3}$

28 $\frac{1}{2} = \frac{2}{4}$, so $\frac{2}{4} + \frac{1}{4} = \frac{3}{4}$

29 $\frac{1}{4} + \frac{2}{4} = \frac{3}{4}$ of the pizza

30 $\frac{2}{5} = \frac{4}{10}$, so $\frac{4}{10} + \frac{1}{10} = \frac{5}{10} = \frac{1}{2}$

Practising

31 a) $\frac{4}{12} + \frac{3}{12} = \frac{7}{12}$ b) $\frac{5}{6} - \frac{3}{6} = \frac{2}{6} = \frac{1}{3}$ c) $\frac{10}{15} + \frac{3}{15} = \frac{13}{15}$

32 $1\frac{1}{2} + 2\frac{1}{4} = 3 + \frac{2}{4} + \frac{1}{4} = 3\frac{3}{4}$

33 $3\frac{1}{3} = \frac{20}{6}$ and $1\frac{1}{2} = \frac{9}{6}$, so $\frac{20}{6} - \frac{9}{6} = \frac{11}{6} = 1\frac{5}{6}$

Challenging

34 $\frac{9}{12} + \frac{8}{12} = \frac{17}{12} = 1\frac{5}{12}$ cups

35 $\frac{11}{4} + \frac{11}{6} = \frac{33}{12} + \frac{22}{12} = \frac{55}{12} = 4\frac{7}{12}$

36 Used: $1\frac{2}{3} + 2\frac{1}{2} = 4\frac{1}{6}$ m. Left: $5 - 4\frac{1}{6} = \frac{5}{6}$ m

37 He added the numerators and the denominators. Use a common denominator: $\frac{4}{12} + \frac{3}{12} = \frac{7}{12}$

Mastery

38 $1\frac{1}{6} = \frac{7}{6}$ and $\frac{1}{2} = \frac{3}{6}$, so $\frac{7}{6} - \frac{3}{6} = \frac{4}{6} = \frac{2}{3}$

39 For example $\frac{1}{3} + \frac{1}{6} = \frac{2}{6} + \frac{1}{6} = \frac{3}{6} = \frac{1}{2}$

7.5.6 Multiply and divide fractions

Learning

40 a) 6 b) 5 c) 15 (20 ÷ 4 = 5, then × 3)

41 $3 \times \frac{1}{4} = \frac{3}{4}$

42 $\frac{1}{2}$ of $\frac{1}{2} = \frac{1}{4}$ (half of a half)

43 $\frac{1}{2} \div 2 = \frac{1}{4}$ of the whole pizza

Practising

44 a) 6 b) $\frac{12}{5} = 2\frac{2}{5}$ c) $\frac{10}{7} = 1\frac{3}{7}$

45 a) $\frac{6}{12} = \frac{1}{2}$ b) $\frac{15}{60} = \frac{1}{4}$ c) $\frac{4}{10} = \frac{2}{5}$

46 a) $\frac{1}{4}$ b) $\frac{3}{7}$ c) $\frac{1}{5}$

47 $\frac{3}{4} \div 6 = \frac{3}{24} = \frac{1}{8}$ kg

Challenging

48 a) 6: how many halves are there in 3? b) 6: how many thirds are there in 2?

49 $1\frac{1}{2} = \frac{3}{2}$, so $\frac{3}{2} \times \frac{2}{3} = \frac{6}{6} = 1$

50 To multiply, multiply the numerators and multiply the denominators: $\frac{2}{3} \times \frac{3}{5} = \frac{6}{15} = \frac{2}{5}$

Mastery

51 Half of something is the same as sharing it between 2. For example $\frac{1}{2} \times 10 = 5$ and $10 \div 2 = 5$

52 Used: $\frac{2}{3} \times \frac{3}{4} = \frac{6}{12} = \frac{1}{2}$ of the tank. Left: $\frac{3}{4} - \frac{1}{2} = \frac{1}{4}$ of the tank

7.5.7 Percentages · 7.5.8 Percentage and fraction of a quantity

Learning	**53**	a) 17% b) 3% c) 50%
	54	25 out of 100 squares, so 25%
	55	a) 5 (50 ÷ 10) b) 15 (30 ÷ 2)
	56	20 ÷ 4 = 5
Practising	**57**	a) 24 b) 20 (80 ÷ 4) c) 3 (10% = 6, so 5% = 3)
	58	a) 30 (10% = 20, 5% = 10) b) 27 (10% = 9, × 3) c) 14 (10% = 4, so 30% = 12 and 5% = 2)
	59	45 ÷ 5 = 9, then 9 × 3 = 27
	60	10% = 8, so 20% = 16. Sale price: 80 − 16 = CHF 64
Challenging	**61**	10% = 35, 1% = 3.5. 13% = 35 + 3 × 3.5 = 45.5
	62	$\frac{36}{40} = \frac{9}{10}$ = 90%
	63	20% means 20 out of every 100. 10% of 60 is 6, so 20% of 60 is 12
Mastery	**64**	50% means 50 out of 100, which is $\frac{1}{2}$. Finding a half is the same as dividing by 2, so all three are 40. The value does not change but how it is written does
	65	10% = 12 and 5% = 6, so 15% = 18. Sale price: 120 − 18 = CHF 102

7.5.9 Fractions, decimals and percentages

Learning	**66**	a) 0.5 b) 0.25 c) 0.75
	67	a) 50% b) 25% c) 7%
	68	40% = 0.4 = $\frac{40}{100} = \frac{2}{5}$
	69	$\frac{1}{5}$ = 0.2 = 20%
Practising	**70**	a) 0.375 b) 0.35 c) 0.67 (2 ÷ 3 = 0.666…)
	71	a) 60% b) 28% ($\frac{7}{25} = \frac{28}{100}$) c) 46%
	72	a) $\frac{35}{100} = \frac{7}{20}$ b) $\frac{6}{10} = \frac{3}{5}$ c) $\frac{12}{100} = \frac{3}{25}$
	73	As decimals: 0.6, 0.55, 0.625, 0.58. Order: 55%, 0.58, 0.6, $\frac{5}{8}$
Challenging	**74**	She wrote the 1 and the 4 side by side. 1 ÷ 4 = 0.25, so $\frac{1}{4}$ = 25%
	75	$\frac{3}{5}$ = 0.6, then 65%, then $\frac{7}{10}$ and 0.7 (equal, both 70%)
	76	Maya: $\frac{17}{20}$ = 85%. Leo: 82%. Zoe: 0.8 = 80%. Maya scored the highest
Mastery	**77**	They all mean 50 out of 100, or one half. The value does not change but how it is written does
	78	$\frac{1}{5}$ = 20%, so the first saving is CHF 10. 15% of 50 = CHF 7.50. The first saving is bigger, by CHF 2.50