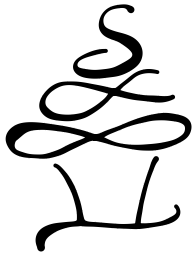
Practice Booklet

MYP 1 · Year 7 Mathematics

Unit 7.7 · Shape and Measure

Name: _____

7.7.1 · 7.7.2	Choosing units · Converting units · Questions 1–13
7.7.3	Perimeter · Questions 14–26
7.7.4	Area · Questions 27–39
7.7.5	Compound shapes · Questions 40–52
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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7.7.1 Choosing units · 7.7.2 Converting units

LEARNING · PRACTISING

Name:

Key vocabulary

Word	Meaning	Example
unit	a standard amount used to measure	cm, kg, litre
convert	change the unit without changing the amount	1 m = 100 cm
metric	units based on powers of 10	mm, cm, m, km
area	the space inside a shape, in square units	cm^2

The value does not change but how it is written does: 1 m = 100 cm.

Learning

1 Choose the best unit (mm, cm, m or km): a) length of a pencil b) distance between two towns c) thickness of a coin

2 Choose the best unit (g, kg or tonne): a) a bag of sugar b) a lorry c) a pin

3 Complete: a) 100 cm = ___ m b) 3 m = ___ cm c) 2 kg = ___ g

4 Complete: a) 1 litre = ___ ml b) 10 mm = ___ cm

Learning score _____ **/ 33**

Practising

5 Convert: a) 4.5 m to cm b) 3200 m to km c) 75 mm to cm

6 Convert: a) 2.4 kg to g b) 850 g to kg c) 3.2 tonnes to kg

7 Convert: a) 3 litres to ml b) 450 ml to litres c) 2.5 litres to cl

8 Put in order, smallest first: 0.8 m, 75 cm, 900 mm

Practising score _____ **/ 30**

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Name:

Challenging

9 A square is 100 cm by 100 cm. What is its area in cm², and what is 1 m² in cm²?

10 A tank holds 2.5 litres. How many 250 ml glasses can be filled from it?

11 **Find and describe the mistake.** Sam says that 3 m² is 300 cm², because 1 m = 100 cm

Challenging score _____ / 9

Mastery

12 Why is 1 m² a much bigger number of cm² than 1 m is of cm? Use a diagram or words

13 Estimate, then pick a sensible unit: the mass of a Year 7 student, the volume of a cup, the length of your classroom

Mastery score _____ / 6

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7.7.3 Perimeter

LEARNING · PRACTISING

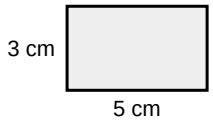
Name:

Key vocabulary

Word	Meaning	Example
perimeter	the distance all the way round a shape	5 + 3 + 5 + 3 = 16 cm
rectangle	a shape with four right angles and opposite sides equal	5 cm by 3 cm
isosceles	a triangle with two equal sides	7.5 cm, 7.5 cm, 4 cm
equilateral	a triangle with three equal sides	9 cm, 9 cm, 9 cm

Learning

14 Find the perimeter of the rectangle



15 Find the perimeter of a square with side 6 m

16 Find the perimeter of a triangle with sides 4 cm, 5 cm and 6 cm

17 A square has a perimeter of 20 cm. How long is each side?

Learning score _____ / 12

Practising

18 Find the perimeter of a rectangle 12.5 cm by 4.2 cm

19 An isosceles triangle has two sides of 7.5 cm and a base of 4 cm. Find its perimeter

20 A rectangle has a perimeter of 30 cm and a length of 9 cm. Find its width

21 Find the perimeter of a rectangle 2.4 m by 85 cm. Give your answer in metres

Practising score _____ / 12

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Name:

Challenging

22 An equilateral triangle has a perimeter of 27 cm. An isosceles triangle has a perimeter of 30 cm and a base of 8 cm. Find the side of the first triangle and the two equal sides of the second

23 A rectangle has a perimeter of 24 cm. List every rectangle with whole-number sides

24 **Find and describe the mistake.** Ivy finds the perimeter of a 6 cm by 4 cm rectangle as 6 × 4 = 24 cm

Challenging score _____ **/ 9**

Mastery

25 Double the side of a square. What happens to its perimeter? Test with sides 3 and 6 and explain

26 A rectangle has sides x and x + 3. Write an expression for its perimeter

Mastery score _____ **/ 6**

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7.7.4 Area

LEARNING · PRACTISING

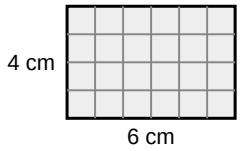
Name:

Key vocabulary

Word	Meaning	Example
area	the space inside a shape, in square units	24 cm²
base and height	the base and the height at right angles to it	triangle: 6 cm and 4 cm
parallelogram	a four-sided shape with two pairs of parallel sides	base 8 cm, height 5 cm
trapezium	a four-sided shape with one pair of parallel sides	sides 6 cm and 10 cm

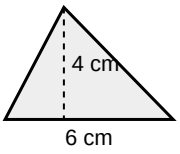
Learning

27 Find the area of the rectangle. The grid shows 1 cm squares



28 Find the area of a square with side 5 m

29 Find the area of the triangle



30 What do the units cm² tell you about area?

Learning score _____ / 12

Practising

31 Find the area of a triangle with base 10 cm and height 7 cm

32 Find the area of a parallelogram with base 8 cm and perpendicular height 5 cm

33 Find the area of a trapezium with parallel sides 6 cm and 10 cm and height 4 cm

34 A rectangle has an area of 48 cm² and a width of 6 cm. Find its length

Practising score _____ / 12

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Name:

Challenging

35 A triangle has an area of 30 cm² and a base of 12 cm. Find its height

36 A trapezium has parallel sides of 5 m and 9 m and an area of 56 m². Find its height

37 **Find and describe the mistake.** Dev finds the area of a triangle with base 8 cm and height 6 cm as 8 × 6 = 48 cm²

Challenging score _____ **/ 9**

Mastery

38 Explain why the area of a parallelogram is base × perpendicular height. Use a rectangle in your answer

39 A triangle and a rectangle have the same base of 8 cm and the same area. How do their heights compare?

Mastery score _____ **/ 6**

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7.7.5 Compound shapes

LEARNING · PRACTISING

Name:

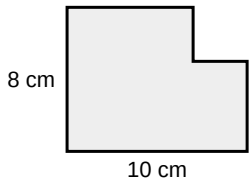
Key vocabulary

Word	Meaning	Example
compound shape	a shape made by joining simpler shapes	an L-shape
rectilinear	a shape with only right angles	an L-shape
perimeter	the distance all the way round	36 cm
area	the space inside, in square units	71 cm²

Learning

40 An L-shape is made by joining a 5 cm by 3 cm rectangle and a 2 cm by 2 cm rectangle. Find its area

41 A 10 cm by 8 cm rectangle has a 3 cm by 3 cm square cut out of one corner. Find the area of what is left



42 Find the perimeter of the same shape: a 10 cm by 8 cm rectangle with a 3 cm by 3 cm square cut out of one corner

43 Draw an L-shape and split it into two rectangles

Learning score _____ / 12

Practising

44 A shape is a 12 cm by 9 cm rectangle with a 5 cm by 4 cm rectangle cut out of a corner. Find its area

45 Find the perimeter of the shape in the last question

46 An L-shaped room is made of a 6 m by 4 m part and a 3 m by 2 m part. Find its area. Carpet costs CHF 20 per m². How much will it cost to carpet the room?

47 The top edge of a compound shape is 14 cm long. It is made of a 9 cm part and a part x cm wide. Find x

Practising score _____ / 12

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7.7.5 Compound shapes

Name:

Challenging

48 A garden is a 15 m by 10 m rectangle with a pond of 4 m by 3 m inside it. Find the area of grass

49 A farmer has 40 m of fence. Try rectangles with whole-number sides. Which gives the largest area?

50 **Find and describe the mistake.** Hal finds the area of a 12 cm by 9 cm rectangle with a 5 cm by 4 cm rectangle cut out of a corner as $12 \times 9 = 108$ cm²

Challenging score _____ / 9

Mastery

51 Explain why, for a fixed perimeter, a square gives the largest area among rectangles

52 Design an L-shape with an area of 50 cm². Give its measurements

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
7.7.1 Choosing units · 7.7.2 Converting units	Q1–13			
7.7.3 Perimeter	Q14–26			
7.7.4 Area	Q27–39			
7.7.5 Compound shapes	Q40–52			

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

7.7.1 Choosing units · 7.7.2 Converting units

Learning	**1**	a) cm b) km c) mm
	2	a) kg b) tonne c) g
	3	a) 1 m b) 300 cm c) 2000 g
	4	a) 1000 ml b) 1 cm
Practising	**5**	a) 450 cm b) 3.2 km c) 7.5 cm
	6	a) 2400 g b) 0.85 kg c) 3200 kg
	7	a) 3000 ml b) 0.45 litres c) 250 cl
	8	Write all in cm: 80 cm, 75 cm, 90 cm. Order: 75 cm, 0.8 m, 900 mm
Challenging	**9**	100 × 100 = 10 000 cm², so 1 m² = 10 000 cm²
	10	2.5 litres = 2500 ml. 2500 ÷ 250 = 10 glasses
	11	That works for length, not area. 1 m² = 100 × 100 = 10 000 cm², so 3 m² = 30 000 cm²
Mastery	**12**	Area has two dimensions, so the 100 is used twice (100 × 100). Length only uses it once
	13	Open answer, such as about 45 kg, about 250 ml, about 9 m

7.7.3 Perimeter

Learning	**14**	5 + 3 + 5 + 3 = 16 cm
	15	4 × 6 = 24 m
	16	4 + 5 + 6 = 15 cm
	17	20 ÷ 4 = 5 cm
Practising	**18**	2 × (12.5 + 4.2) = 33.4 cm
	19	7.5 + 7.5 + 4 = 19 cm
	20	30 ÷ 2 = 15, and 15 − 9 = 6 cm
	21	85 cm = 0.85 m. 2 × (2.4 + 0.85) = 6.5 m
Challenging	**22**	First: 27 ÷ 3 = 9 cm. Second: (30 − 8) ÷ 2 = 11 cm each
	23	1 by 11, 2 by 10, 3 by 9, 4 by 8, 5 by 7, 6 by 6
	24	6 × 4 is the area. The perimeter is the distance round the edge: 6 + 4 + 6 + 4 = 20 cm
Mastery	**25**	It doubles: 12 becomes 24. Each of the four sides is twice as long
	26	2x + 2(x + 3) = 4x + 6

7.7.4 Area

Learning	**27**	6 × 4 = 24 cm²
	28	5 × 5 = 25 m²
	29	$\frac{1}{2}$ × 6 × 4 = 12 cm²
	30	The number of squares, each 1 cm by 1 cm, that fit inside the shape
Practising	**31**	$\frac{1}{2}$ × 10 × 7 = 35 cm²
	32	8 × 5 = 40 cm²
	33	$\frac{1}{2}$ × (6 + 10) × 4 = 32 cm²
	34	48 ÷ 6 = 8 cm
Challenging	**35**	$\frac{1}{2}$ × 12 × h = 30, so 6h = 30 and h = 5 cm
	36	$\frac{1}{2}$ × 14 × h = 56, so 7h = 56 and h = 8 m
	37	He forgot to halve. The area of a triangle is $\frac{1}{2}$ × base × height = 24 cm²
Mastery	**38**	Cut a triangle off one end and move it to the other end. The parallelogram becomes a rectangle with the same base and height
	39	The rectangle is 8 × h and the triangle is $\frac{1}{2}$ × 8 × h, so the triangle must be twice as tall

7.7.5 Compound shapes

Learning	**40**	5 × 3 = 15 and 2 × 2 = 4, so 15 + 4 = 19 cm²
	41	80 − 9 = 71 cm²
	42	2 × (10 + 8) = 36 cm. Cutting a square out of a corner does not change the perimeter
	43	Open answer: a line splits the L into two rectangles
Practising	**44**	12 × 9 − 5 × 4 = 108 − 20 = 88 cm²
	45	2 × (12 + 9) = 42 cm. The perimeter is the same as the full rectangle
	46	Area 24 + 6 = 30 m². Cost 30 × 20 = CHF 600
	47	x = 14 − 9 = 5 cm
Challenging	**48**	150 − 12 = 138 m²
	49	A 10 m by 10 m square gives 100 m². For example 5 by 15 gives 75 m² and 8 by 12 gives 96 m²
	50	That is the area of the whole rectangle. He must take off the cut-out part: 108 − 20 = 88 cm²
Mastery	**51**	The more equal the sides, the bigger the product. For a perimeter of 40: 10 × 10 = 100 is more than 9 × 11 = 99 and 8 × 12 = 96
	52	Open answer. For example an 8 cm by 5 cm rectangle with a 5 cm by 2 cm rectangle joined on (40 + 10 = 50)