

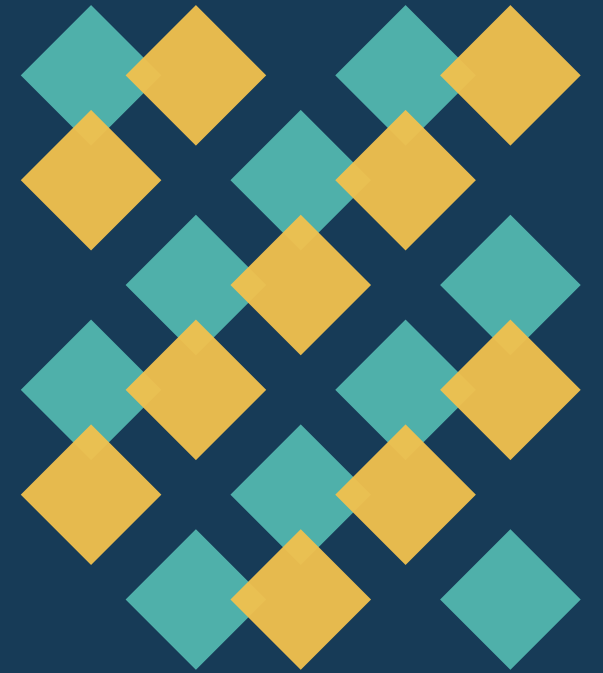
PARALLELOGRAMS

Bases, Heights & Area

Review for Math 6 • Unit 1 • Lessons 4–6

Goal: choose a base, match its height, and
explain why $A = b \times h$.

Access IDEAS presents a customized session for OUSD Math 6.



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What are we trying to understand?

Three ideas connect the parallelogram lessons.

1

RECOGNIZE

A parallelogram has two pairs of parallel sides.

2

MATCH

Choose a base and its perpendicular height.

3

CALCULATE

Multiply the base by its corresponding height.

Big idea: A parallelogram can be rearranged into a rectangle with the same base, height, and area.

What makes a parallelogram?

Look for relationships—not for one “typical” slanted shape.

ONE REPRESENTATIVE SHAPE



A parallelogram

two pairs of opposite sides are parallel

THREE PROPERTIES TO CHECK

- 1 Opposite sides are parallel:
top || bottom, left || right.
- 2 Opposite sides have equal length.
- 3 Opposite angles have equal measure.

SPECIAL PARALLELOGRAMS



rectangle



rhombus

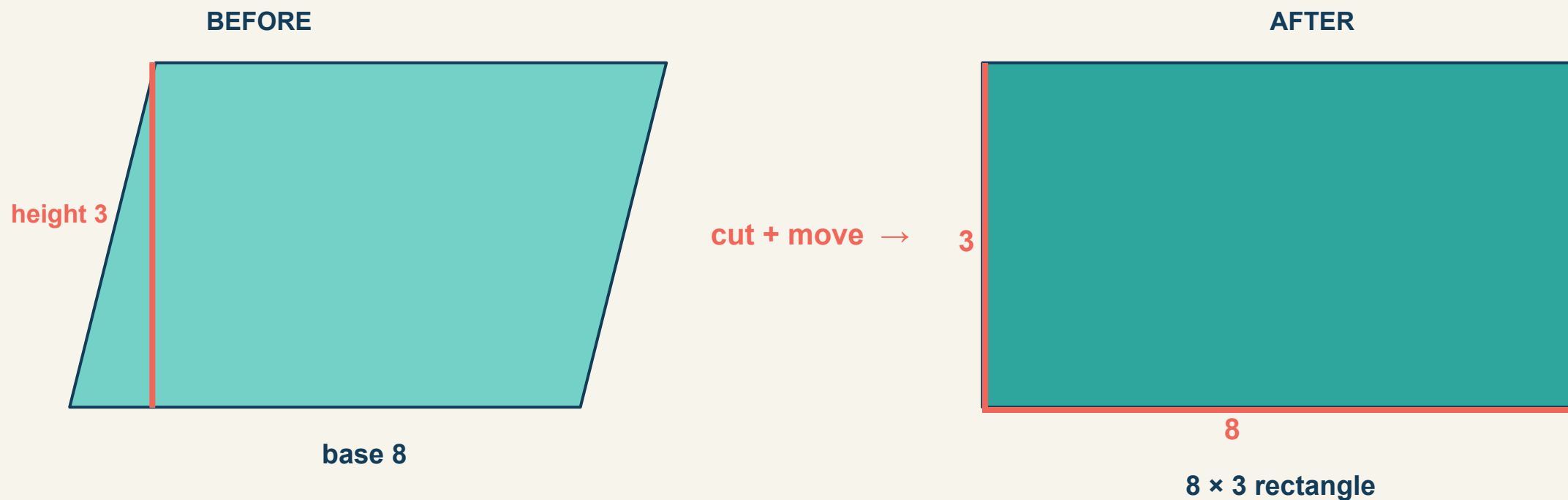


square

Each is a special parallelogram with
two pairs of parallel sides.

A parallelogram can become a rectangle

Move one triangular piece. The amount of space does not change.



Move the triangle—do not stretch it. Both shapes have area $8 \times 3 = 24$ square units.

Example 1 — Try it first

A parallelogram has base 9 cm and corresponding height 4 cm.
What is its area? Explain why.



YOUR TURN

**Find the area.
Be ready to explain why your
formula works.**

Start by naming b and h .

Example 1 — Step 1: Name the base

A parallelogram has base 9 cm and corresponding height 4 cm.
What is its area? Explain why.



STEP 1: NAME THE BASE

**Choose $b = 9$ cm.
Use the bottom side
as the base.**

Next: match the height.

Example 1 — Step 2: Match the height

A parallelogram has base 9 cm and corresponding height 4 cm.
What is its area? Explain why.



STEP 2: MATCH THE HEIGHT

**The perpendicular
height is $h = 4$ cm.
It meets the 9 cm base
at 90° .**

Next: multiply $b \times h$.

Example 1 — Step 3: Calculate the area

A parallelogram has base 9 cm and corresponding height 4 cm. What is its area? Explain why.



STEP 3: CALCULATE THE AREA

$$A = b \times h$$

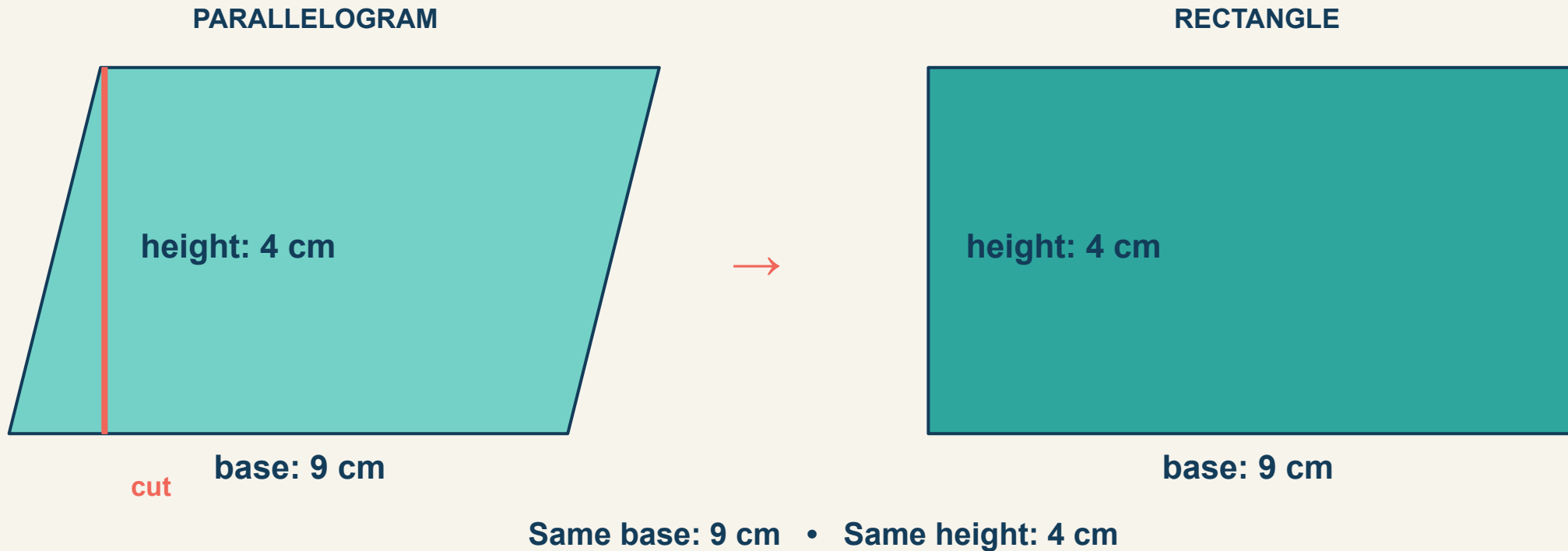
$$A = 9 \times 4$$

$$A = 36 \text{ cm}^2$$

The parallelogram's area is 36 cm^2 .

Example 1 — Why the formula works

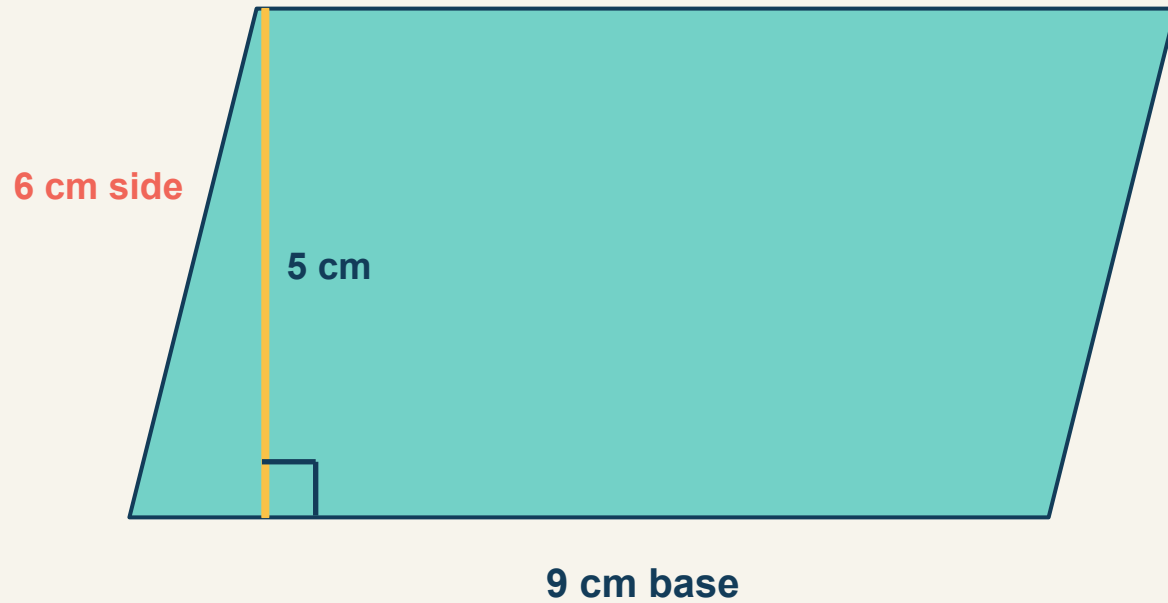
Rearrange the same parallelogram into a rectangle without changing its area.



The rectangle has area 9×4 , so the parallelogram does too.

Example 2 — Step 1: Name the base

For the 9 cm base, which labeled length is the corresponding height: 5 cm or 6 cm?

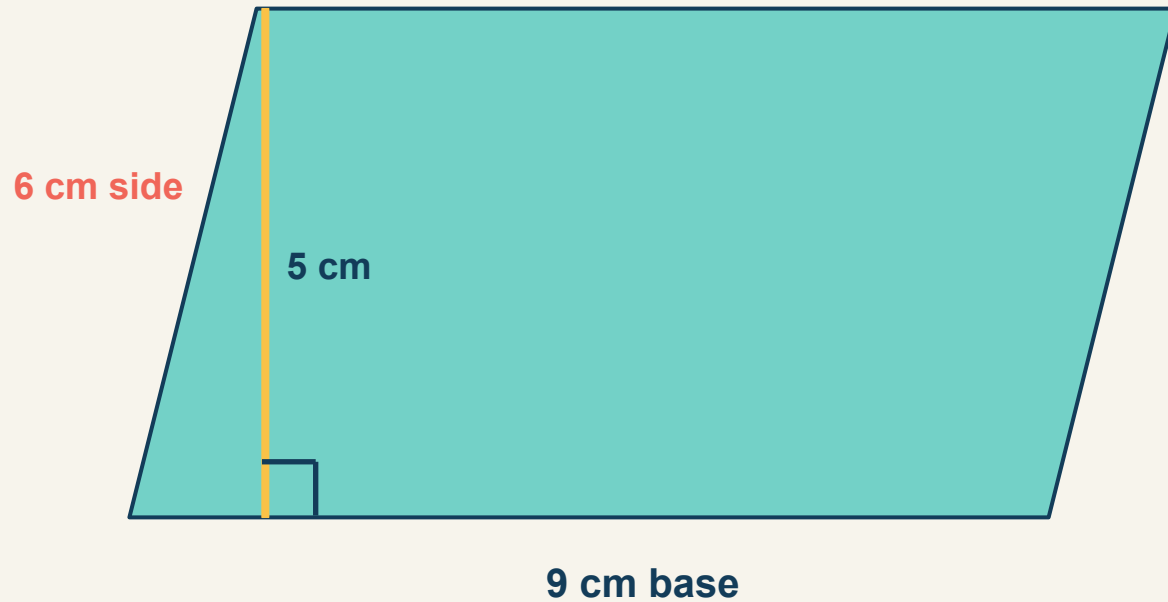


Start with the chosen base

The bottom side is $b = 9$ cm.

Example 2 — Step 2: Check for 90°

For the 9 cm base, which labeled length is the corresponding height: 5 cm or 6 cm?



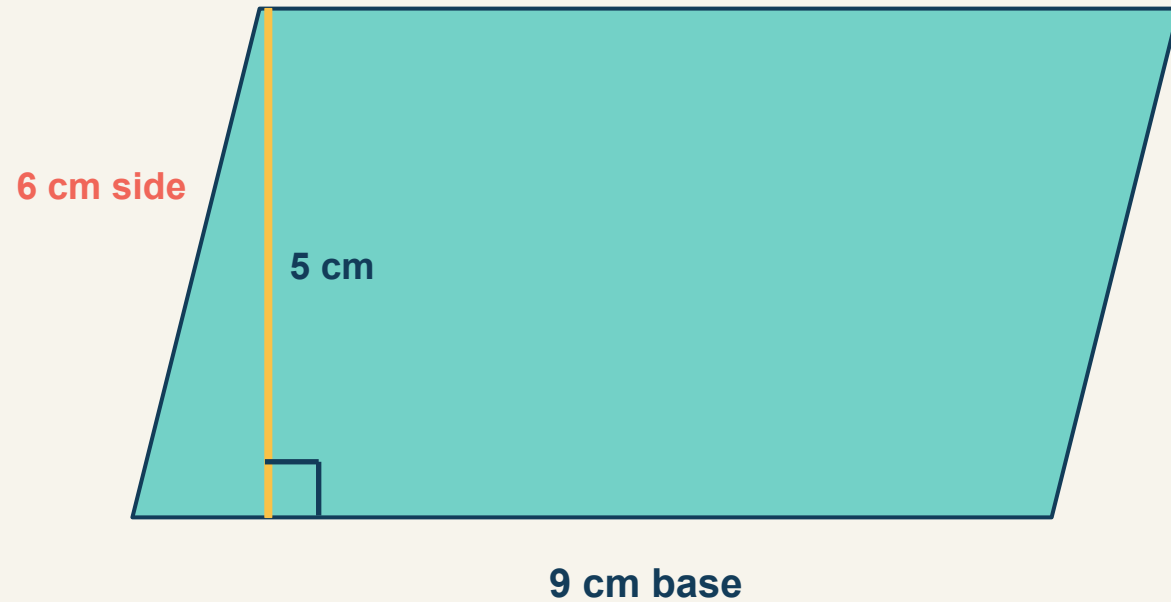
STEP 2: CHECK FOR 90°

The 5 cm segment meets the 9 cm base at 90°.

The 6 cm side is slanted, so it is not the height.

Example 2 — Solution

For the 9 cm base, which labeled length is the corresponding height: 5 cm or 6 cm?



SOLUTION

Base: $b = 9$ cm.

Height: $h = 5$ cm.

**Area: $A = 9 \times 5 = 45$
 cm^2 .**

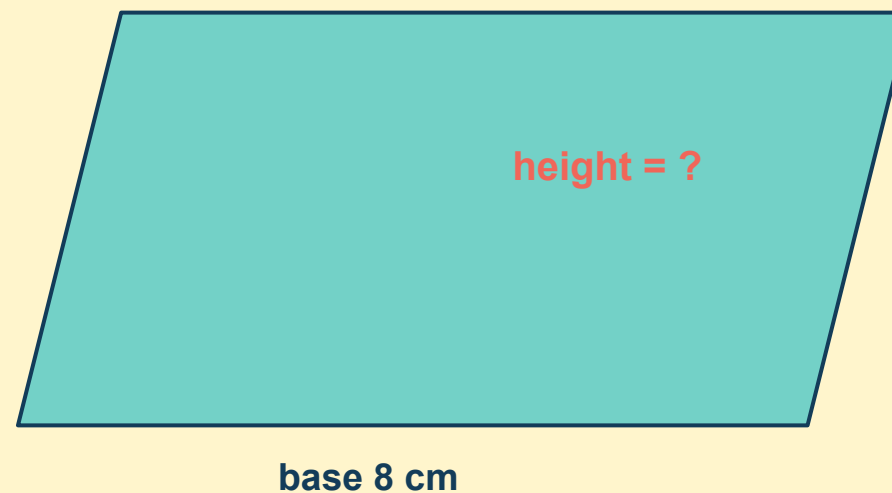
Example 3 — Try it first

A parallelogram has one base-height pair 12 cm and 5 cm. If another base is 8 cm, find its corresponding height.

VIEW 1: KNOWN PAIR



VIEW 2: OTHER BASE



How can the first base-height pair help?

Example 3 — Step 1: Find the area

Use the known base-height pair first.

VIEW 1: KNOWN PAIR



$$A = 12 \times 5 = 60 \text{ cm}^2$$

VIEW 2: OTHER BASE



Example 3 — Step 2: Use the other base

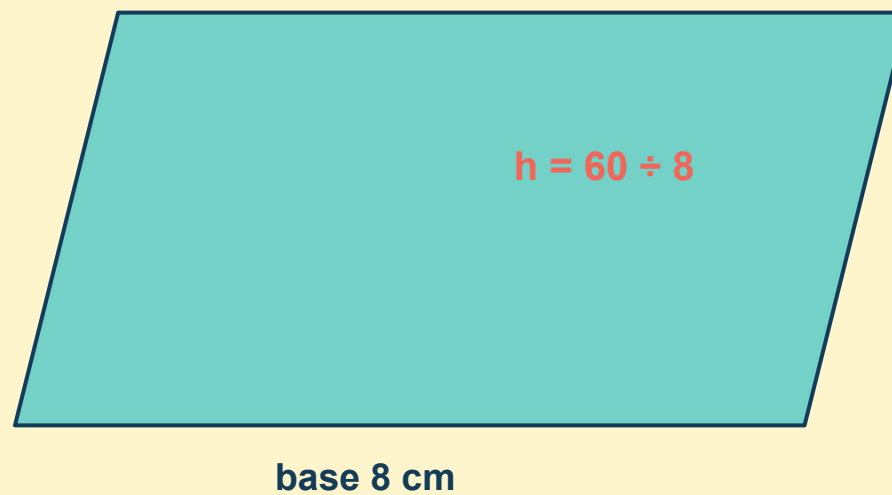
The same parallelogram has the same area, no matter which side is the base.

VIEW 1: KNOWN PAIR



$$A = 12 \times 5 = 60 \text{ cm}^2$$

VIEW 2: OTHER BASE



Example 3 — Solution

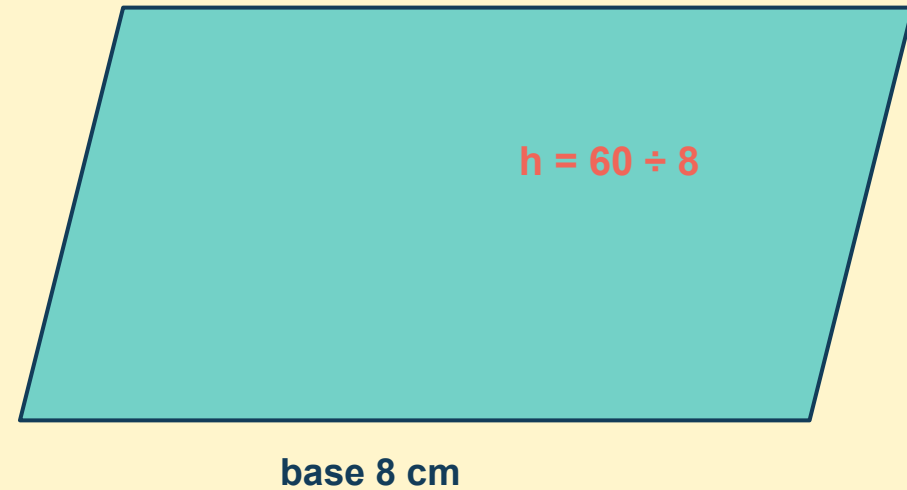
Check that both base-height pairs give the same area.

VIEW 1: KNOWN PAIR



$$A = 12 \times 5 = 60 \text{ cm}^2$$

VIEW 2: OTHER BASE



$$h = 7.5 \text{ cm}$$
$$8 \times 7.5 = 60 \text{ cm}^2$$

Both base-height pairs give an area of 60 cm².

Pause & think

Decide what counts as a matching base-height pair before calculating.

A

A parallelogram is turned so no side is horizontal.

Can any side still be chosen as the base? What must the height do?

choose a side

look for 90°

ignore the tilt

B

Two parallelograms have the same base length and the same height, but different slants.

How do their areas compare? Explain without counting squares.

Use the words
base, corresponding height, and
perpendicular.

No need to solve yet—first explain how you know which measurements belong together.

Takeaway + exit ticket

A correct area calculation begins by matching a base with a perpendicular height.

1 Any side can be a base

Choose one side and name its length b .

2 Height means perpendicular distance

It may be drawn inside or outside the shape.

3 Area is base $\times$ height

Use the matching pair and write square units.

EXIT TICKET

A parallelogram has base 11 m, height 3 m, and slanted side 5 m. Find its area and explain why 5 m is not used.

Bonus: sketch a different parallelogram with the same base, height, and area.



THANK YOU

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