

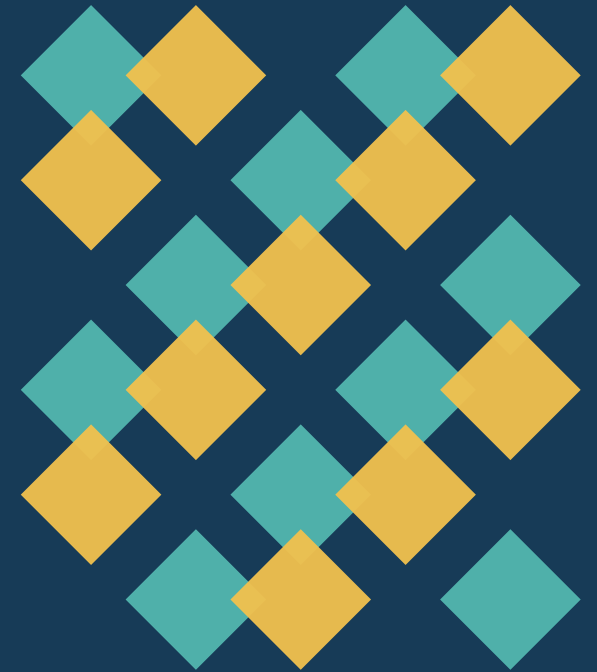
POLYGONS

Recognize, Decompose & Find Area

Review for Math 6 • Unit 1 • Lesson 11

Goal: recognize polygons and find their areas by adding or subtracting areas of known shapes.

Access IDEAS presents a customized session for OUSD Math 6.



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What are we trying to understand?

Three ideas organize our polygon work.

1

RECOGNIZE

A polygon is closed and made of straight sides.

2

DECOMPOSE

Split the polygon into rectangles and triangles.

3

CALCULATE

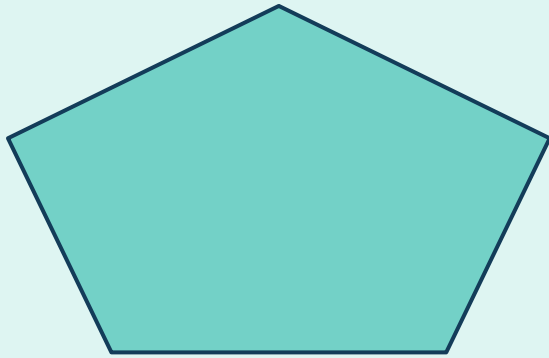
Add the pieces—or surround and subtract.

Big idea: Use shapes whose area formulas you already know.

What makes a polygon?

Check the sides, connections, and enclosed region.

ONE EXAMPLE



A pentagon

five straight sides and five vertices

THREE RULES TO CHECK

- 1 The figure is closed.
- 2 Every side is a straight line segment.
- 3 The sides connect without crossing.

EXAMPLES OF POLYGONS



triangle



quadrilateral

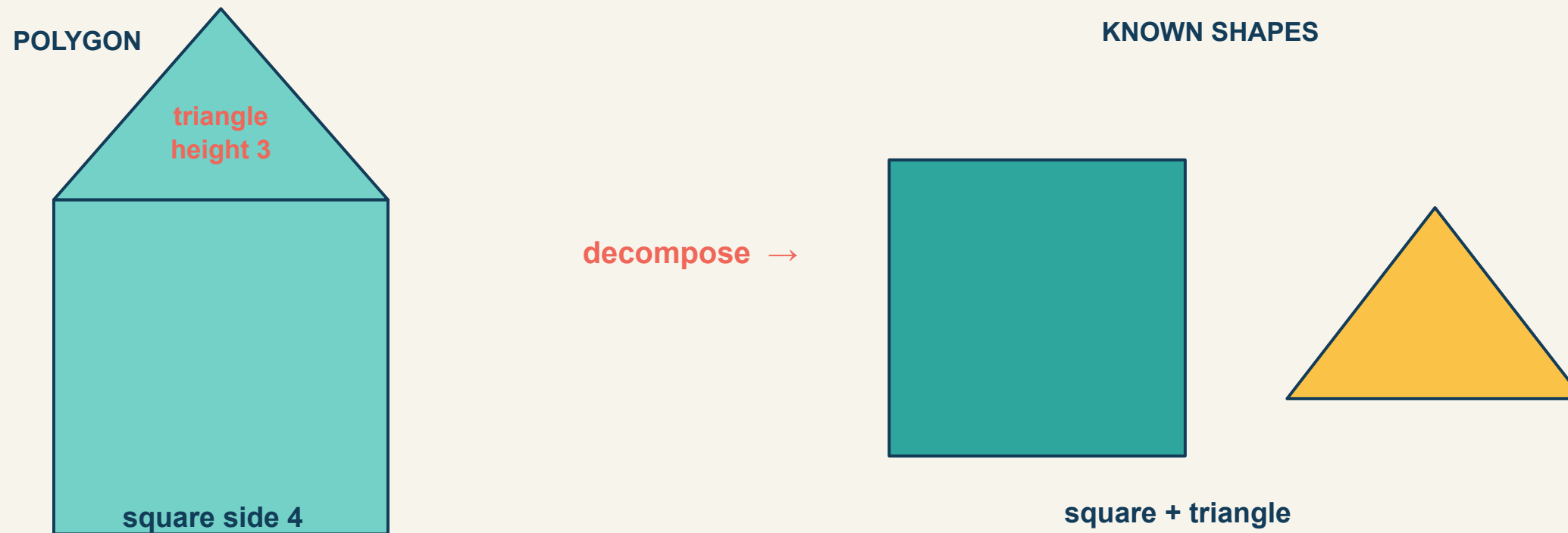


hexagon

Polygons can be regular or irregular.

Find polygon area with known shapes

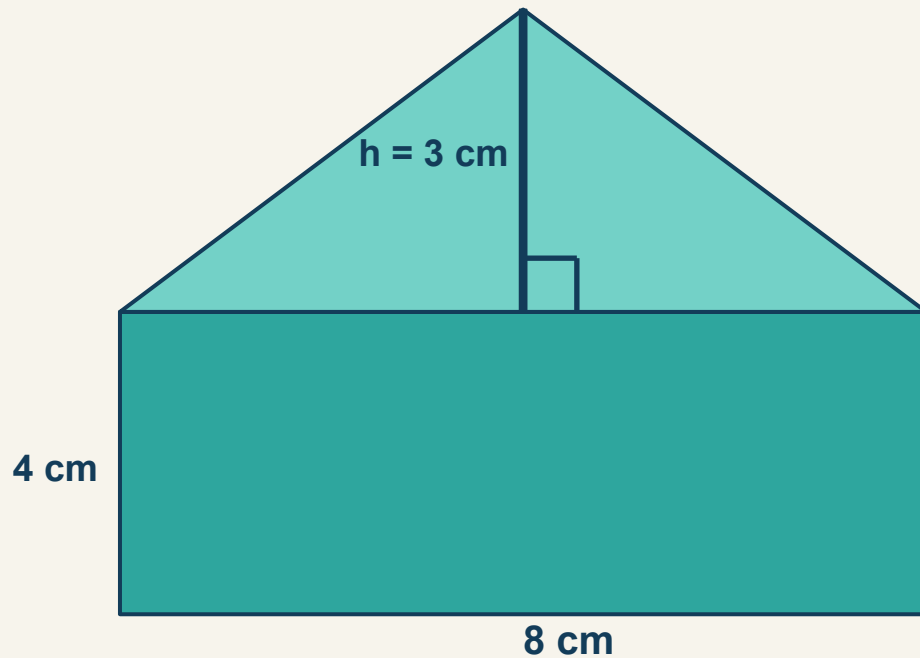
Decompose the polygon into pieces you know how to measure.



Add the areas of non-overlapping pieces. Another option is to surround the polygon and subtract the extra parts.

Example 1 — Try it first

A polygon is made from an 8 cm by 4 cm rectangle and a triangle with base 8 cm and height 3 cm. What is its area?



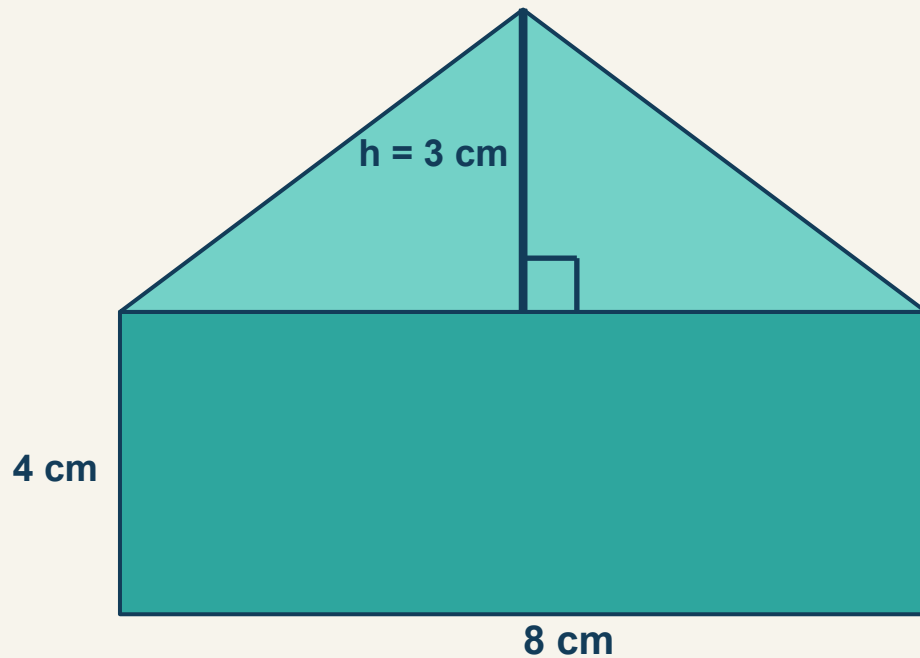
YOUR TURN

**Find the area of each piece.
Then combine the areas.**

Start by decomposing the polygon.

Example 1 — Step 1: Find the rectangle

A polygon is made from an 8 cm by 4 cm rectangle and a triangle with base 8 cm and height 3 cm. What is its area?



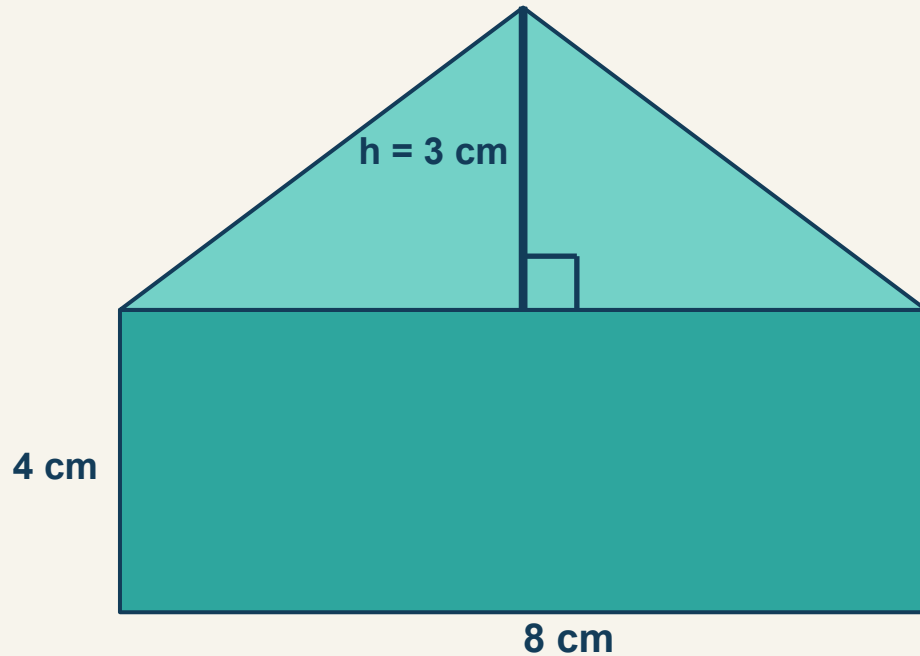
STEP 1: FIND THE RECTANGLE

Rectangle area:
 $8 \times 4 = 32 \text{ cm}^2$

Next: find the triangle.

Example 1 — Step 2: Combine the pieces

A polygon is made from an 8 cm by 4 cm rectangle and a triangle with base 8 cm and height 3 cm. What is its area?



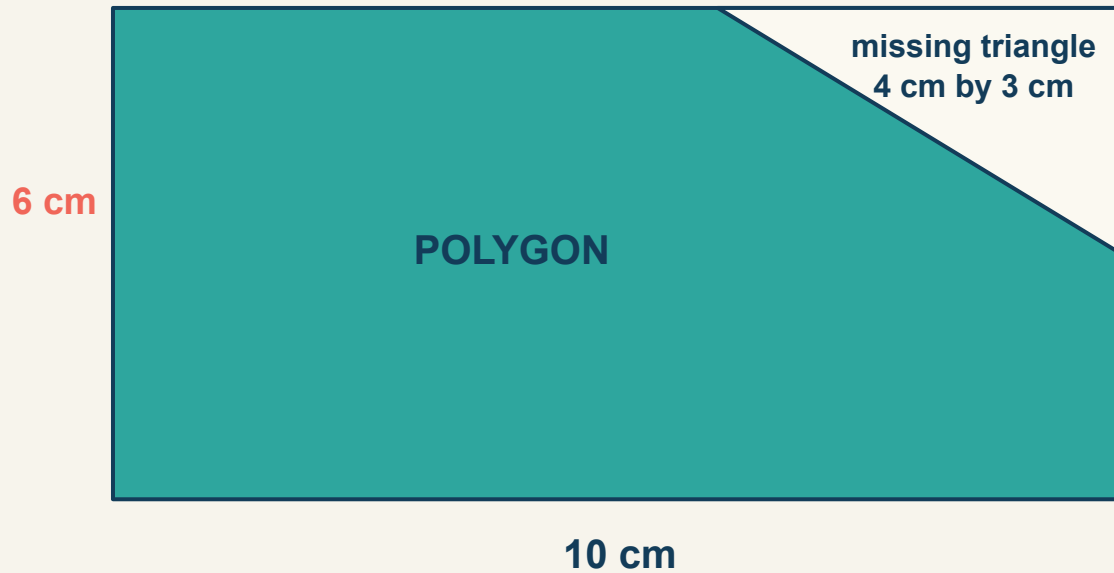
STEP 2: FIND THE TOTAL

Triangle area:
 $\frac{1}{2} \times 8 \times 3 = 12 \text{ cm}^2.$

Total area:
 $32 + 12 = 44 \text{ cm}^2.$
The polygon's area is 44 cm².

Example 2 — Try it first

A teal polygon is made from a 10 cm by 6 cm rectangle by cutting off a right-triangle corner with base 4 cm and height 3 cm. Find the polygon's area.

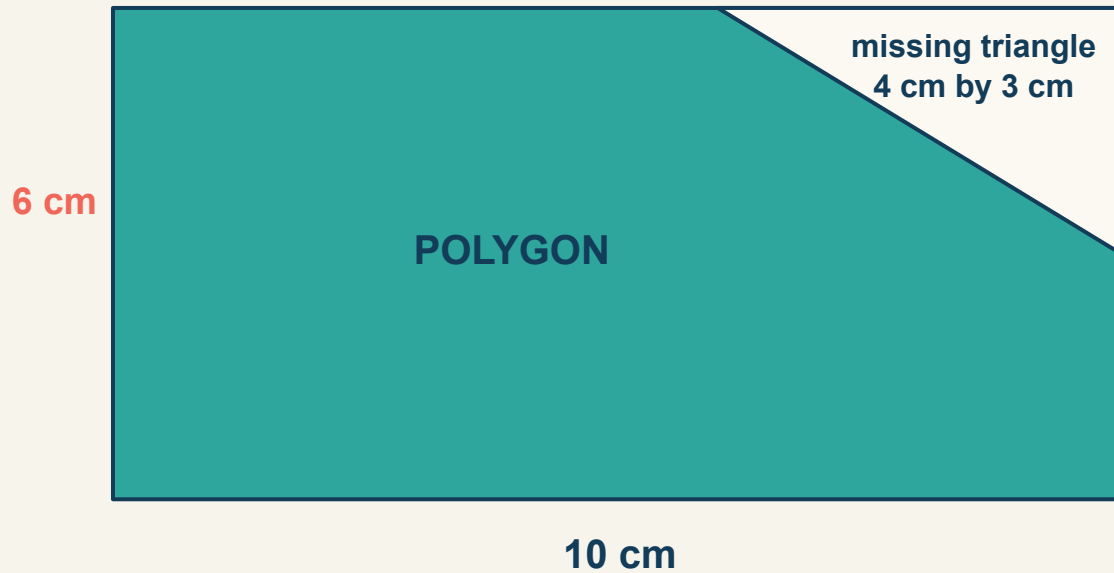


YOUR TURN

Find the rectangle, then subtract the missing triangle.

Example 2 — Step 1: Find both areas

A teal polygon is made from a 10 cm by 6 cm rectangle by cutting off a right-triangle corner with base 4 cm and height 3 cm. Find the polygon's area.



STEP 1: FIND BOTH AREAS

Rectangle:

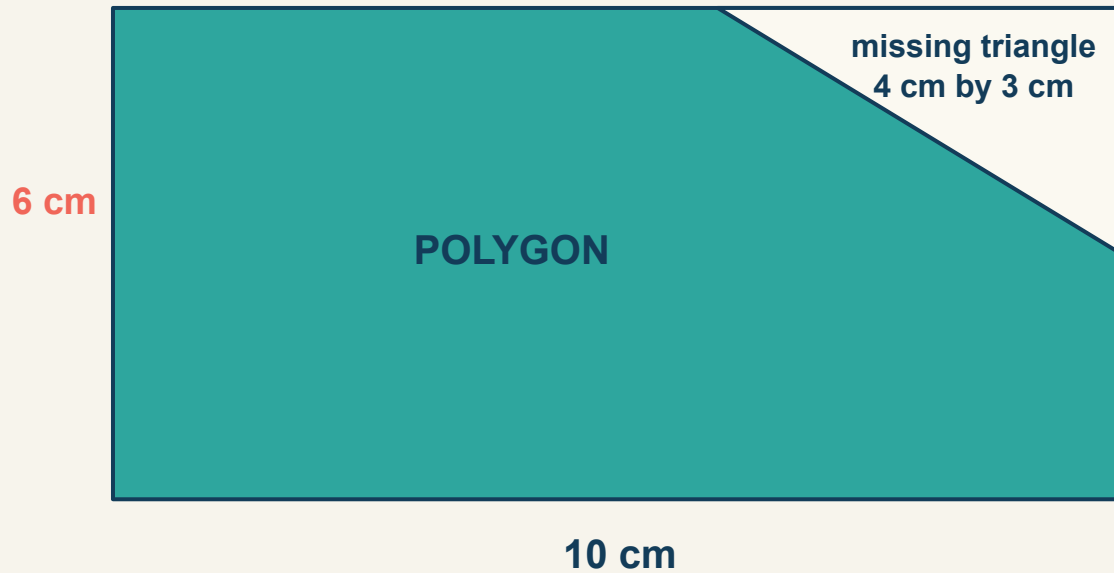
$$10 \times 6 = 60 \text{ cm}^2$$

Missing triangle:

$$\frac{1}{2} \times 4 \times 3 = 6 \text{ cm}^2$$

Example 2 — Solution

A teal polygon is made from a 10 cm by 6 cm rectangle by cutting off a right-triangle corner with base 4 cm and height 3 cm. Find the polygon's area.



SOLUTION

Polygon area:
 $60 - 6 = 54 \text{ cm}^2$

The polygon's area is
54 cm².

Common mistakes to avoid

Check the figure and your pieces before calculating.

A

The figure has a curved side or is not closed.

That figure is not a polygon. Polygons are closed and use straight sides.

check closed

check straight

check crossings

B

The pieces overlap—or leave a gap.

Areas should cover the polygon exactly once.

Use the words
decompose, add, subtract,
and square units.

A clear diagram makes the area strategy easier to verify.

Takeaway + exit ticket

Polygon area comes from combining areas of familiar shapes.

1

Recognize the polygon

Closed, straight sides, and no crossings.

2

Choose a strategy

Decompose and add, or surround and subtract.

3

Show each area calculation

Label the pieces and write square units.

EXIT TICKET

An irregular polygon is split into a 6 m by 5 m rectangle and a triangle with base 6 m and height 2 m. Find the total area and explain your strategy.

Bonus: sketch a different decomposition that gives the same area.



THANK YOU

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