Day 13: Complex Shapes and Scales

Warm-Up:
Find the perimeter of shapes below
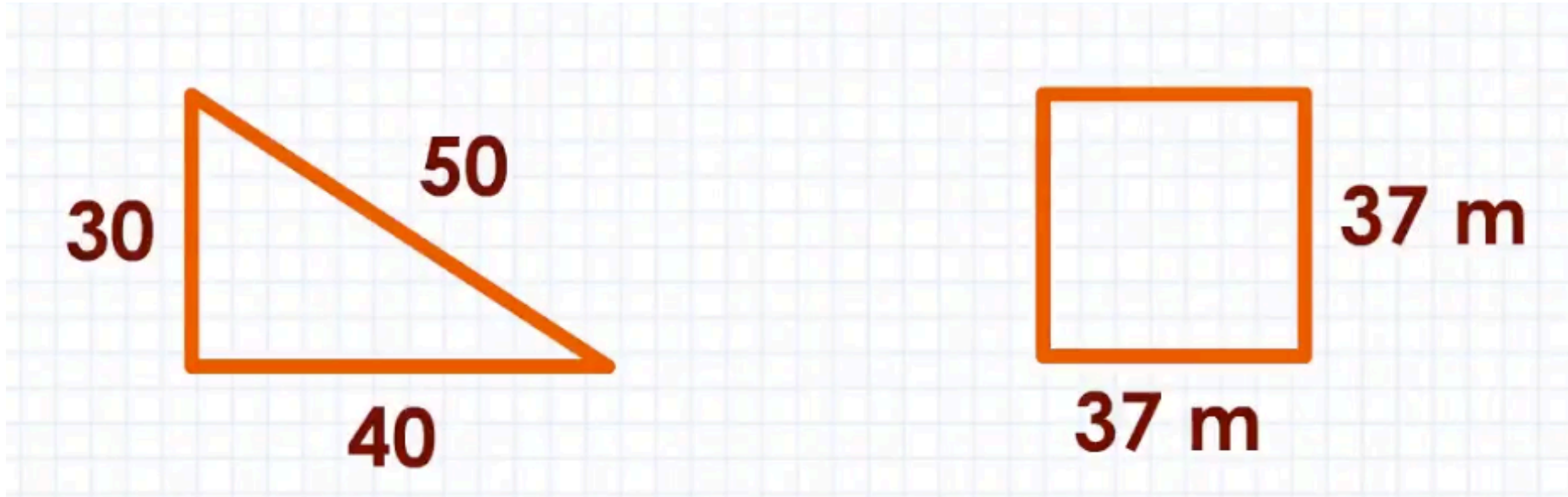
Key Understanding

Complex geometrical figures can be divided into smaller shapes.

Complex Shapes

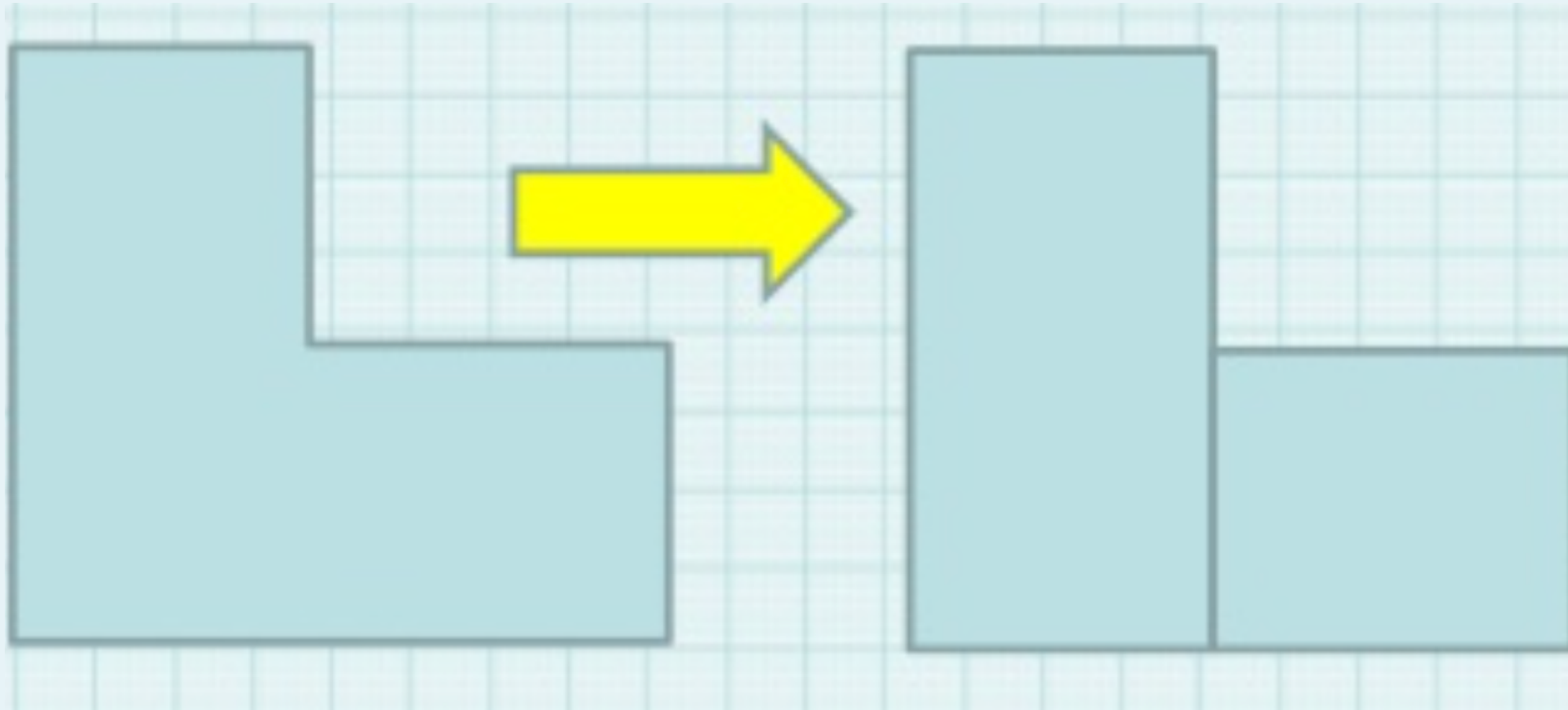Composite plane figures are made up of two or more 2-D shapes.

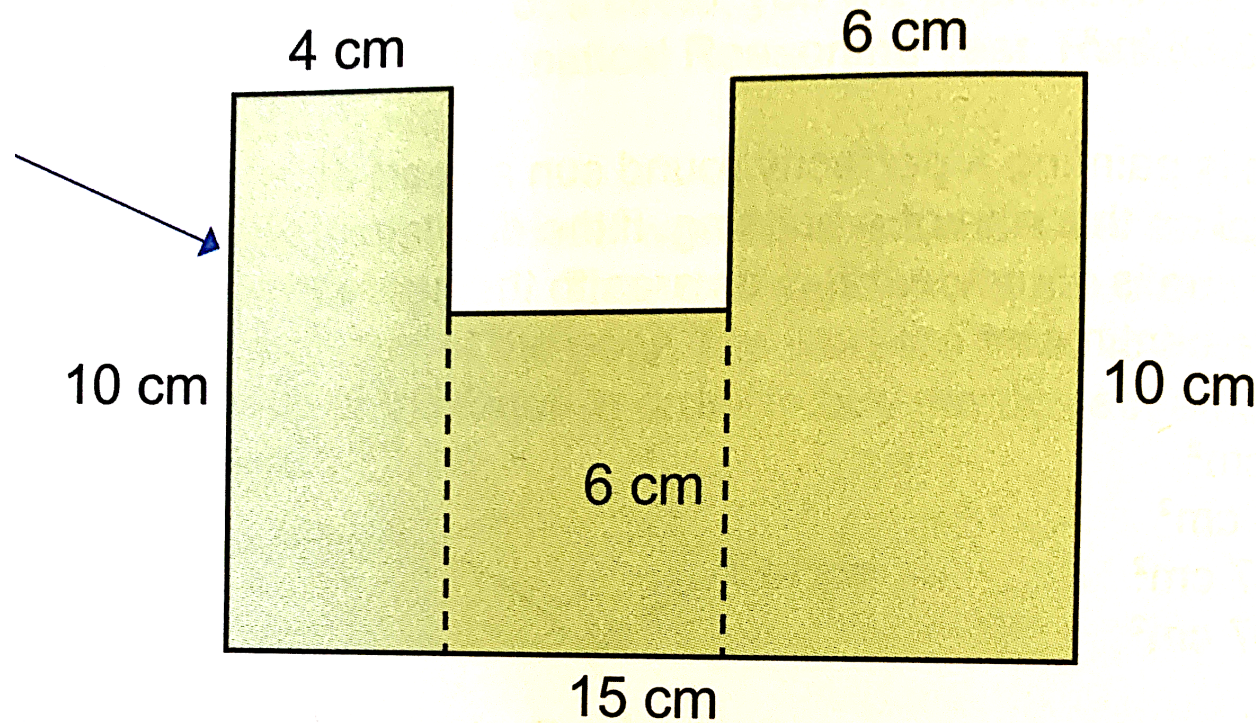The perimeter of a composite plane figure is the distance around the entire figure.

It can be calculated by adding the lengths of the exterior side.

To find the area of a complex figure, divide the figure into simple shapes
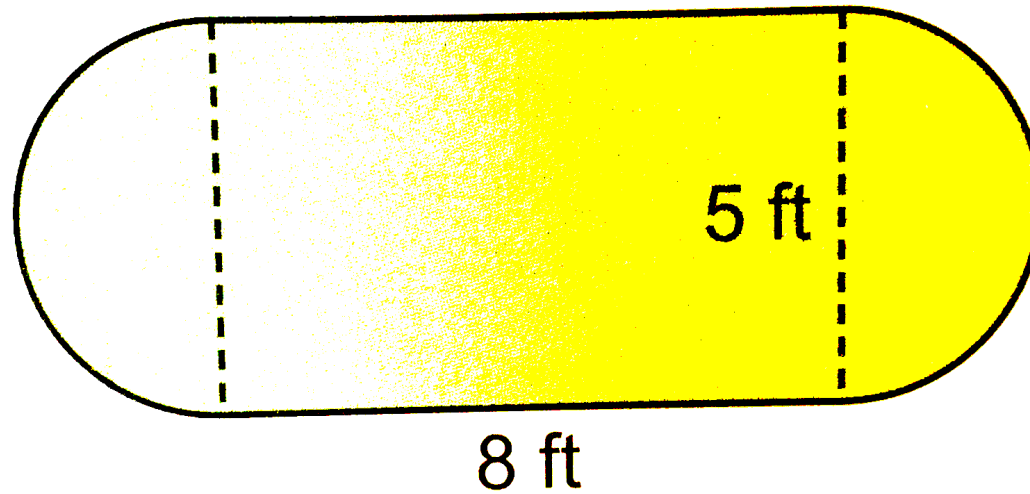
What is the perimeter of the figure?

4 cm

6 cm

10 cm

10 cm

6 cm

15 cm

$A = 4 \times 10$
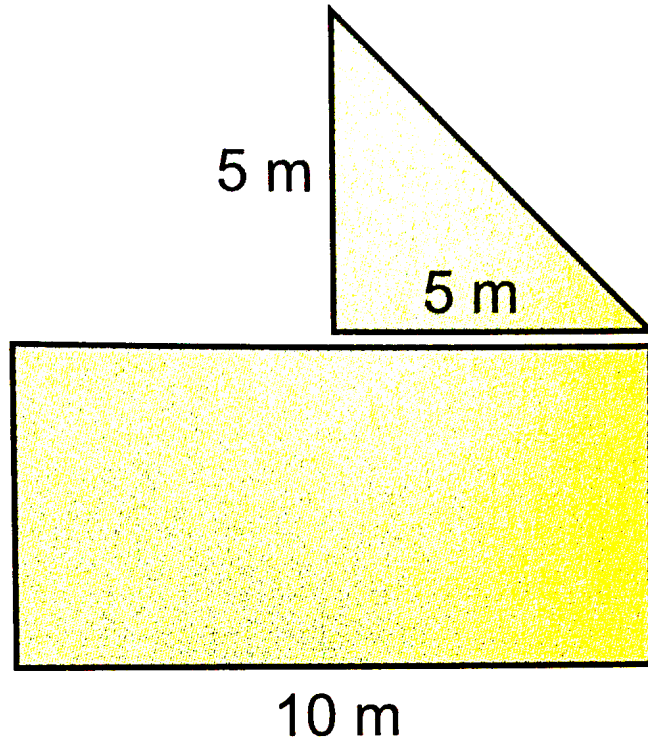$A = 40$

$A = 5 \times 6$
$A = 30$

$A = 6 \times 10$
$A = 60$

$A = 40 + 30 + 60 = 130$ square centimeters

Kirsten sewed a tablecloth in the shape shown below. What is the area of her tablecloth in square feet?

5 ft

8 ft

A. 26

B. 40

C. 47.9

D. 59.625

A kindergarten student designs the following shape using blocks on the carpet floor.
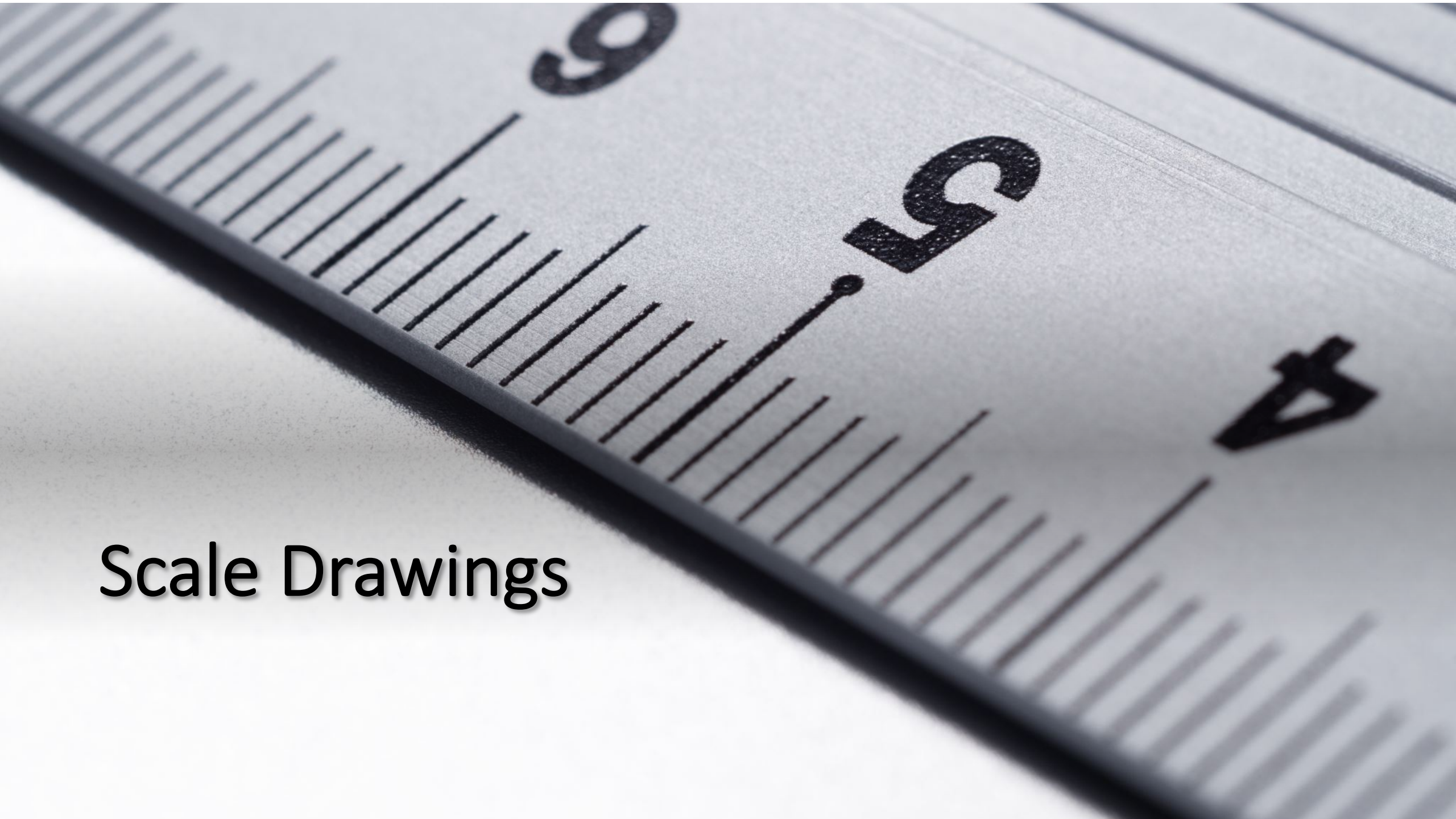

What is the area of the triangular portion of the figure?

A. 12.5 m²
B. 25 m²
C. 50 m²
D. 59.63 m²

If the width of the rectangle is 5 m, what is the total area of the figure above?

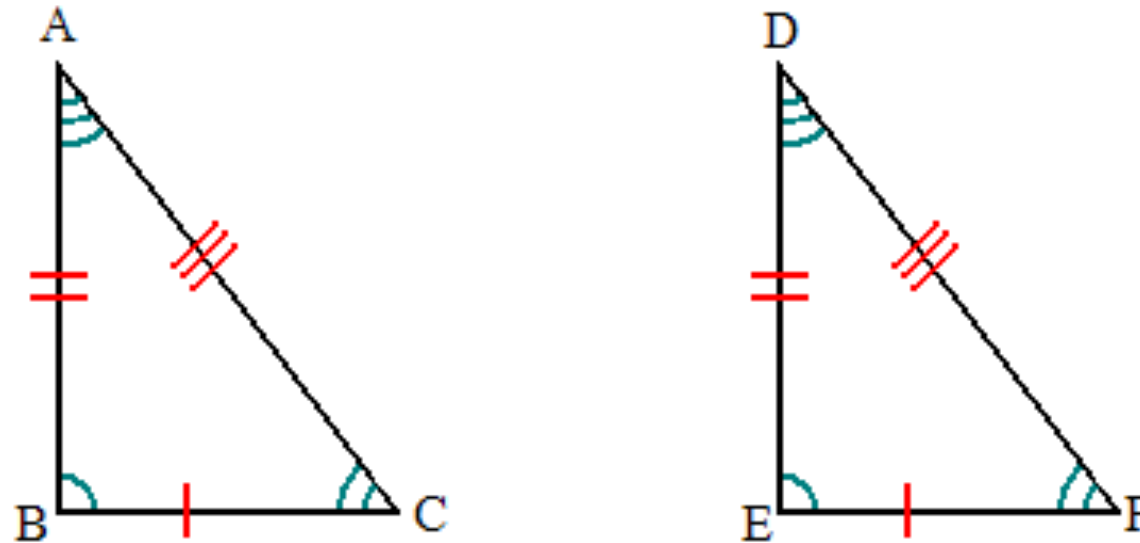A. 5 m²
B. 12.5 m²
C. 50 m²
D. 62.5 m²

Scale Drawings

Congruent Figures

- Two figures that are exactly the same and have corresponding angles and sides
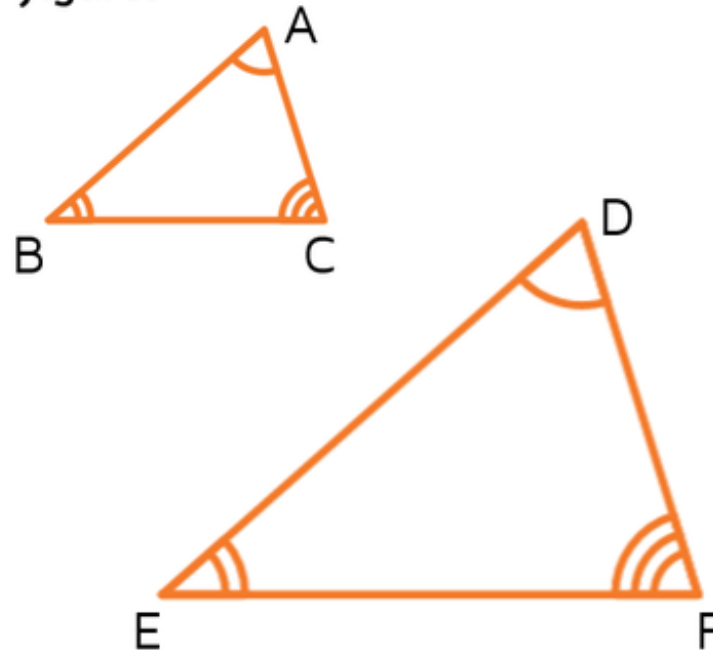
Similar Figures

- Two figures that have equal angles but the lengths of their sides are proportional

The corresponding sides of similar figures are **proportional**.

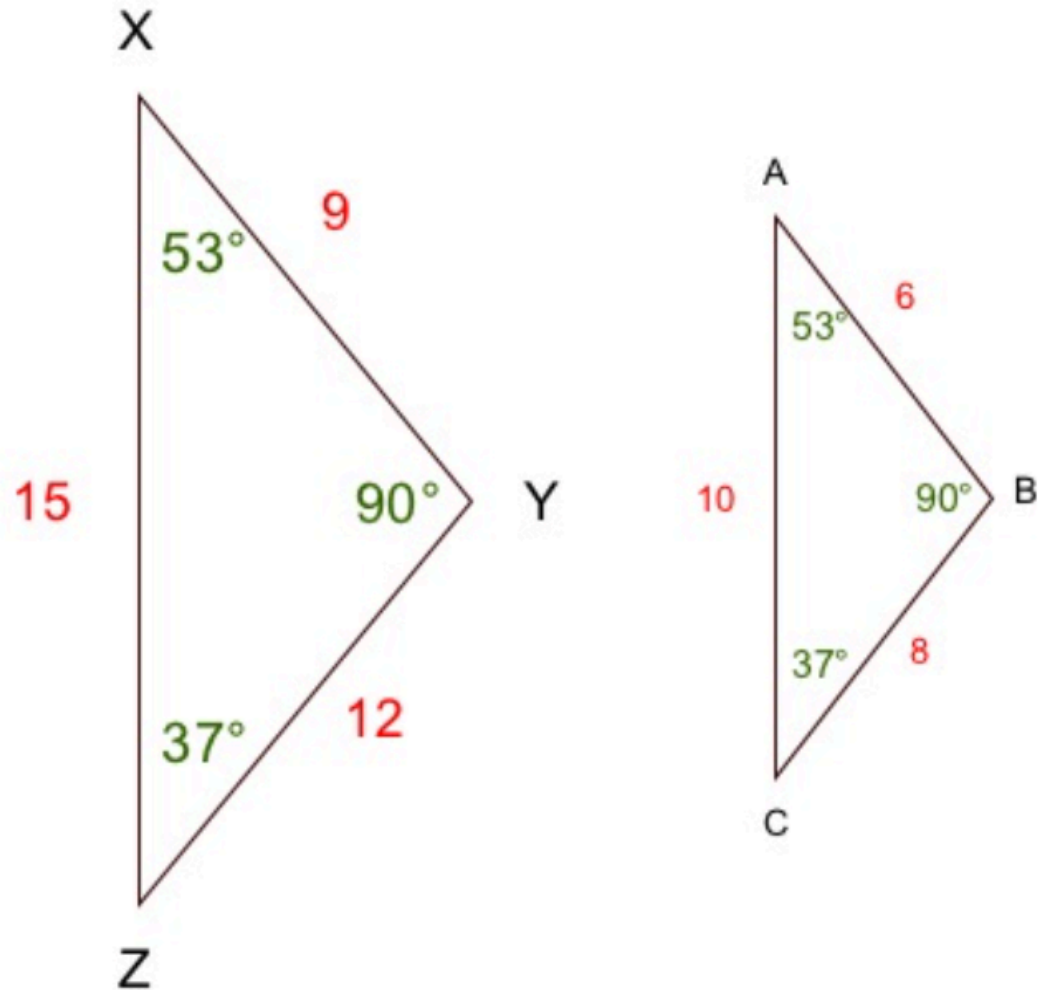$$\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$$

The ratios of the corresponding sides are the same.

These Figures Are Similar

X

9

53°

15

90° Y

37°

12

Z

A

6

53°

10

90° B

37°

8

C

The symbol ~ means "*is similar to*".

To the right,

ΔABC ~ ΔXYZ.

Scale Drawings

- Scale drawings, involving maps and blueprints, are similar figures.
- A scale factor is the ratio of a dimension in a scale drawing to the corresponding dimension in an actual drawing or reality.
- Ratios can be used to determine the scale factor of a drawing.
- Proportions can be used to determine an unknown dimension in an actual or scale drawing, given the scale factor and the corresponding dimension.

Scale	Interpretation
1:20	1 unit on the drawing is 20 units.
1 cm: 1 m	1 cm on the drawing is 1 m.
$\frac{1}{4}$ in. = 1 ft	$\frac{1}{4}$ in. on the drawing is 1 ft.

Reading Math

The scale a:b is read "a to b." For example, the scale 1 cm:3 ft is read "one centimeter to three feet."

A. The length of an object on a scale drawing is 2 cm, and its actual length is 8 m. The scale is 1 cm: ___ m. What is the scale?

$$\frac{1 \text{ cm}}{x \text{ m}} = \frac{2 \text{ cm}}{8 \text{ m}}$$ *Set up proportion using* $\frac{scale\ length}{actual\ length}$ *.*
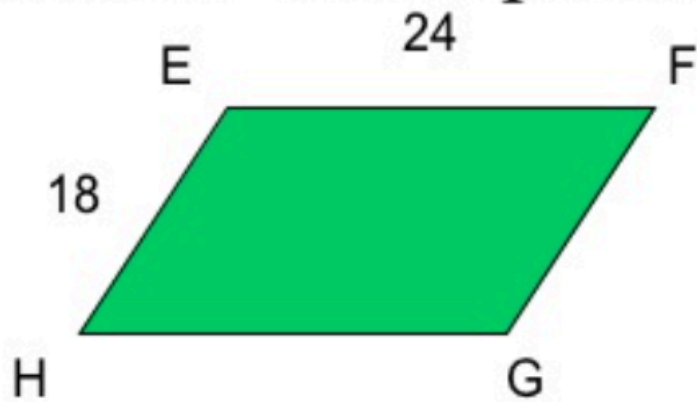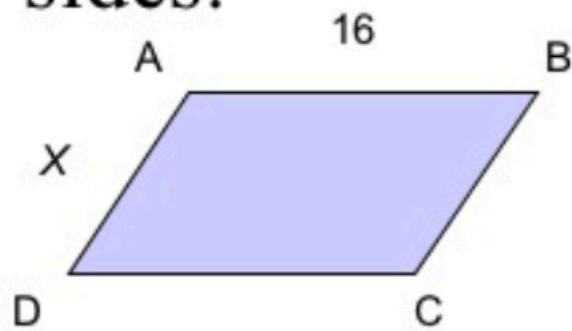
$1 \cdot 8 = x \cdot 2$ *Find the cross products.*

$8 = 2x$

$4 = x$ *Solve the proportion.*

The scale is 1 cm:4 m.

Example Problems

- Parallelogram ABCD ~ parallelogram EFGH. Find the value of X.
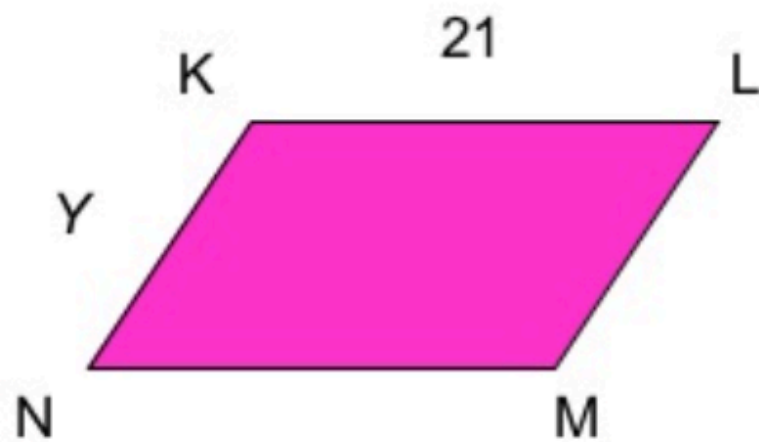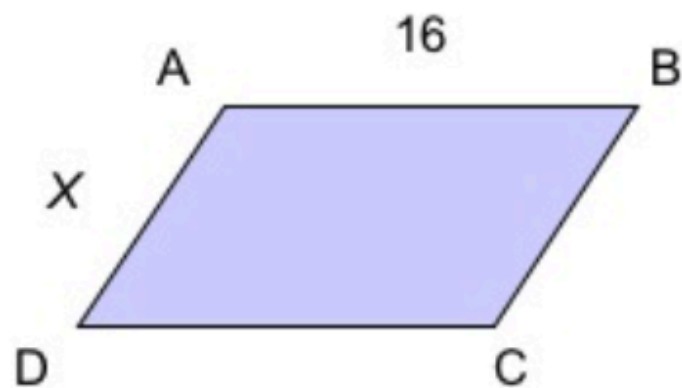
- Hint: Write a proportion for corresponding sides.

Side AB corresponds to side EF. So x/18 = 16/24

Write the CROSS PRODUCT.

Divide and Simplify to SOLVE for X. $X = 12$

Try This…

- Parallelogram KLMN is similar to parallelogram ABCD in the previous example. Find the value of Y.

- Remember, $X = 12$ on Parallelogram ABCD.

Homework!

Active Assignments

NEW Week 13

To begin, select an activity from All Activities

Select New Activity ➡

📖 **All Activities** | Completion: 0/5 (0%) | No Due Date