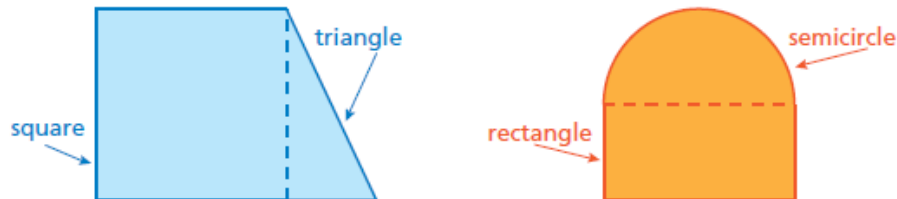


Indicator 24 Class Notes by Mrs. Joshi

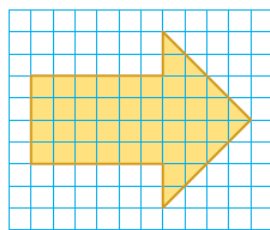
Drawing Polygons and Length of the Side-(6.G.3)

A **composite figure** is made up of triangles, squares, rectangles, semicircles, and other two-dimensional figures. Here are two examples.



To find the perimeter of a composite figure, find the distance around the figure.

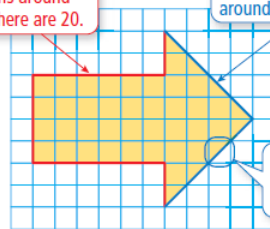
EXAMPLE 1 Finding a Perimeter Using Grid Paper



Each square on the grid paper is 1 square inch. Estimate the perimeter of the arrow.

Count the number of grid square lengths around the arrow. There are 20.

Count the number of diagonal lengths around the arrow. There are 8.



1 in.
1 in.
Estimate the diagonal length to be 1.5 in.

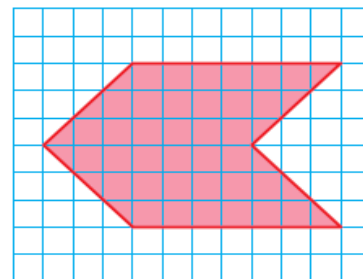
Length of 20 grid square lengths: $20 \times 1 = 20$ inches

Length of 8 diagonal lengths: $8 \times 1.5 = 12$ inches

∴ The perimeter is about $20 + 12 = 32$ inches.

On Your Own

1. Each square on the grid paper is 1 square foot. Estimate the perimeter of the red figure.
2. Measure the diagonal of a square whose area is exactly one square foot. Is the diagonal length closer to 1.5 feet or 1.4 feet? Explain.



Indicator 24 Class Notes by Mrs. Joshi

Plot a quadrilateral with vertices $A(3, 2)$, $B(8, 2)$, $C(8, 6)$, $D(3, 6)$ on the coordinate plane. Then find the area of the quadrilateral.

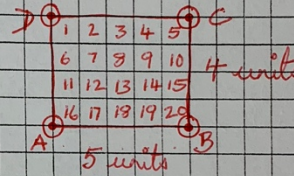
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Area of a rectangle

$$= \text{length} \times \text{width}$$

$$= 5 \times 4$$

$$= 20 \text{ units}^2$$



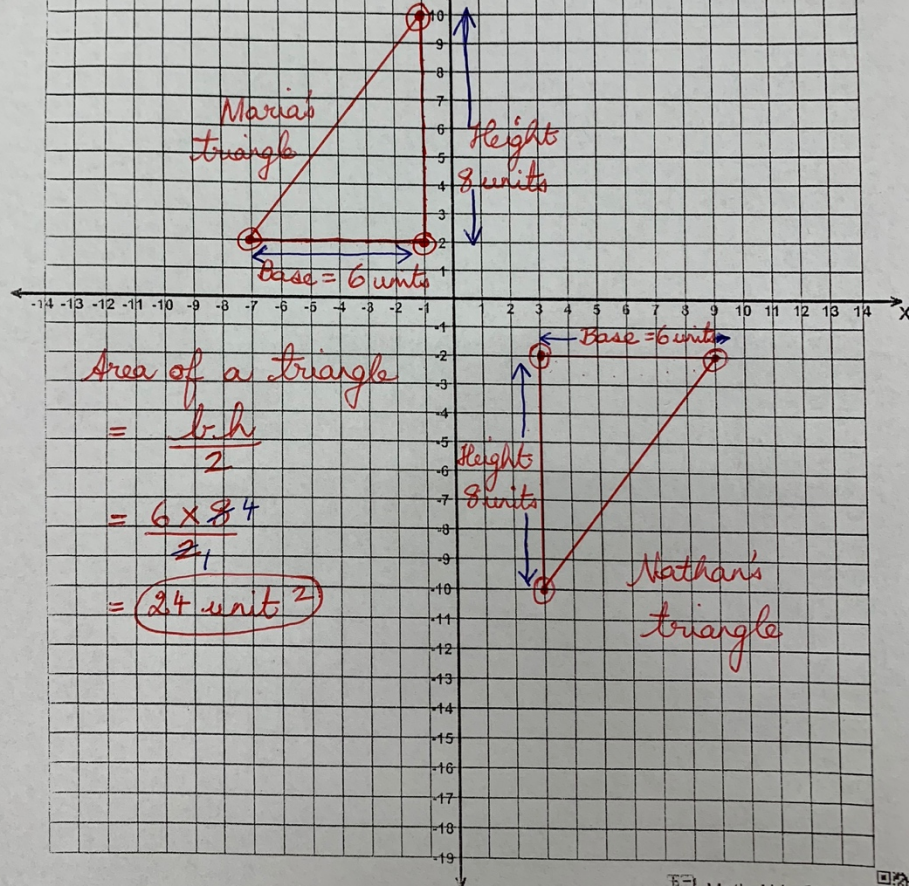
You may also count the number of square units inside the rectangle and you will get 20 square units as your area.



Indicator 24 Class Notes by Mrs. Joshi

Maria created a triangle on a coordinate plane using coordinates $(-1, 2)$, $(-1, 10)$, $(-7, 2)$. Nathan created a triangle on the same coordinate plane using coordinates $(3, -2)$, $(9, -2)$, $(3, -10)$. Do their triangles have the same area? Explain why.

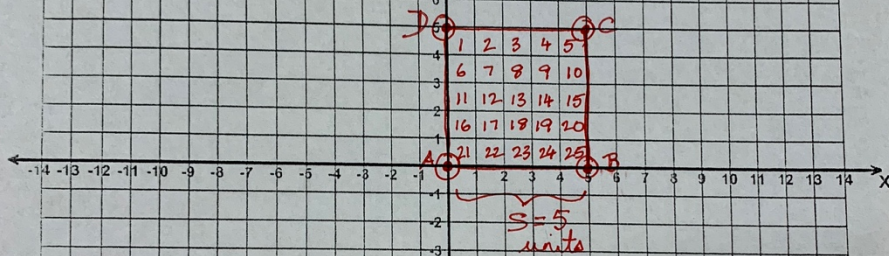
Mrs. Joshi



Indicator 24 Class Notes by Mrs. Joshi

Plot a square with vertices $A(0,0)$, $B(5,0)$, $C(5,5)$, and $D(0,5)$ on the coordinate grid. Then find the area of the square.

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Area of a square $= s^2$

$$\begin{aligned} \text{or } & 5 \times 5 \\ & 5 \times 5 \\ & = 25 \text{ unit}^2 \end{aligned}$$

OR

You can count the number of square units inside the shape and you will get 25 square units as the area.



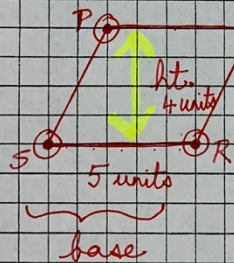
Indicator 24 Class Notes by Mrs. Joshi

Plot a quadrilateral with vertices $P(-7, -3)$, $Q(-2, -3)$, $R(-4, -7)$ and $S(-9, -7)$ on the coordinate plane. Then find the area of the quadrilateral.

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Area of a parallelogram
= base \times height

$$\begin{aligned} A &= bh \\ &= 5 \times 4 \\ &= 20 \text{ unit}^2 \end{aligned}$$



OR You may count the square units inside the parallelogram. There are 16 full squares and 8 half squares (which 2 half squares = 1 full square). \square

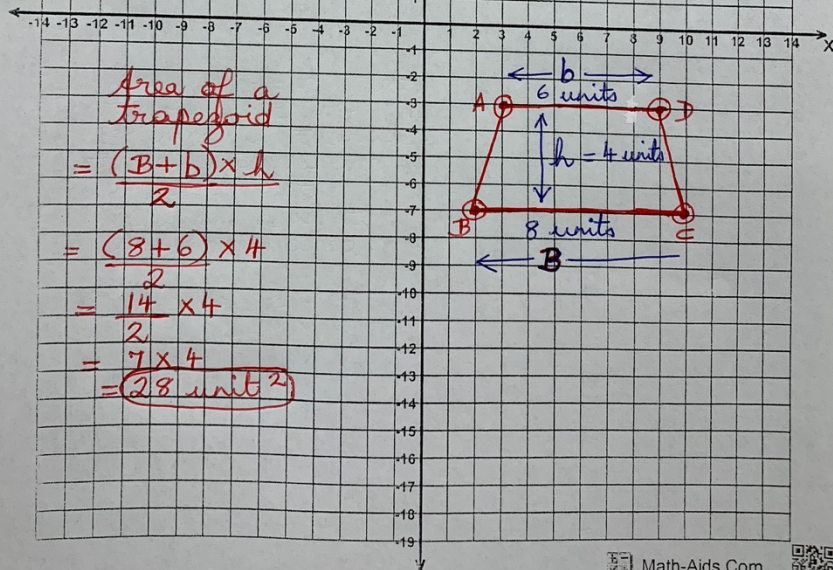
$$\begin{aligned} 16 \text{ full} + 8 \text{ half} &= \\ 16 \text{ full} + 4 \text{ full} &= 20 \text{ square units} \end{aligned}$$



Indicator 24 Class Notes by Mrs. Joshi

Plot a quadrilateral with vertices $A(3, -3)$, $B(2, -7)$, $C(9, -3)$, $D(10, -7)$ on the coordinate plane. Then find the area of the quadrilateral.

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Indicator 24 Class Notes by Mrs. Joshi

EXAMPLE

Find Perimeter of a Composite Figure

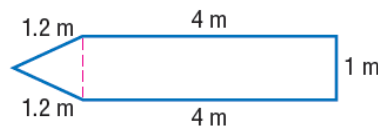
2 Find the perimeter of the figure.

Add all of the distances around the composite figure.

$$P = 1.2 + 1.2 + 4 + 1 + 4 \quad \text{Sum of all sides}$$

$$P = 11.4 \text{ m} \quad \text{Add.}$$

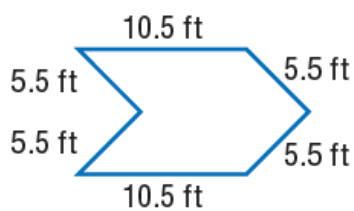
The perimeter is 11.4 meters.



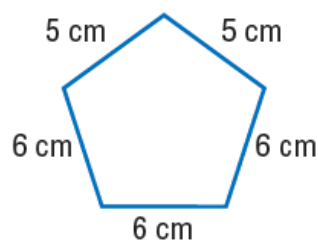
CHECK Your Progress

Find the perimeter of each figure.

b.



c.



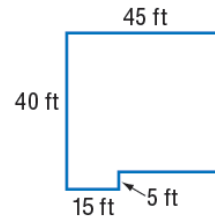
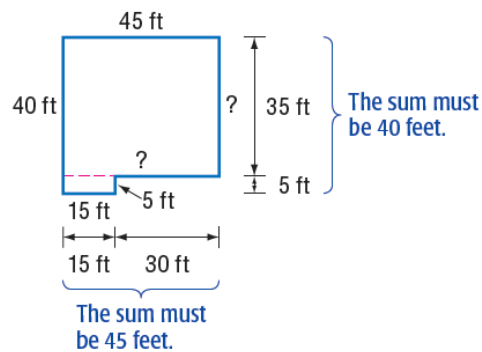
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EXAMPLE

Find Missing Measures to Find Perimeter

4 Find the perimeter of the figure.

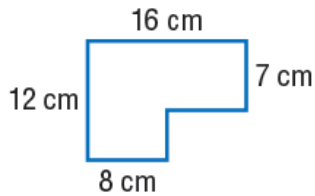
Find the unknown lengths by breaking the figure into two shapes.



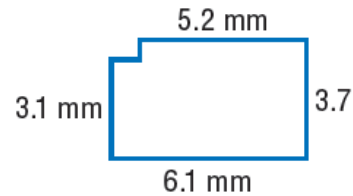
So, the perimeter is $45 + 40 + 15 + 5 + 30 + 35$ or 170 feet.

CHECK Your Progress

e.

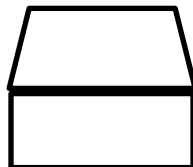


f.



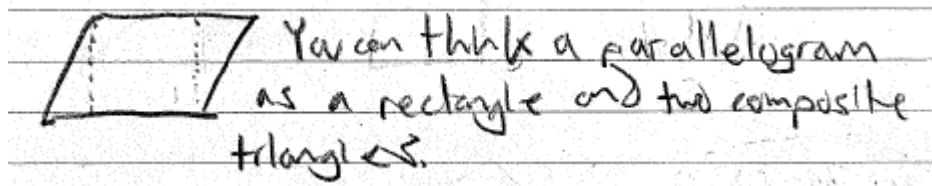
Drawing Polygons and Length of the Side

1. Draw a composite figure formed by a trapezoid and a rectangle.



Indicator 24 Class Notes by Mrs. Joshi

2. Draw a parallelogram. Suppose you can't remember the formula for the area of a parallelogram. Explain how you can think of the parallelogram as a composite figure to find its area.



3. Is the perimeter of a composite figure *greater than*, *less than*, or *equal to* the sum of the perimeters of each figure separately? Explain.

