Measuring Angles

Objectives

1. Find the area of irregular shapes

Perimeter and Area

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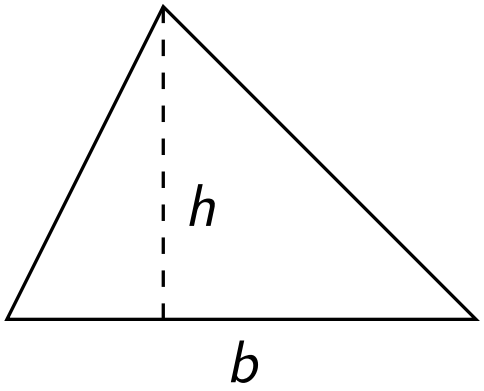
We can find the areas and perimeters of irregular shapes by dividing it into simpler shapes and either adding or subtracting individual areas.

Areas and Perimeters of Common Shapes

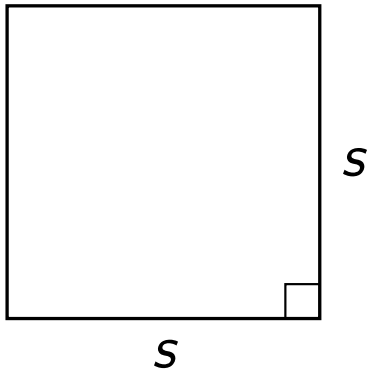
Triangle

$A = \frac{1}{2}bh$



Square

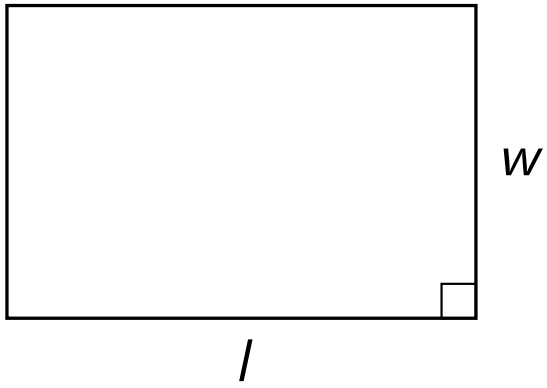
$A = s^2$



Areas and Perimeters of Common Shapes

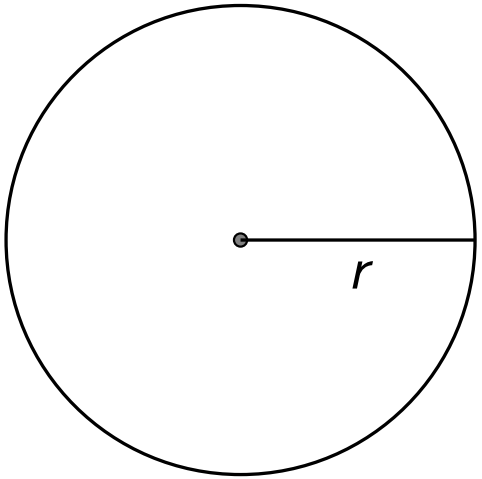
Rectangle

$A = lw$



Circle

$A = \pi r^2; \quad C = 2\pi r$



Example 1

You want to frame a picture that is 5 in by 7 in with a 1-in wide frame.

(a) What is the area of the picture?

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$$\text{Area } = 5\text{in} \times 7\text{in}$$

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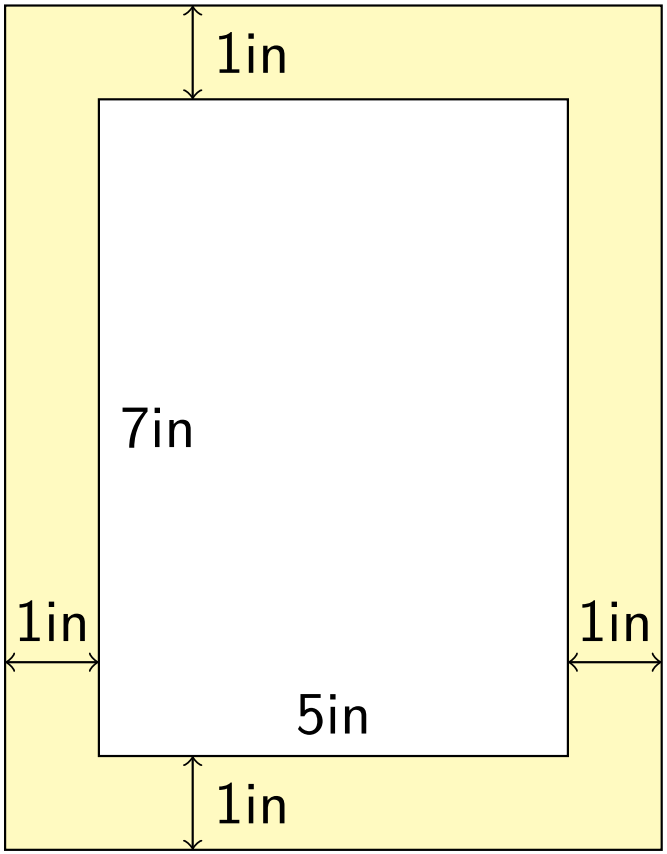
$$\begin{aligned} \text{Area} &= 5\text{in} \times 7\text{in} \\ &= 35 \text{ in}^2 \end{aligned}$$

Example 1

(b) What is the area of the frame?



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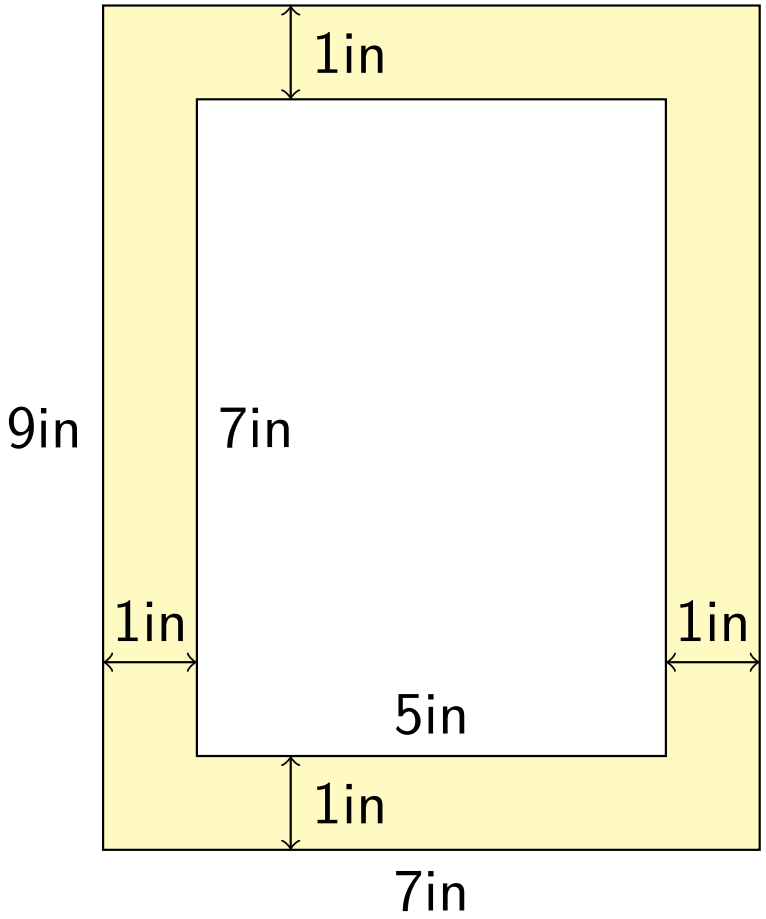

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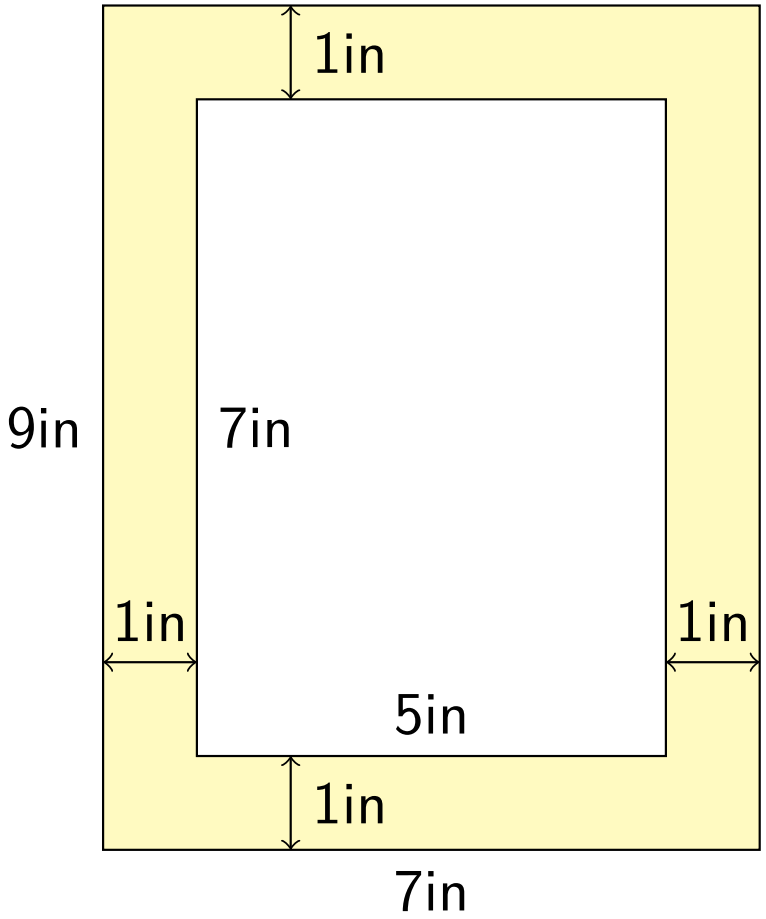

$$\text{Area}_{\text{frame}} = (9 \times 7) - (5 \times 7)$$

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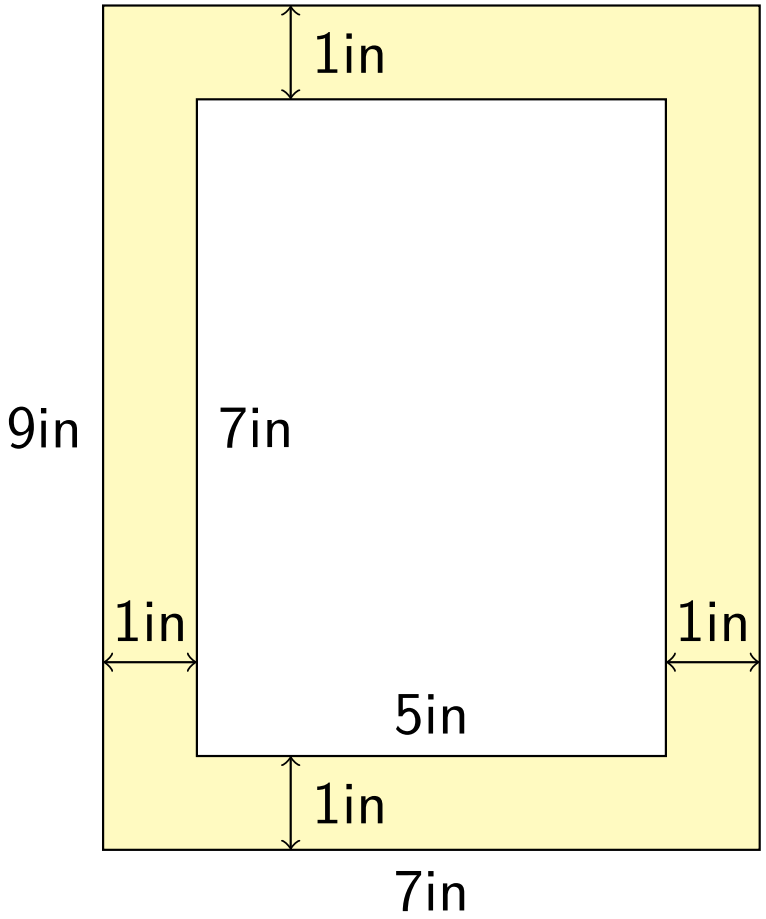

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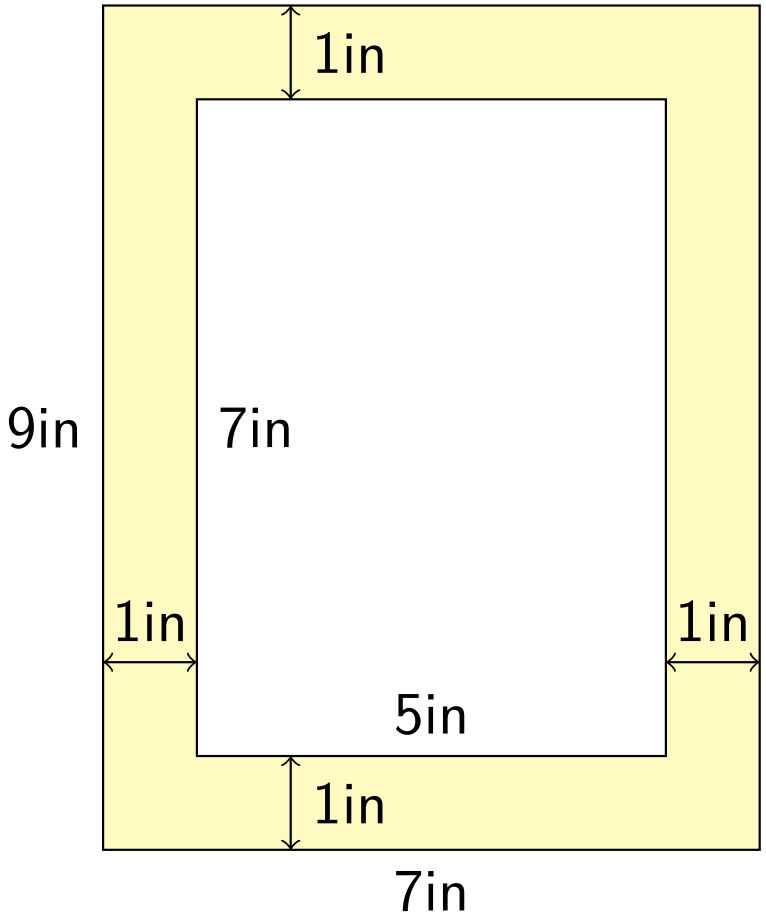

$$\text{Area}_{\text{frame}} = (9 \times 7) - (5 \times 7)$$

$$= 63 - 35$$

$$= 28 \text{ in}^2$$

Example 2

What is the perimeter of $\triangle EFG$ if $E(3, 6)$, $F(3, -2)$, $G(-3, -2)$?

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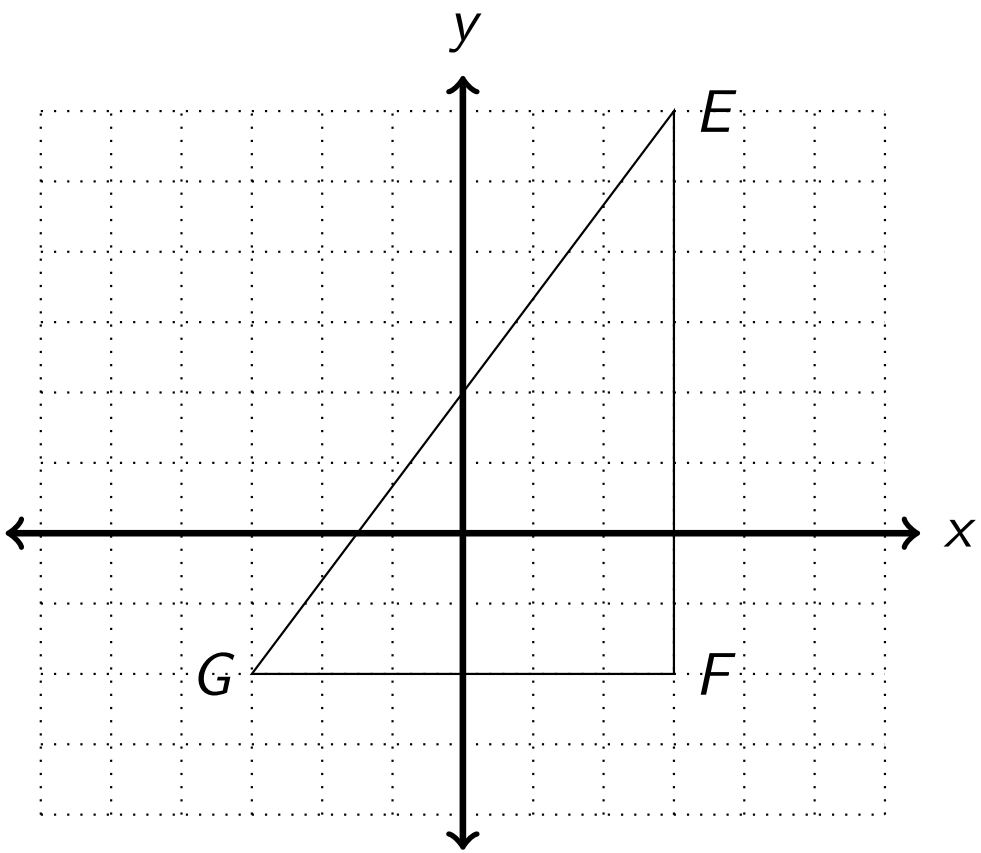

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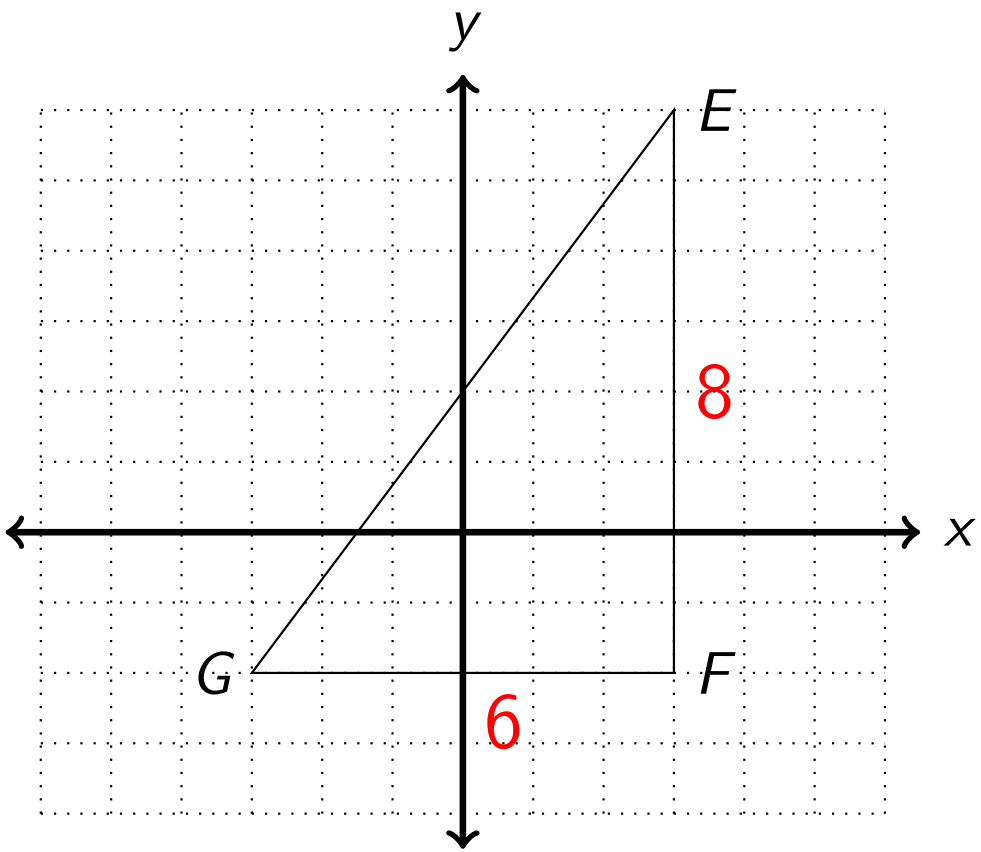

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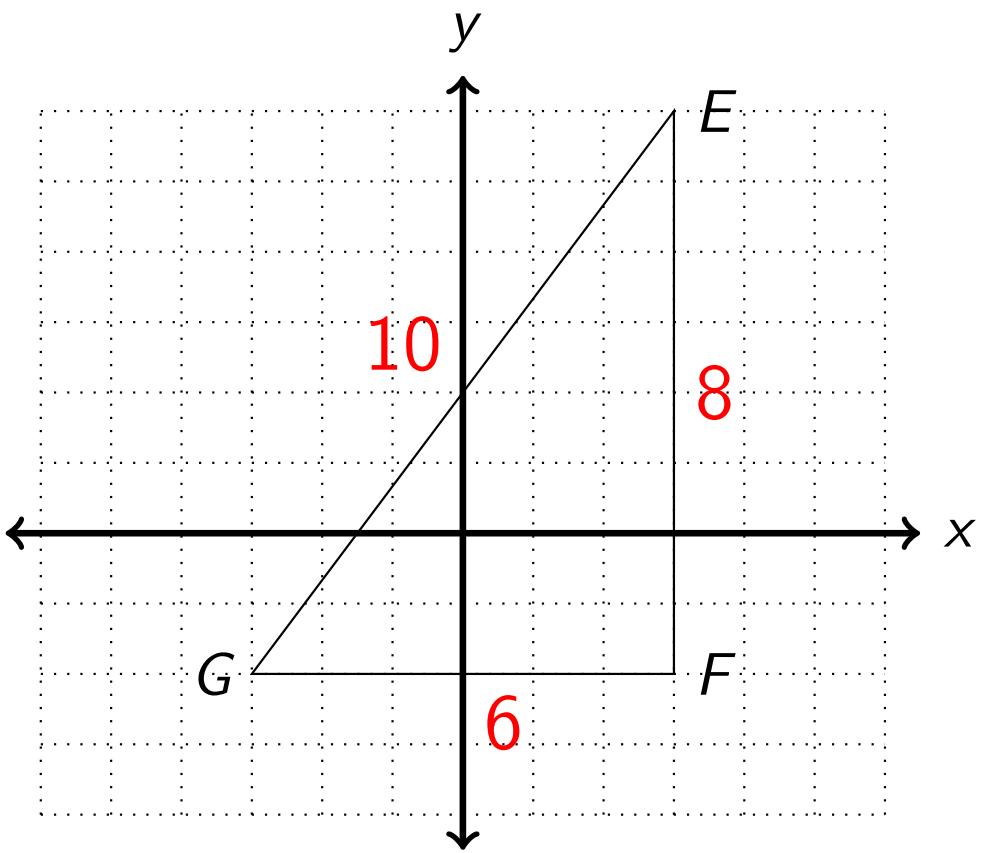

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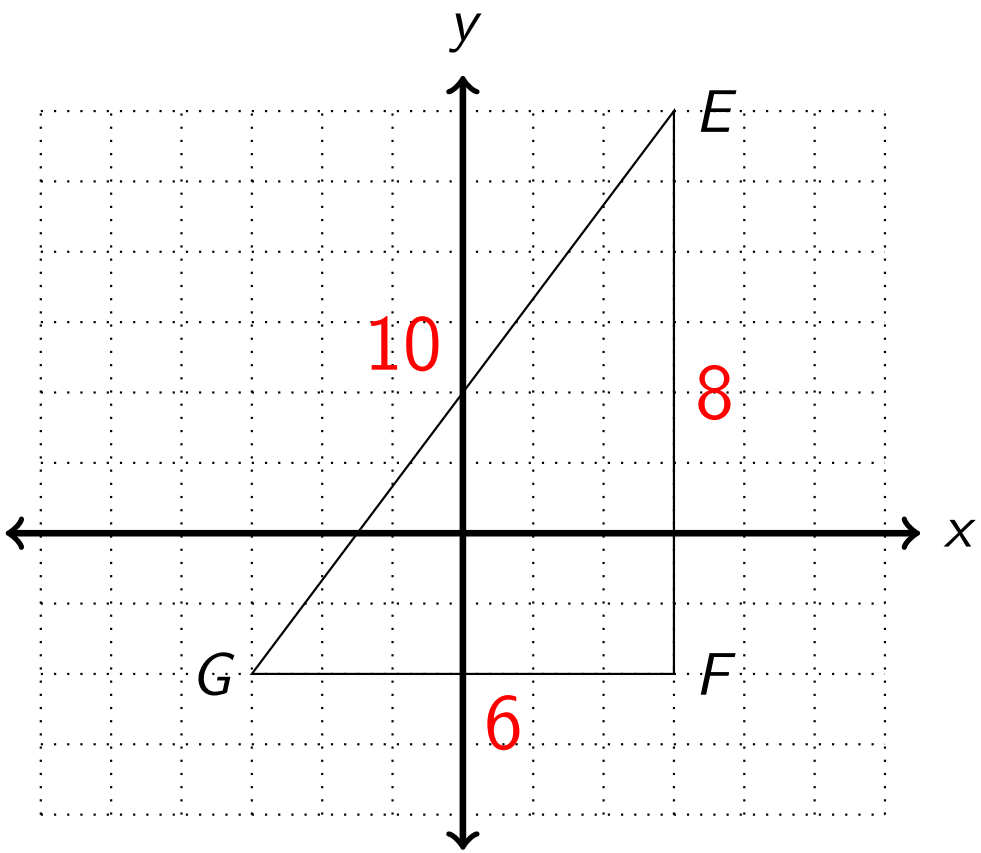

Perim. $= 6 + 8 + 10$

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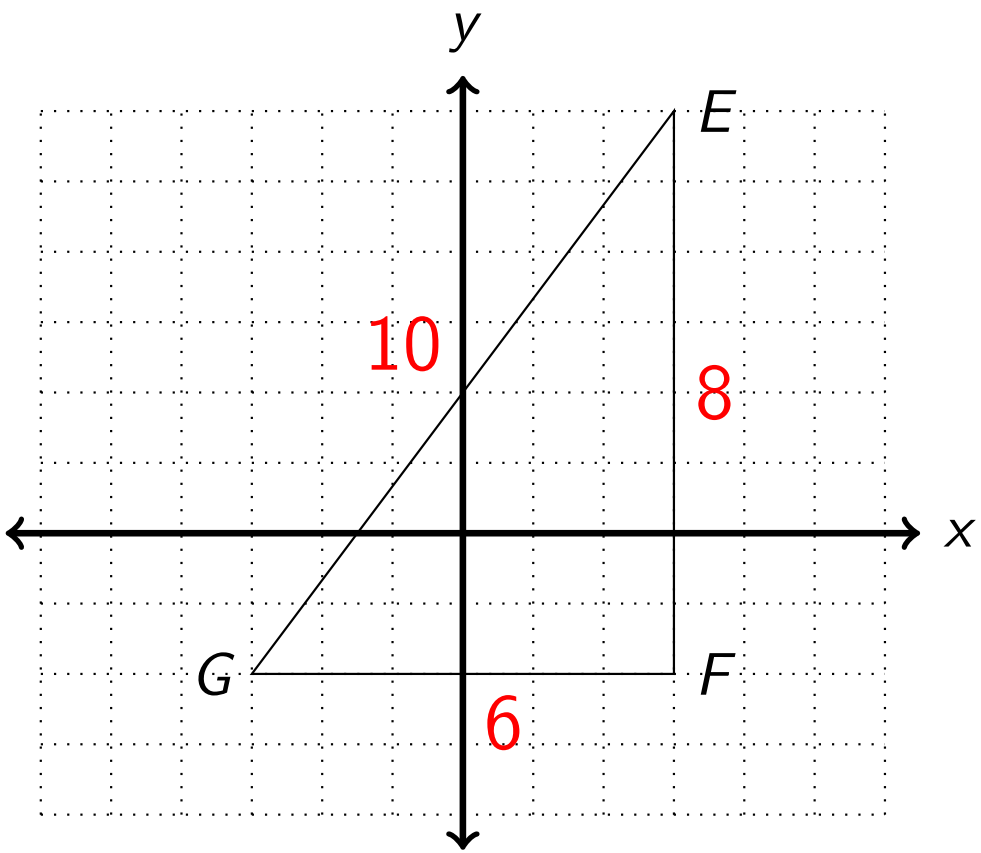


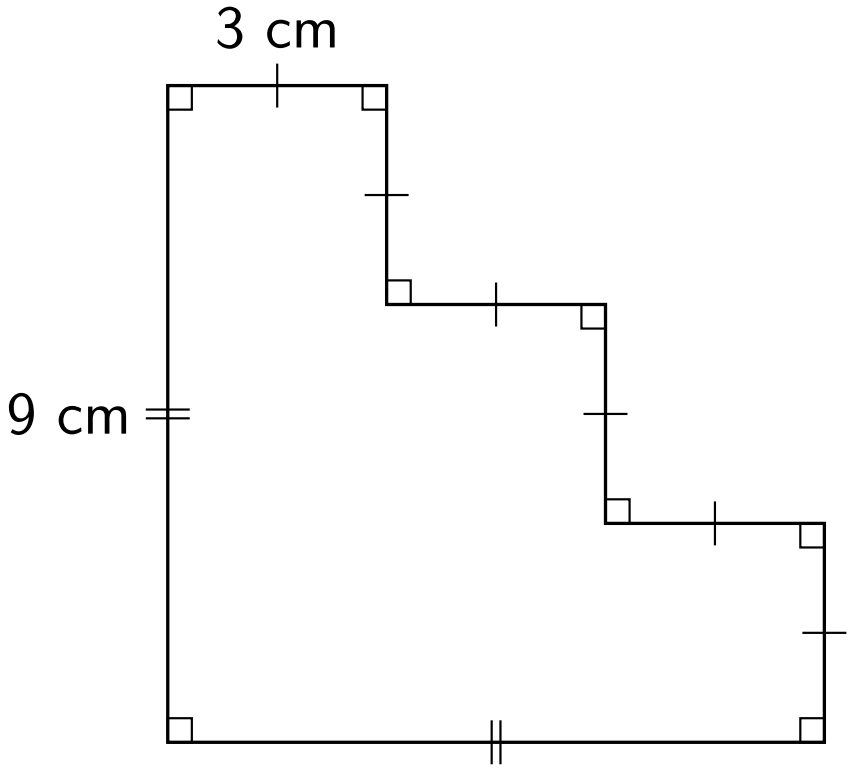
$$\text{Perim.} = 6 + 8 + 10$$

$$= 24 \text{ units}$$

Example 3

Find the perimeter and area of each. Round your answers to 2 decimal places when necessary.

(a)



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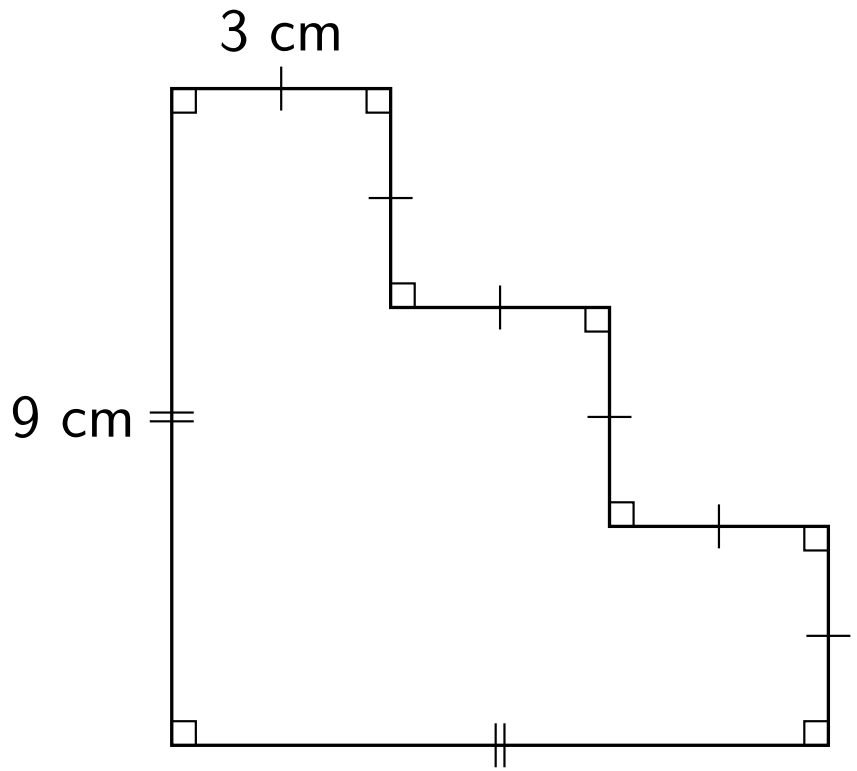

Perim

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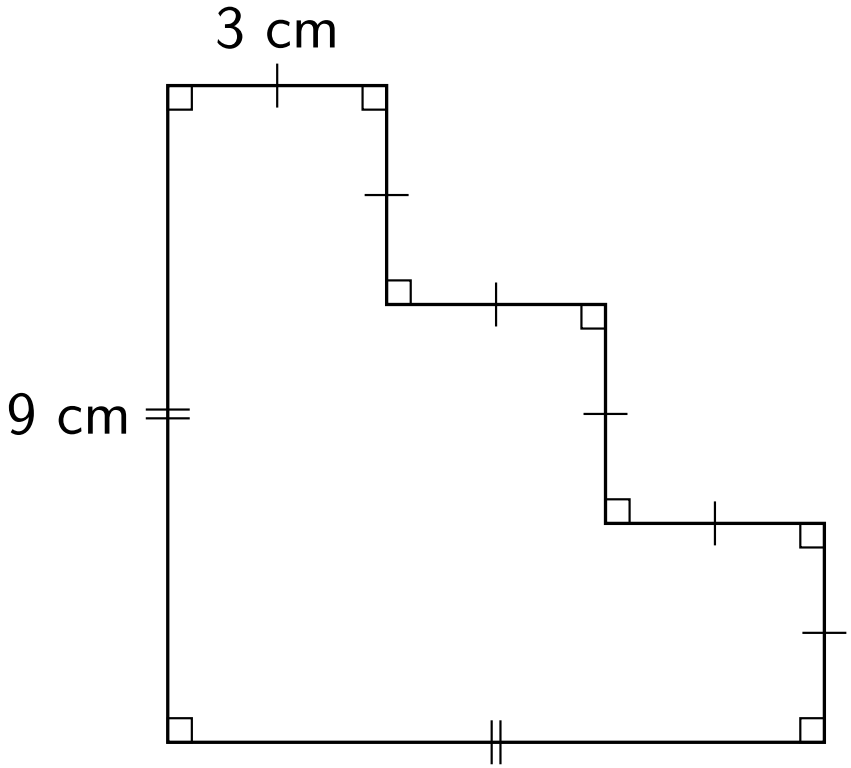
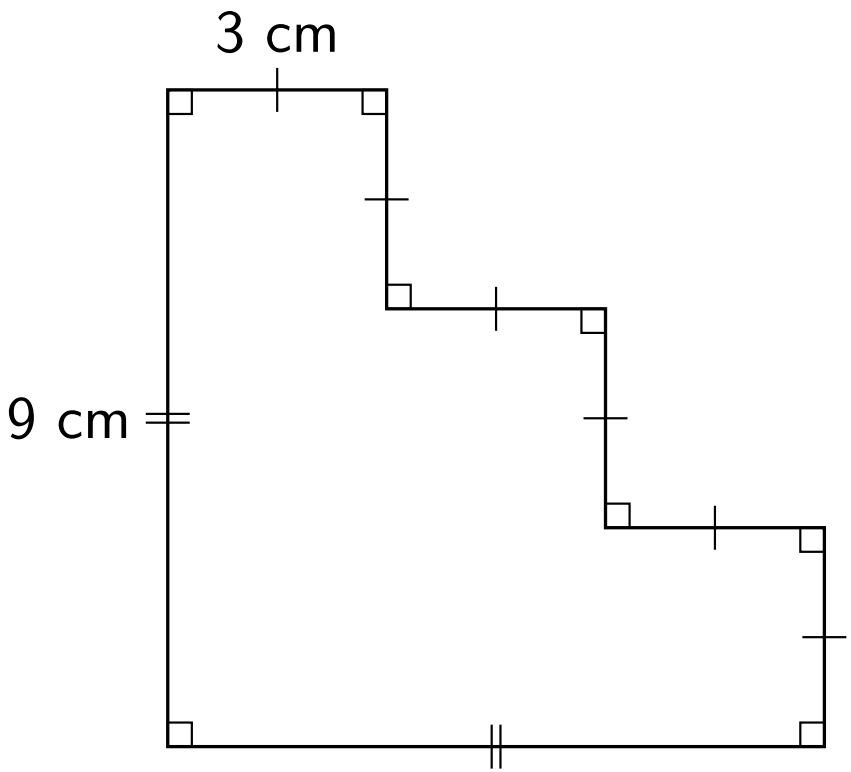


Perim
$4(9) = 36$ units

Example 3a



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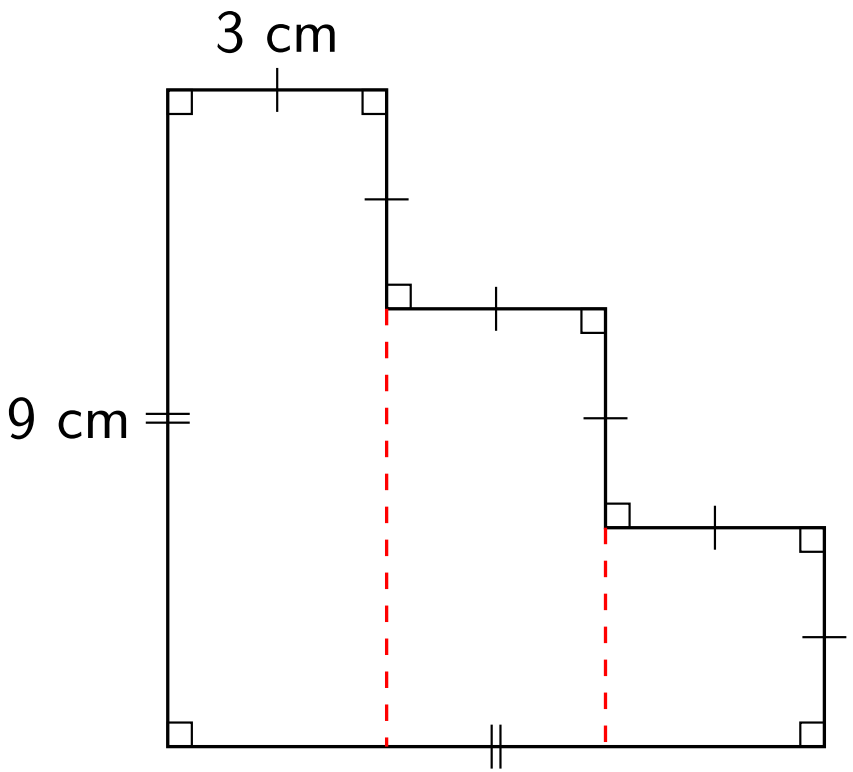

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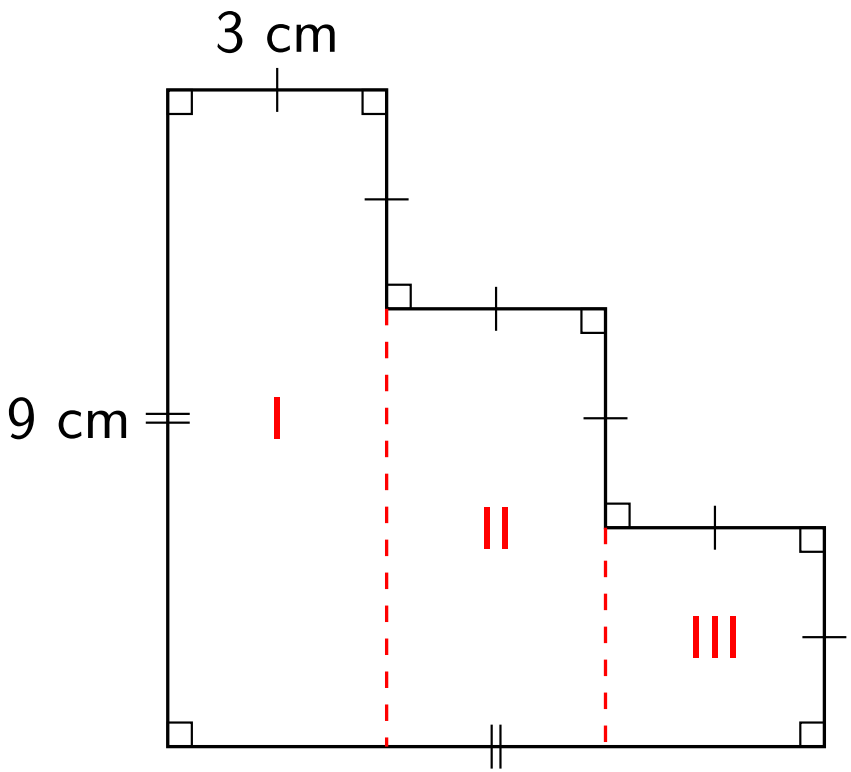

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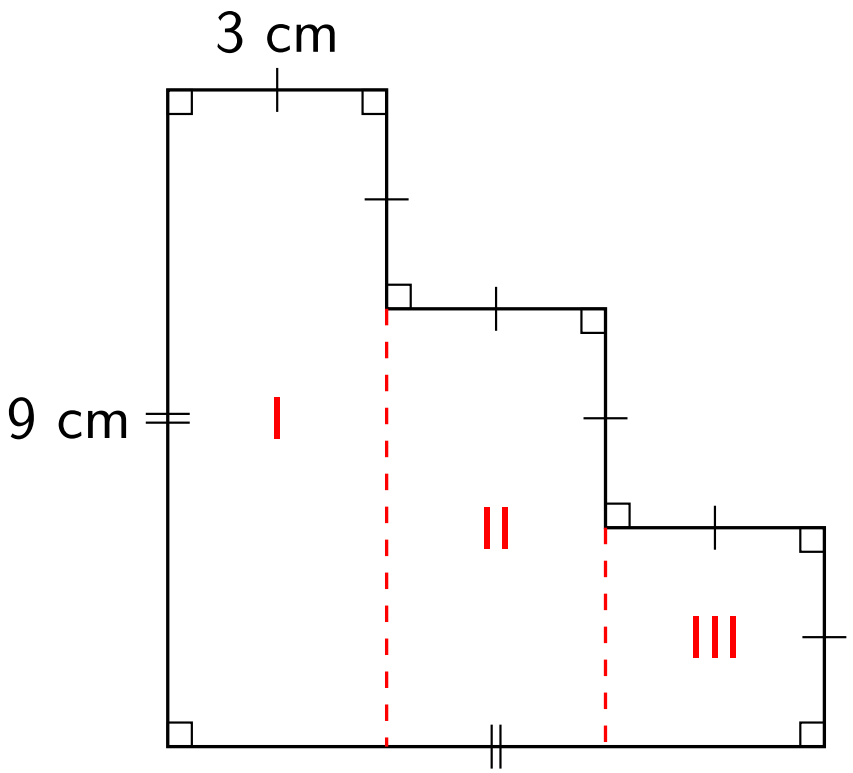
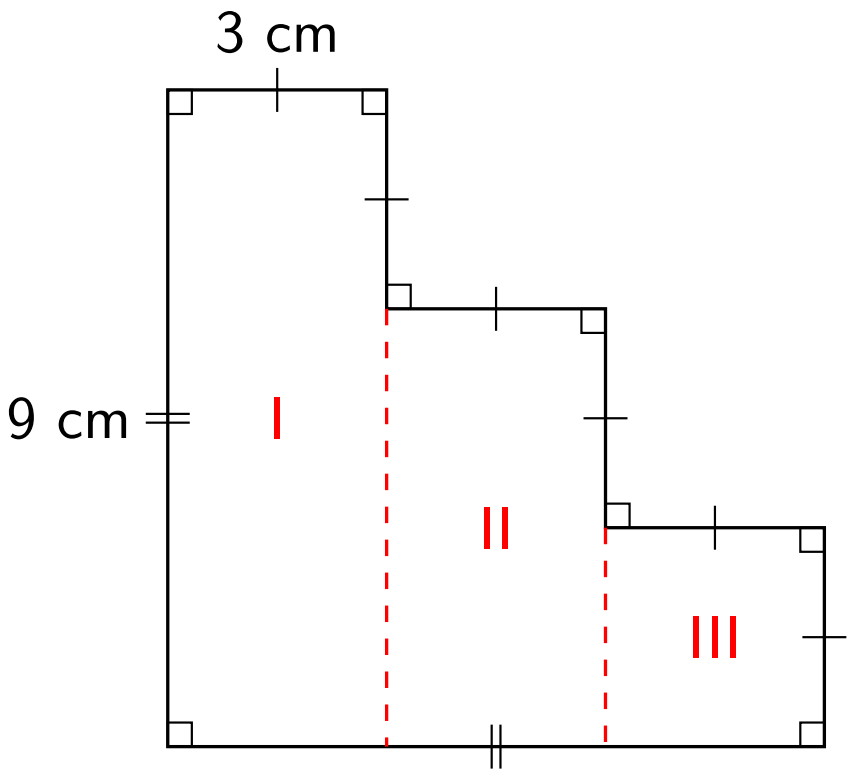


$\mathrm{I} : 3(9) = 27$

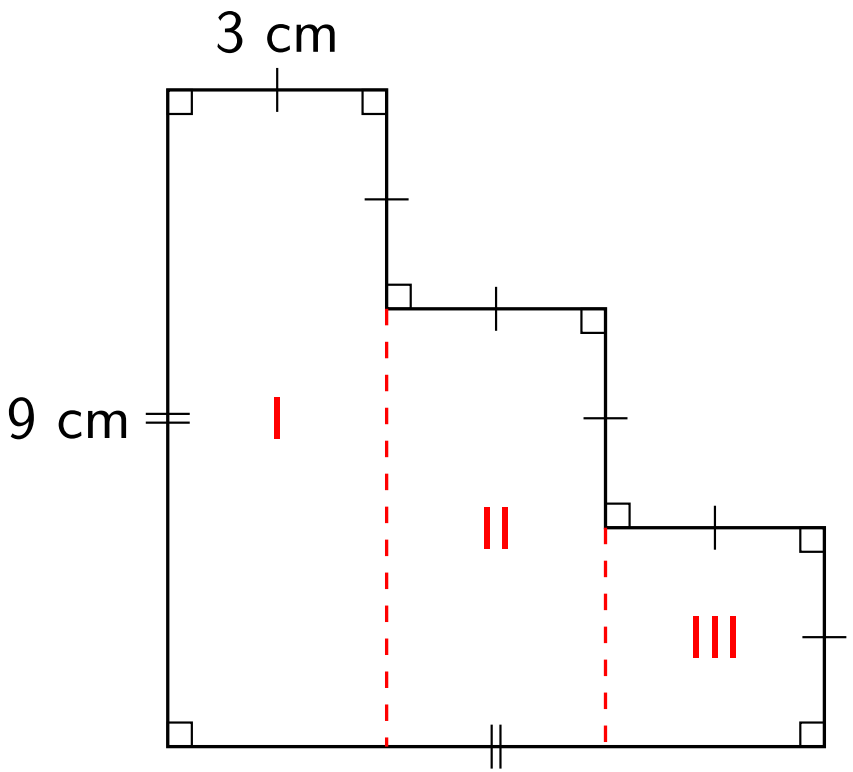
Example 3a



$$\text{I} : 3(9) = 27$$

$$\text{II} : 3(6) = 18$$

Example 3a

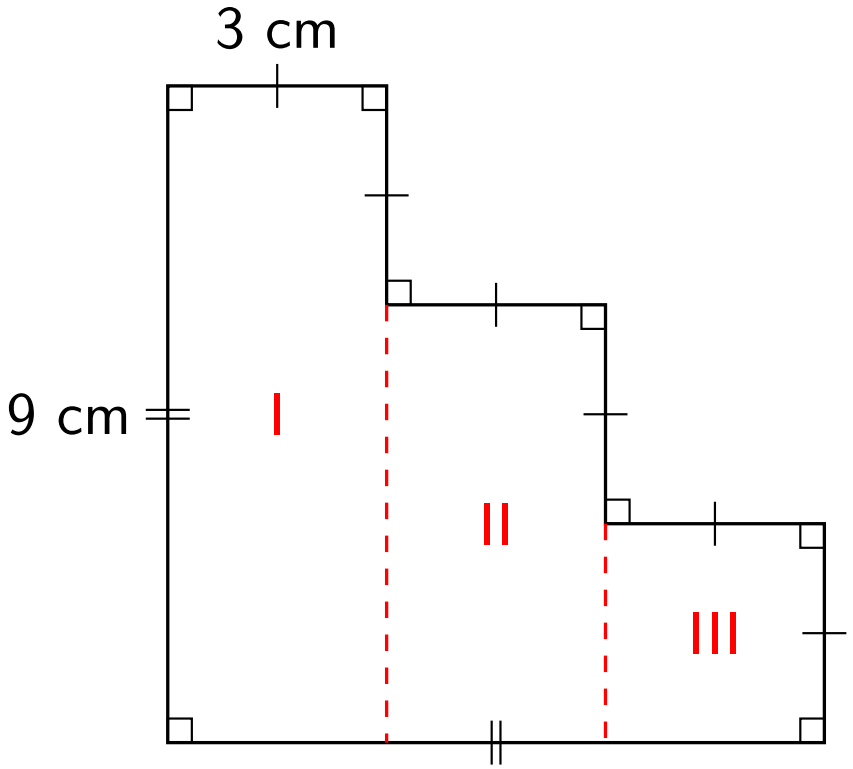


$$\text{I} : 3(9) = 27$$

$$\text{II} : 3(6) = 18$$

$$\text{III} : 3(3) = 9$$

Example 3a



$\text{I} : 3(9) = 27$

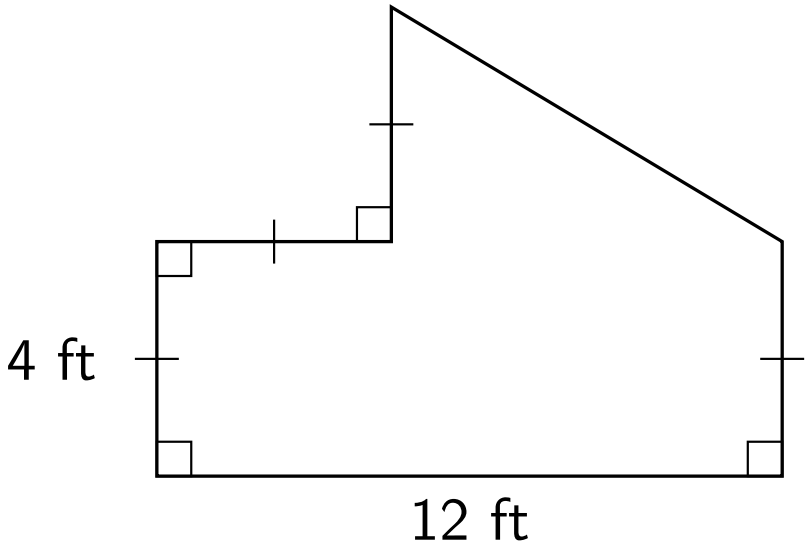
$\text{II} : 3(6) = 18$

$\text{III} : 3(3) = 9$

Total Area: $27 + 18 + 9 = 54$ sq. units

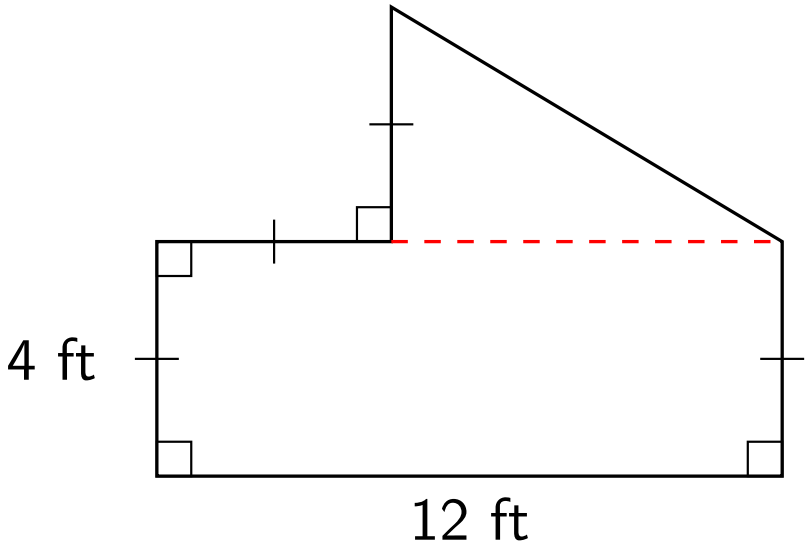
Example 3

(b)



Example 3

(b)



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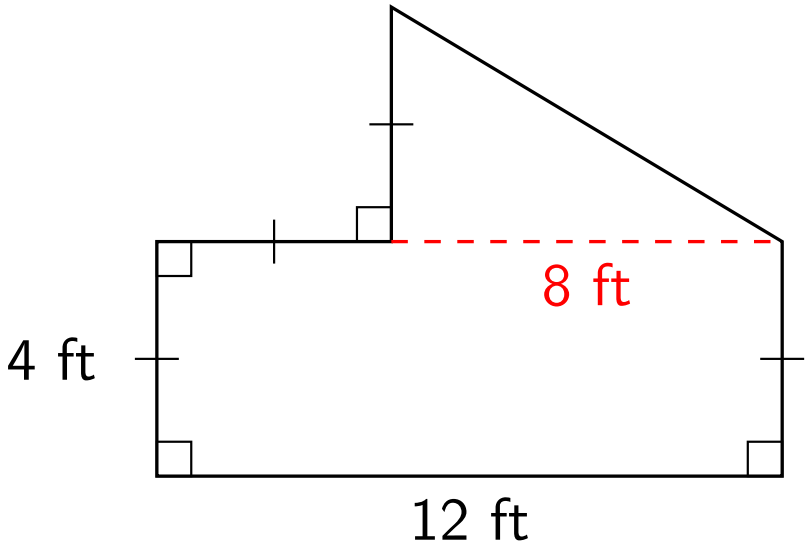

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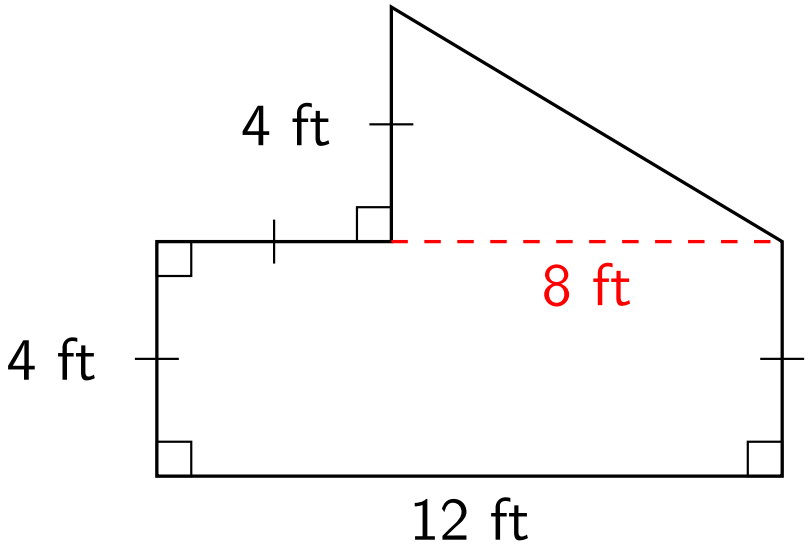
(b)



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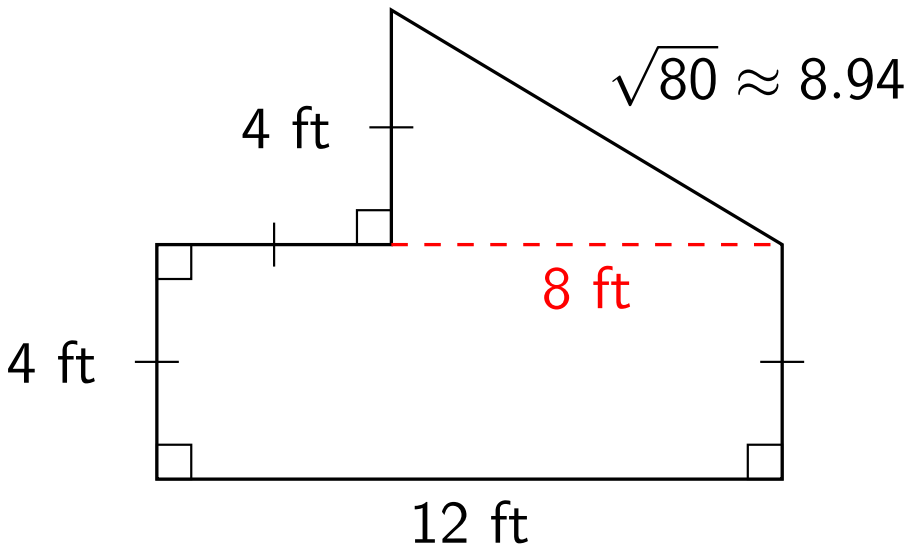

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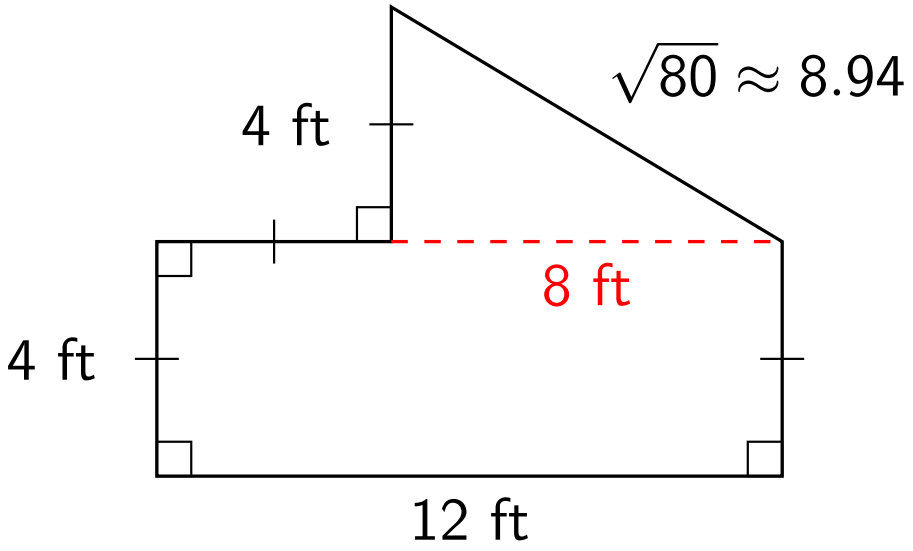
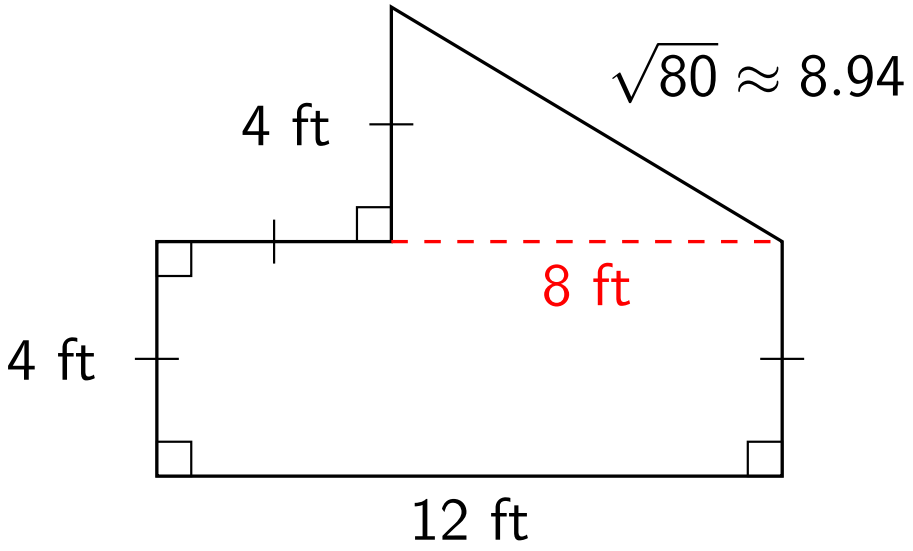


Perimeter:

Example 3

(b)

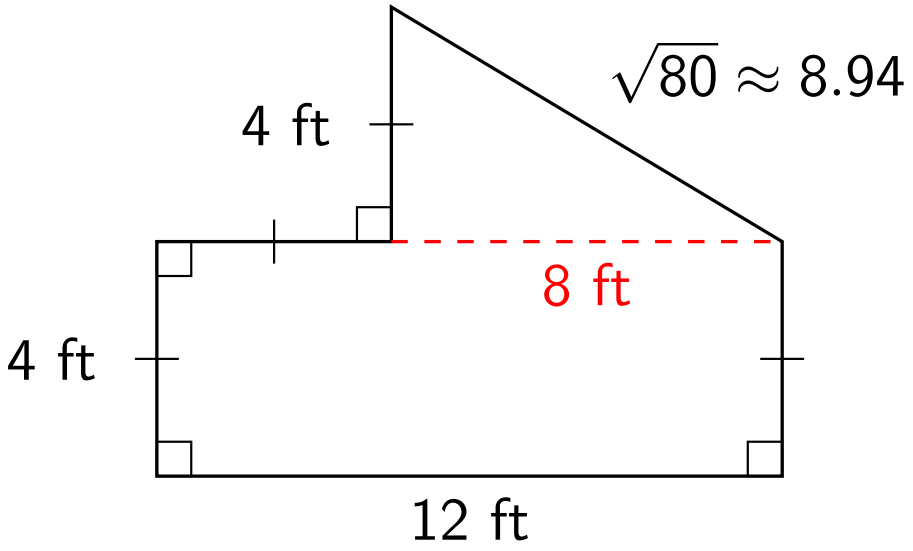


Perimeter:

$$4 + 12 + 4 + 8.94 + 4 + 4$$

Example 3

(b)

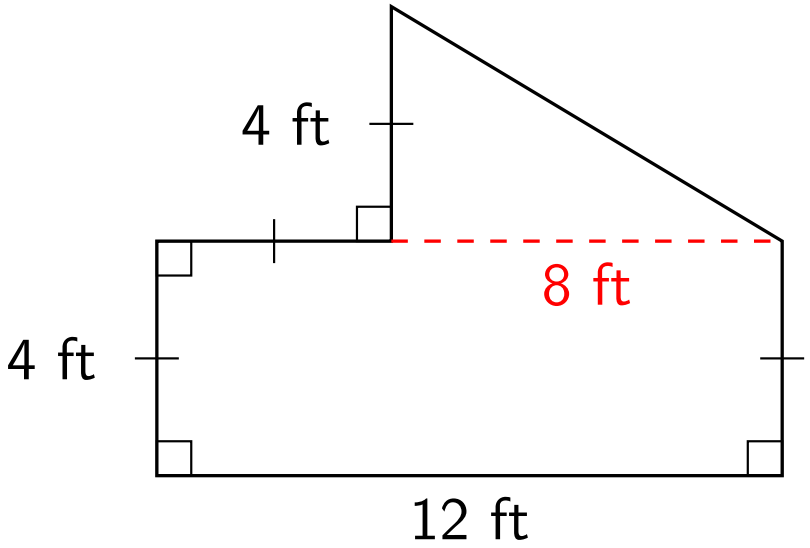


Perimeter:

$$4 + 12 + 4 + 8.94 + 4 + 4$$

$$36.94 \text{ ft}$$

Example 2b



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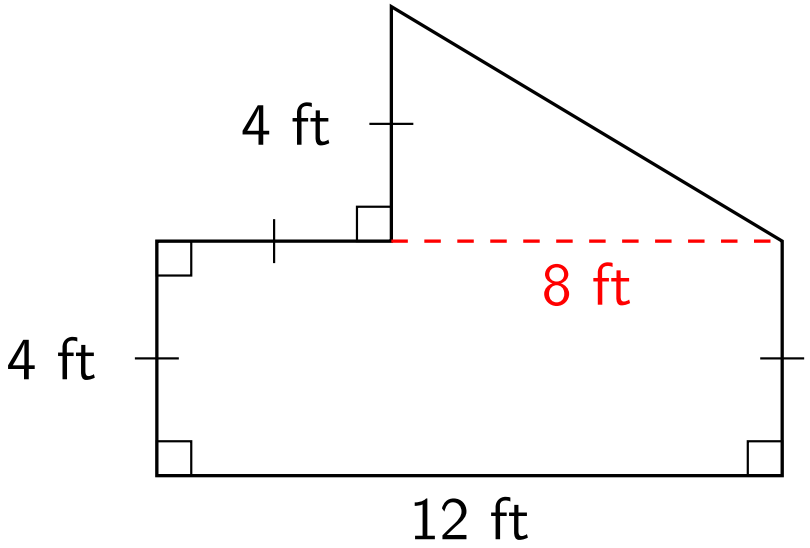
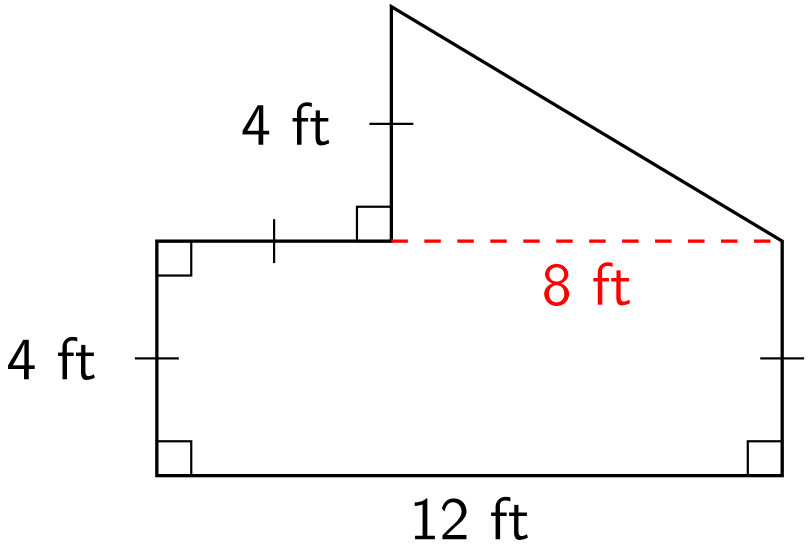


Triangle Area: $\frac{1}{2}(8)(4) = 16 \text{ ft}^2$

Example 2b



Triangle Area: $\frac{1}{2}(8)(4) = 16$ ft^2

Rectangle Area: $4(12) = 48$ ft^2

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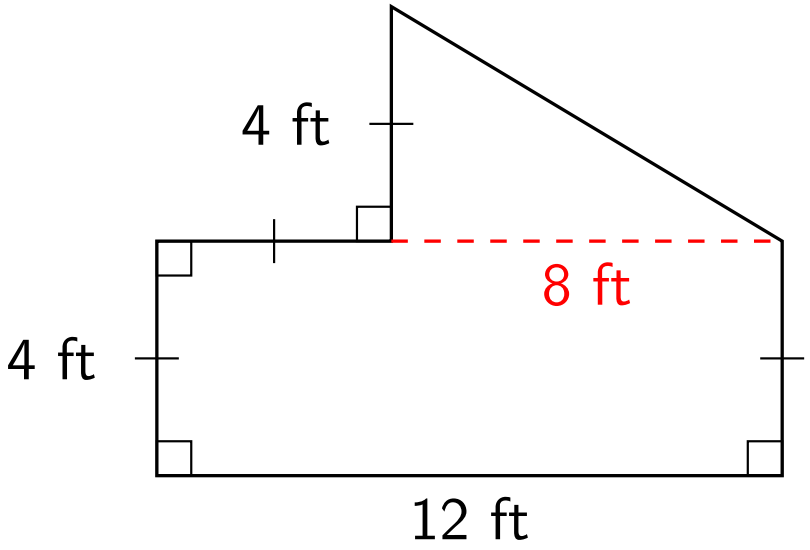

Triangle Area: $\frac{1}{2}(8)(4) = 16$ ft^2

Rectangle Area: $4(12) = 48$ ft^2

Total Area: $16 + 48 = 64$ ft^2