



4th  
Basic

5th  
Advanced

# Helping With Math

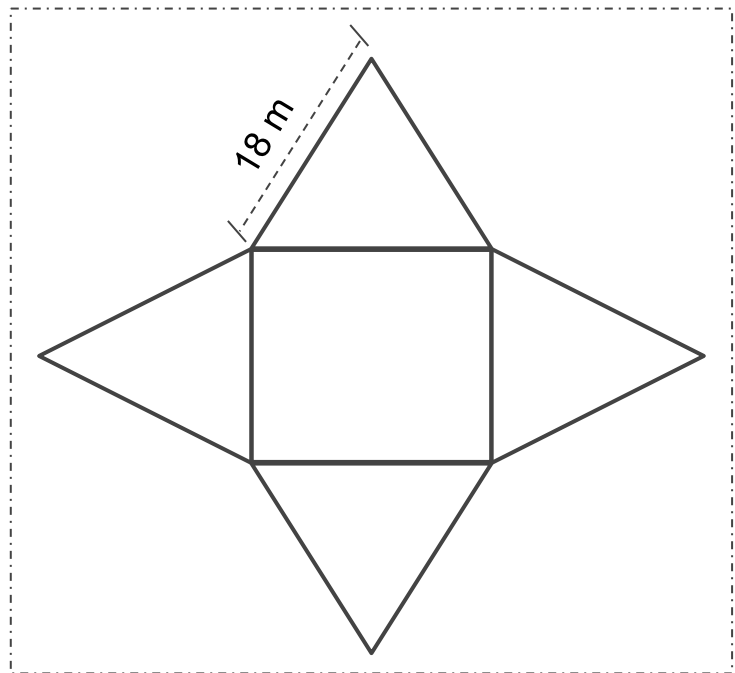
USA  
GRADES

## Perimeter of Polygons

Suitable for students  
aged 8-10



This pack is suitable for learners aged 8 to 10 years old or 4th to 5th graders (USA). The content covers fact files and relevant basic and advanced activities involving perimeter of polygons.



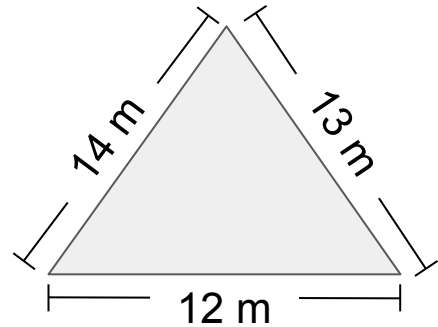
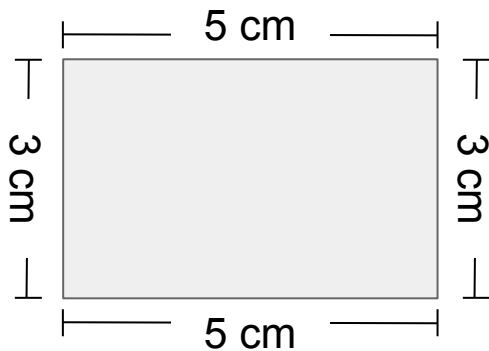
Johnny's team is in charge of constructing the new sports park in his town. The design of the sports park is given above. If all of the black lines will be enclosed using a wire, how many meters of wire are needed?



## PERIMETER

**Perimeter** is the measurement of the total length of the sides of a given shape or polygon.

When we want to measure the perimeter of a polygon, all we need to do is to **add the length of all its sides**.

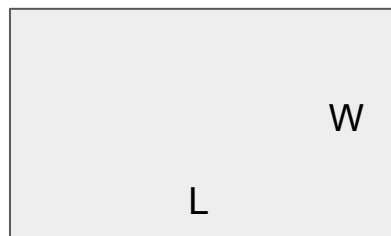


## PERIMETER OF POLYGONS



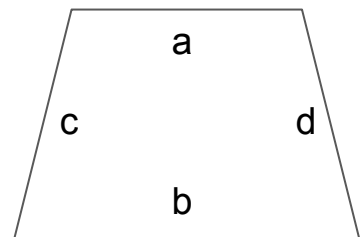
Square

$$P = 4s$$



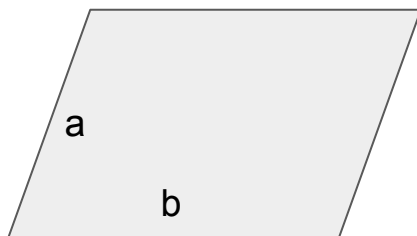
Rectangle

$$P = 2L + 2W$$



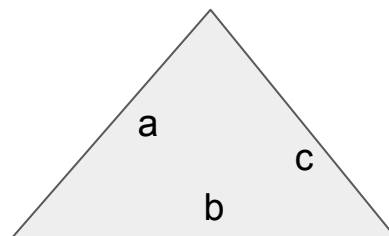
Trapezoid

$$P = a + b + c + d$$



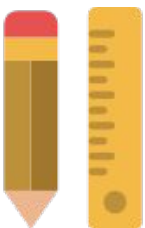
Parallelogram

$$P = 2a + 2b$$

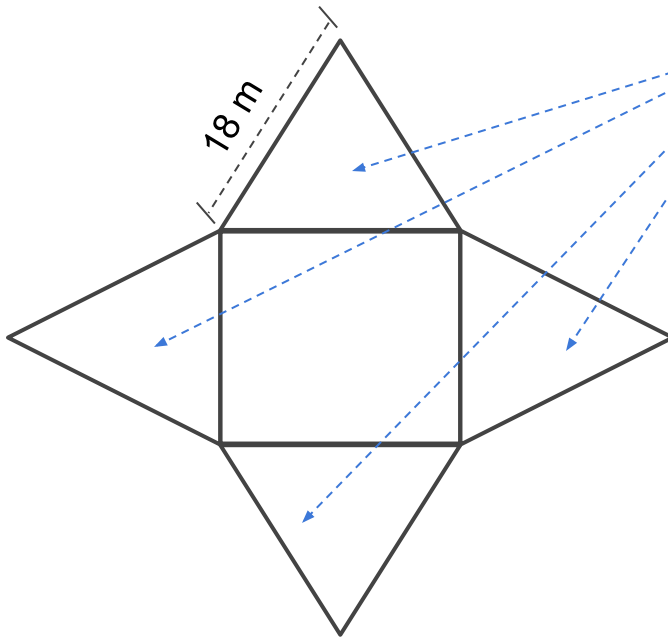


Triangle

$$P = a + b + c$$



## ILLUSTRATIVE EXAMPLES



Four regular triangles

If all of the illustrated triangles are regular, meaning, all of its sides have equal length, what is the total perimeter of the image at the left?

Since all of the involved polygons are regular triangles, then we just need to use the formula in getting the perimeter of a triangle. That is:

$$P = a + b + c$$



One side of the triangle measures 18 m, therefore, all sides are 18 m as well! Let's now compute.

$$P = 18 \text{ m} + 18 \text{ m} + 18 \text{ m}$$

$$P = 54 \text{ m} \text{ (each triangle has 54 m as perimeter)}$$

$$\text{Total perimeter} = 54 \times 4 \text{ (because there are 4 triangles)}$$

$$\text{Total perimeter} = 216 \text{ m}$$



# TABLE OF ACTIVITIES

Ages 8-9 (Basic)		<u>4th Grade</u>
1	HWM Construction Company	
2	Johnny's House Project	
3	House Renovation	
4	Measuring the Window Frame	
5	Trapezoidal Landscape	
Ages 9-10 (Advanced)		<u>5th Grade</u>
6	How Long is the Rope?	
7	The Missing Length	
8	Triangular Furniture	
9	Be Fair and Square	
10	Construction and Math	



# HWM CONSTRUCTION COMPANY

G4

Basic

The HWM Construction Company is hiring! To pass their initial screening, each applicant must know the basic concepts of perimeter and polygons. Draw the given polygon and write the formula of getting its perimeter.

Triangle

Square

Rectangle

Parallelogram

Trapezoid



# RICHARD'S HOUSE PROJECT

G4  
Basic

Richard's next project is a house construction. The house's structure is drawn below. Use your understanding of perimeter to answer the questions that follow.



Use polygons only to draw the outline of the house.

1. What are the polygons that you used to create the outline?

2. If the perimeter of the actual house structure (front view) is 120 ft, what is the equivalent of that in inches?

3. If the triangular shaped roof has the following lengths: 18 ft, 18 ft, and 25 ft, what is its perimeter?



# HOUSE RENOVATION

G4

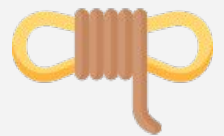
Basic

This ongoing house renovation is in need of some construction supplies. Use the concepts of perimeter to answer these questions.

1. The owner needs to buy wires to enclose a square-shaped wood. The wood is 5 ft. by 5 ft. in size. How many inches of wires are needed?



2. A rope is needed to secure a rectangular table so that it will not wobble. If the rope needed is 240 inches in length, what are the possible dimensions of the table? Give three possibilities in whole numbers.



3. Johnny needs to put a tape on a rectangular wooden door. The dimensions of the wooden door are 75 in in width and 100 in length. How much tape is needed to complete the task?



# MEASURING THE WINDOW FRAME

G4

Basic

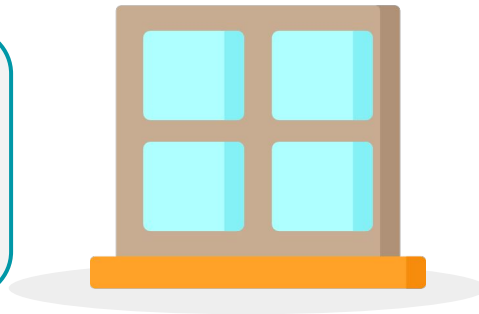
**Sort the following window frames according to its measurement. Your knowledge about perimeter will help you complete the task.**  
**Note: all frames are rectangular in shape.**

Length: 8 in  
Width: 6 in

Length: 11 in  
Width: 10 in

Length: 20 in  
Width: 13 in

Length: 30 in  
Width: 16 in



Length: 19 in  
Width: 13 in

Length: 24 in  
Width: 18 in

Length: 12 in  
Width: 8 in

Length: 18 in  
Width: 14 in

Window frame sizes:

Small - less than or equal to 40 inches

Medium - greater than 40 in but less than 60 inches

Large - greater than 60 in but less than 80 inches

Extra Large - greater than 80 inches





# TRAPEZOIDAL LANDSCAPE

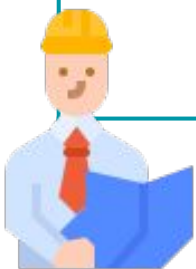
G4

Basic

**Are you excited to work on this trapezoidal landscape? Get ready with your pencil and ruler because you will create your own landscape design.**

1. Draw a trapezoidal landscape with a perimeter of 180 ft. (Note: your drawing does not need the given accurate measurement. Just make sure to put proper labels.

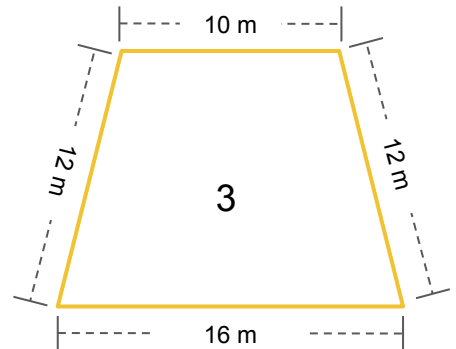
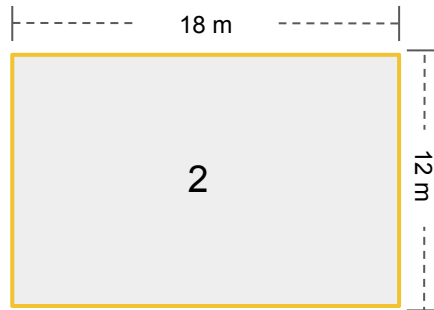
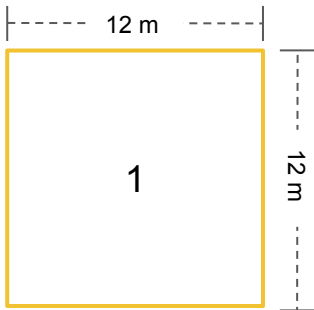
2. Construct a trapezoidal landscape with a perimeter of 350 ft. (Note: your drawing does not need the given accurate measurement. Just make sure to put proper labels.



# HOW LONG IS THE ROPE?

G5  
Advanced

A rope is needed to enclose the following wood materials. The shape and its dimensions are given below. Determine the length of the rope needed for each given.



1.

2.

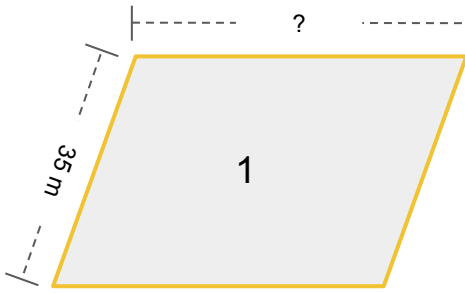
3.



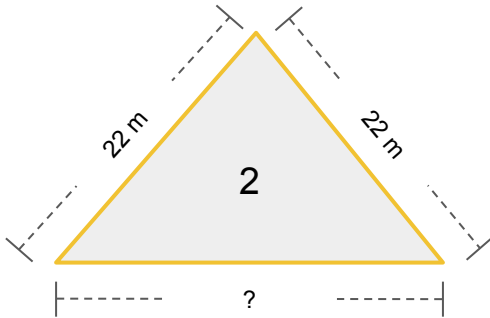
# THE MISSING LENGTH

G5  
Advanced

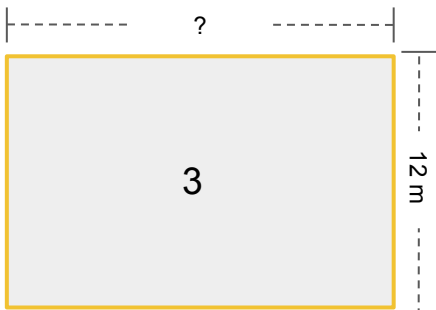
This construction project by Johnny has a task to identify the missing length of the side of each polygon given its perimeter.



$$P = 160 \text{ m}$$



$$P = 66 \text{ m}$$



$$P = 122 \text{ m}$$

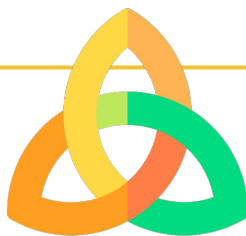


# TRIANGULAR FURNITURE

G5  
Advanced

The triangular furniture needed for the new house are given below. Only that their dimensions are the available details. Find their perimeter.

1. The outline of the furniture is an isosceles triangle. The base measures 100 inches while the other two sides are 20 inches less than the base.
2. The outline of the furniture is an equilateral triangle. One side measures 2.5 m. What is its perimeter in cm?
3. The base of the triangle is 8 yards. The other side measures two yards longer than the base while the other is 12 ft shorter than the base.
4. This is a scalene triangle whose dimensions are one yard shorter than the previous given.



# BE FAIR AND SQUARE

G5  
Advanced

All of the given below involve a square. Construct a drawing based on each given and solve for the perimeter.

1. Four squares whose each side measures 12.35 m are formed together. What are their total perimeters?

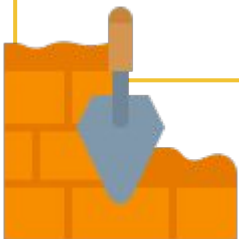


2. A square whose each side measures 56 m are divided into four equal smaller squares. What would be the length of each side of the smaller squares? What will be their perimeter?



**Now that you learned about the perimeter of polygons. It's now time for some insights. Answer the following questions below.**

1. Which among the polygon formulas are the the most easiest and most difficult to follow? Explain your answer.
2. Why do you think the concepts of perimeter and polygons are essential in constructing houses, building, etc?
3. What do you think will happen if measurements and perimeter are not properly followed? Give three reasons.



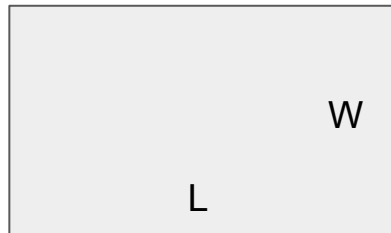
# ANSWER GUIDE

## Activity 1



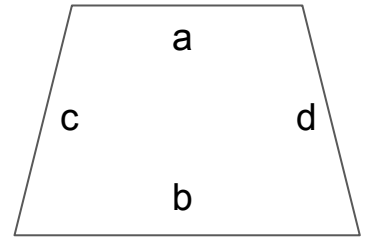
Square

$$P = 4s$$



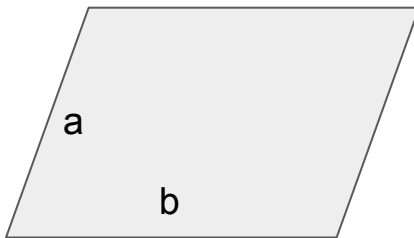
Rectangle

$$P = 2L + 2W$$



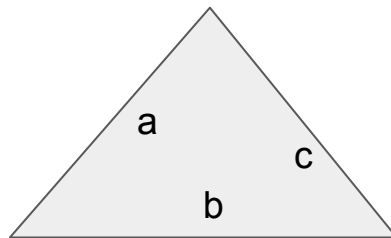
Trapezoid

$$P = a + b + c + d$$



Parallelogram

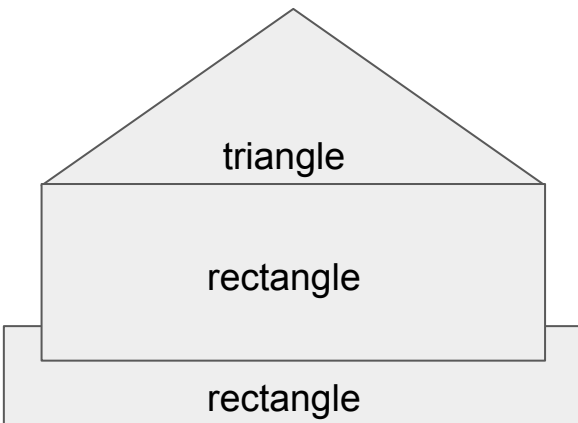
$$P = 2a + 2b$$



Triangle

$$P = a + b + c$$

## Activity 2



2.  $120 \text{ ft} \times 12 = 1440 \text{ inches}$
3. Its perimeter will be 61 ft.



# ANSWER GUIDE

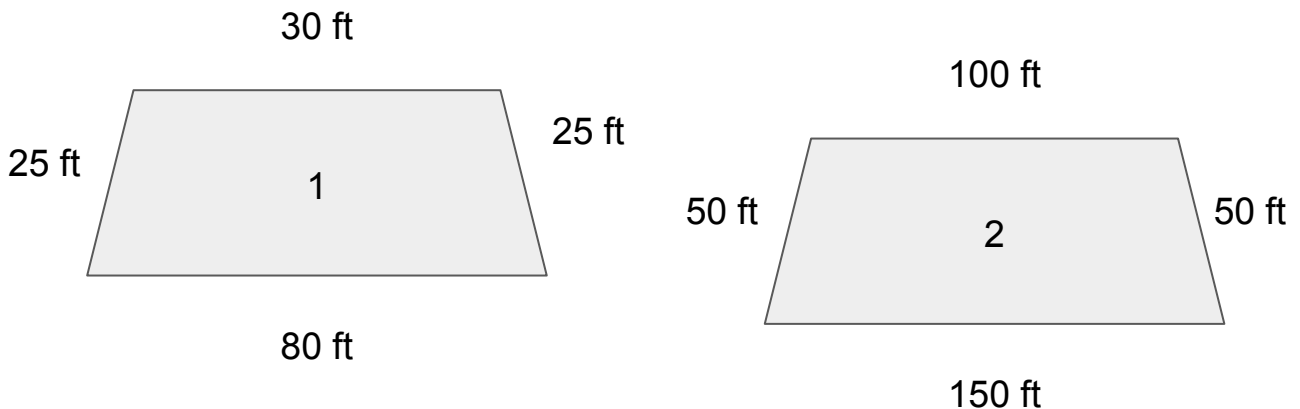
## Activity 3

1. 20 ft = 240 inches
2. Possible answers: 100 in by 20 in, 75 in by 45 in, 80 in by 40 in
3. 350 in

## Activity 4

- |                        |                   |                        |
|------------------------|-------------------|------------------------|
| 1. 28 in (small)       | 2. 42 in (medium) | 3. 66 in (large)       |
| 4. 92 in (extra large) | 5. 64 in (large)  | 6. 84 in (extra large) |
| 7. 40 in (small)       | 8. 64 in (large)  |                        |

## Activity 5



## Activity 6

1.  $12 \times 4 = 48$  m
2.  $2(18) + 2(12) = 36 + 24 = 40$  m
3.  $10 + 12 + 12 + 16 = 50$  m





# ANSWER GUIDE

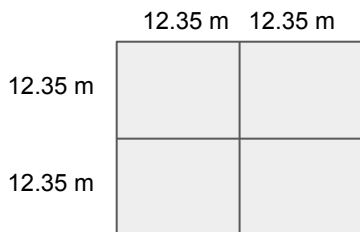
## Activity 7

1. 45 m      2. 22 m      3. 49 m

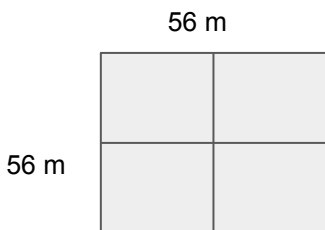
## Activity 8

1. 140 in      2. 7.5 m = 750 cm  
3. 21 yards      4. 18 yards

## Activity 9



The larger square has a side that measures 24.7. Thus, its perimeter is 98.8 m.



Each smaller square has its side measures 28 m. Thus, each smaller square will have a 112 m as perimeter.

## Activity 10

Answers may vary.



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