4th Basic

5th Advanced

Helping With Math

USA GRADES

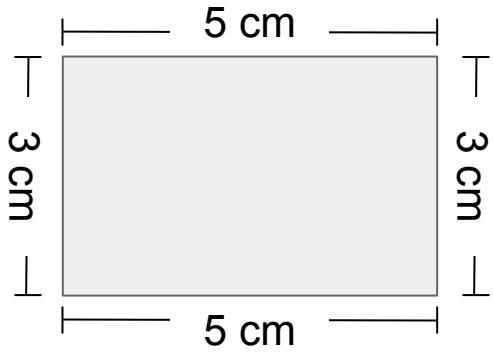
Word Problems Involving Perimeter and Area of Polygons

Suitable for students
aged 8-10

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

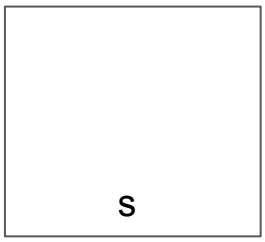
Perimeter is the measurement of the total length of the sides of a given shape or polygon. When we want to measure the perimeter of a polygon, all we need to do is to **add the length of all its sides.**

While **area** can be defined as the region covered by a flat shape or the surface of an object. The area of a figure is the number of unit squares that occupied the surface of a closed figure.



This rectangle has the following dimensions: length is 5 cm and the width is 3 cm.

PERIMETER OF POLYGONS

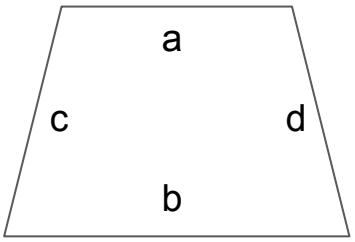


Square

$P = 4s$

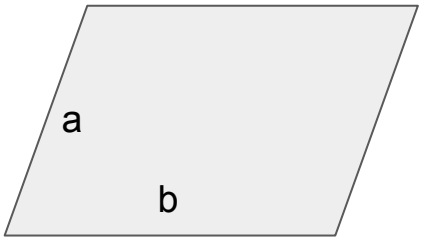
Rectangle

$P = 2L + 2W$



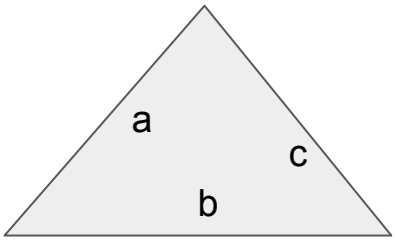
Trapezoid

$P = a + b + c + d$



Parallelogram

$P = 2a + 2b$



Triangle

$P = a + b + c$

AREA OF POLYGONS

Area of square $A = s^2$	Area of rectangle $A = lw$	Area of Rhombus $A = bh$ or $\frac{d_1 \times d_2}{2}$

Area of Parallelogram $A = bh$	Area of Trapezoid $A = bh$ or $\frac{b_1 \times b_2}{2} h$	Area of Kite $A = bh$ or $\frac{d_1 \times d_2}{2}$

The area of a triangle is equal to the half of the product of its base and height or **A = ½ bh,** where b = base of the triangle and h = height/altitude of the triangle

ILLUSTRATIVE EXAMPLES

Henry needs to put a tape on a rectangular wooden door. The dimensions of the wooden door are 85 in in width and 98 in in length. How much tape is needed to complete the task?

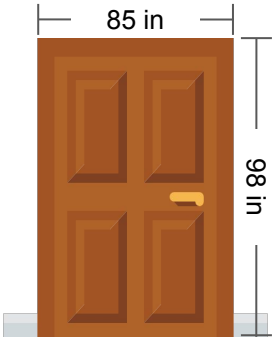
SOLUTION:

Based on the problem, Henry is dealing with a rectangular door. Since he needs to put a tape on the wooden door, it means that he is going to put tape around it.

Now the question is: Is the problem about perimeter or area?

Since he needs to put a tape around it, the problem deals about perimeter! Thus,

The formula of getting the perimeter of a rectangle is **P = 2L + 2W.**



Given: **L = 98 in** **W = 85 in**

P = 2L + 2W = 2(98) in + 2(85) in

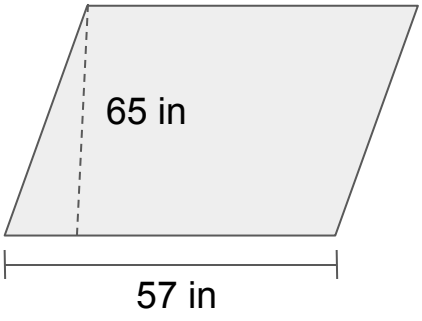
P = 196 in + 170 in

P = 366 in

Therefore, Henry need 366 in of tape to wrap it around the rectangular door.

ILLUSTRATIVE EXAMPLES

A parallelogram board measures 57 inches on its base and has an altitude of 65 inches. Compute for the area.



SOLUTION:

The formula for getting the area of parallelogram is A = bh, where b is the length of the base and H is the height/altitude of the parallelogram.

Given: **b = 57 in** **h = 65 in**

A = b x h = 57 in x 65 in

A = (57 x 65) in

A = 3705 square inches

Therefore, the area of the parallelogram board is 3,705 square inches.

PRACTICE EXERCISE

Compute for the perimeter and area of a triangle whose base measures 34 in and height measures 4 ft.

TABLE OF ACTIVITIES

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9	Scale Drawing	
10	The Carpenter's Dream	

SAWMILL ERRANDS

G4
Basic

Henry is one of the best carpenters in town. For today's work, he needs to cut woods whose dimensions are given below. Answer each question and remember to show your complete solution.

1. What is the perimeter of an equilateral triangular piece of wood whose side measures 36 inches?

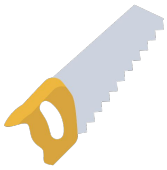
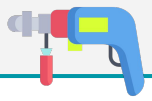
2. A square-shaped plywood has a side measuring 3 m. What is its perimeter?

3. A rectangular plywood is to be cut. If its length is 58 cm and the width is 40 cm, compute for its perimeter.

DRILL AND CUT

G4 Basic

Henry is again up for a loaded carpentry works today. But this time, his task is to drill and cut gypsum boards. Use your understanding of perimeter to accomplish his tasks.

1. A gypsum board that is in a shape of isosceles trapezoid is to be cut and drilled. The upper base is 28-inch long, the lower base is 48-inch long and the two remaining sides measure 15 inches each.	Solution: 
2. A gypsum board that is in a shape of triangle is to be cut and drilled. The board is an isosceles triangle whose longest side is 24 cm and the other sides measure 20 cm each.	Solution: 
3. A gypsum board that is in a shape of square is to be cut and drilled. Each side is 80 mm in length.	Solution:

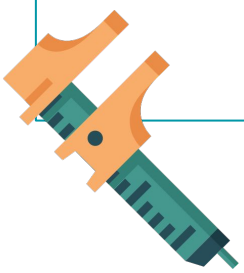
CONSTRUCTING LAYOUT

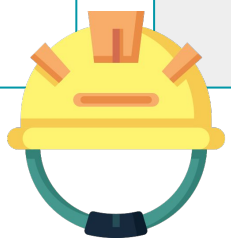
G4 Basic

Annie is also a renowned carpenter in town. She is Henry's best friend. Both of them are helping the town when a carpentry problem arises on the neighborhood. Solve for the perimeter.

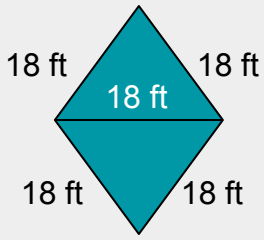
1. In her sketch pad, Annie did a layout of a square-shaped fence whose each side measures 12 m.

2. She did a layout of a rectangular fence whose length and width are 14.23 m and 12.50 m respectively.

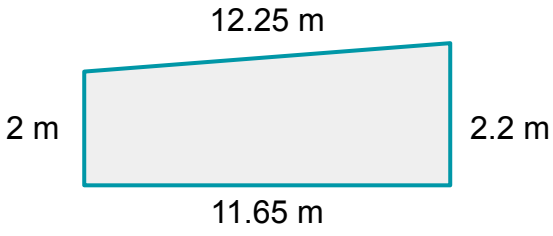




3. A blueprint of two triangles like this:



4. If a trapezoid wood is like this, what would be its perimeter?



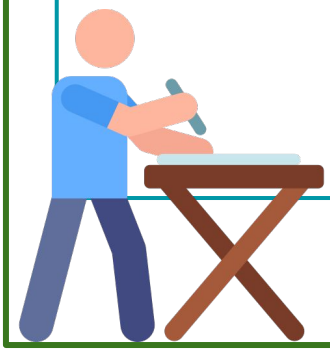
CARPENTRY SHOP MOMENTS

G4
Basic

Below are some scenarios at Henry's Carpentry Shop. Use your understanding of perimeter to answer the following. Draw the given and solve.

1. A customer wants to order a rectangular shaped table at Henry's. With curiosity, he asked this: What is the height of a rectangle with a perimeter of 122.8 in and base length of 50.2 in?

2. What is the perimeter of a parallelogram-shaped board with a base of 28 cm, side length 50 cm, and a height of 30 cm? What is the equivalent of the perimeter in mm?

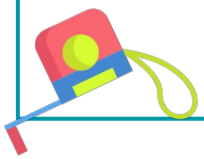


ENCLOSING THE VACANT LOT

G4
Basic

Henry and Annie's joint project is to enclose the vacant lot in the neighborhood. Help them accomplish their task.

If the larger rectangle is 1.54 times the size of the smaller rectangle, compute for their total perimeter if the larger polygons' length and width are 39 in and 25 in, respectively.

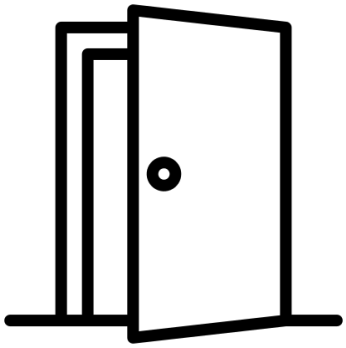


PAINT THE AREA

G5 Advanced

Help Henry and Annie calculate the area of the wooden door that they are going to paint. Show your complete solution.

1. A wooden door measures 70.23 inches in length and 1.75 yards in width. Calculate for the area that is needed to paint by the two carpenters.



2. Henry told Annie that the current door they are working on has an area of more than 4895 square inches. The door is a 7 ft by 5 ft wood. Is his claim correct?

3. Compare your answers from the two previous items. Which door has a wider area to paint? Why?

FLOOR TILE PROJECT

G5 Advanced

The following floor tiles are to be cut in a form of different polygons. Answer the questions that follow.

1. A tile in shape of a kite is needed for today's work. Its base id 15 inches and the height is 13.25 inches. Compute for its area.

2. A triangular tile whose base is 1.2 m and height which is 80 cm. Compute for the area of the given triangle.

3. What is the area of a tile in rhombus shape if its shorter diagonal is 15 cm and the other diagonal is 3.5 cm longer than the shorter one.

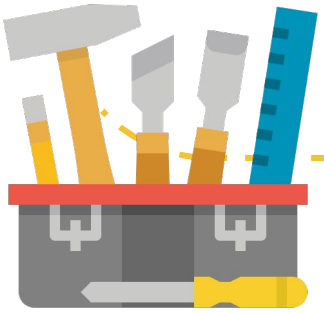
4. A square tile has a perimeter of 48 inches. What is its area?

THE MISSING TOOLKIT

G5 Advanced

Oh no! Annie has misplaced her toolkit and now, it is missing! Help her find it by answering the two-step word problem below.

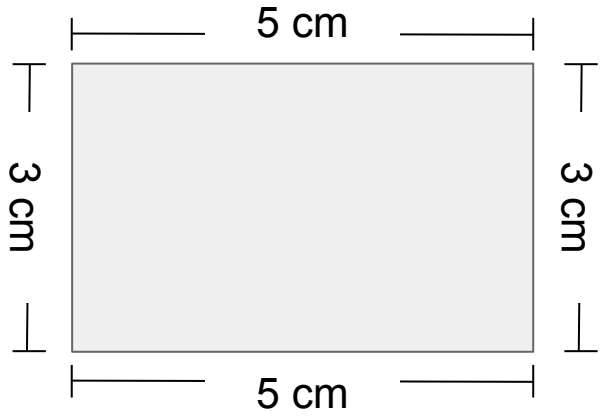
Annie was booked for her new carpentry project. She is asked to put vinyl tiles on a yet fully renovated house. The floor is a 15 m by 13 m wide area. If she is going to use 5 in by 5 in vinyl tile, estimate the number of tiles that she needed to complete the project.



SCALE DRAWING

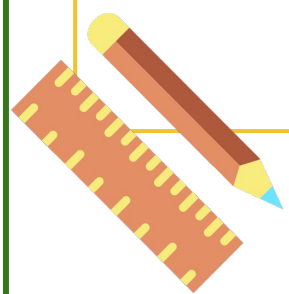
G5 Advanced

A scale drawing of an on-going carpentry project is given below. Each cm in the scale drawing is equal to 15 m in actual measure.



1. Compute for the perimeter of the actual polygon.

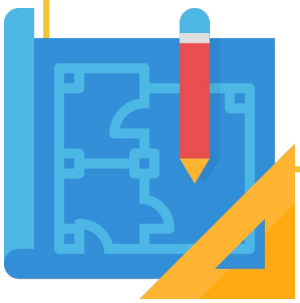
2. How many square meter units are needed to cover the entire area?



THE CARPENTER'S DREAM

G5 Advanced

Assume that you are one of the most skilled carpenters in the neighborhood and you are asked to sketch your dream house. How will it look like? Create a sketch of your dream house and label the important dimensions. Then compute for the perimeter and area of your drawing. Note: use a scale drawing for this task.



ANSWER GUIDE

Activity 1

1. 108 inches
2. 12 meters
3. 196 cm

Activity 3

1. 48 m
2. 53.46 m
3. 72 ft
4. 28.1 m

Activity 5

1. Larger polygon = 128 in, the smaller polygon has 25.32 in length ang 16.23 in width. So, its perimeter is 83.1 in.

Activity 7

1. 198.75 sq. in.
2. 4800 sq. cm
3. 138.75 sq. cm
4. 144 sq. in

Activity 9

1. The perimeter is (2)(75) + (2)(45) = 150 + 90 = 240 m
2. A = 75 m x 45 m 3375 sq. m.

Activity 2

1. 106 inches
2. 64 cm
3. 320 mm

Activity 4

1. 11.2 inches
2. 158 cm, 1580 mm

Activity 6

1. Larger polygon = 128 in, the smaller polygon has 25.32 in length ang 16.23 in width. So, its perimeter is 83.1 in.

Activity 8

Floor area is 195 sq. m or approximately 7677.17 inches. The tile's area is 25 sq. in. To get the number of tiles, divide the floor area by the tile area. It is equal to 307.09 tiles but since tile is a countable object, our final answer must be 308 tiles.

Activity 10

Answer may vary.

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