

# The Polygon Zone

A polygon is a straight-sided shape. All sides are fully connected. When the sides and the angles are all the same size it is called a regular polygon.

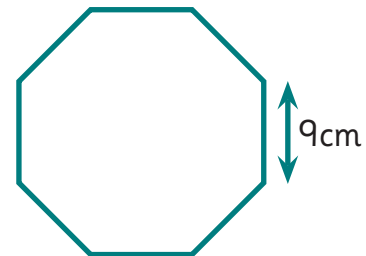
Shapes with different sized straight sides are called irregular polygons.



Today you will use your skills with perimeter and polygons to escape from the Polygon Zone!

How to calculate the perimeter of a regular polygon:  
number of sides x size of one side.

This is a regular octagon. It has 8 sides.  
One side is 9cm long.  
Perimeter =  $9 \times 8 = 72\text{cm}$



**TOP TIP:** Always count the number of sides carefully. Only sides which don't connect count.

## WELCOME TO THE TRAINING ZONE:

1. Complete the table to show you are ready for the challenges ahead.

Regular shape	Number of sides	Size of one side	Perimeter of shape
hexagon	.....	10cm	.....
square	.....	.....	100cm
.....	5	.....	150cm
heptagon	.....	50cm	.....

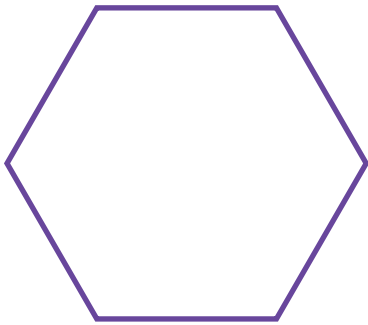
# The Polygon Zone

## ENTER THE POLYGON ZONE!

Now you're ready to put your training into action. Keep a track of your score!

2. Three regular-shaped force fields lie ahead. Calculate the missing information to deactivate each one and move forward. Good luck. 1000 points for each correct answer!

a)

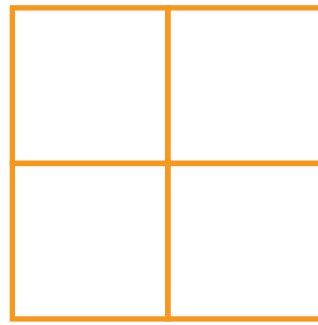


Size of one side:  
**4m**

Perimeter =

.....

b)

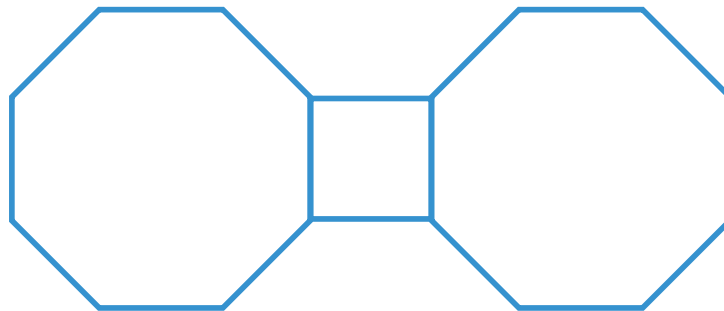


Size of one side of each square:  
**7m**

Perimeter of compound shape =

.....

c)



Size of one side of the square: **6m**

Perimeter of compound shape = .....



# The Polygon Zone

## ESCAPE FROM THE ZONE!

3. Your skills have served you well – so far!

Now you must work out the perimeter of this pool of lava to drain it away.

Score 5000 points for a correct answer and escape the zone!

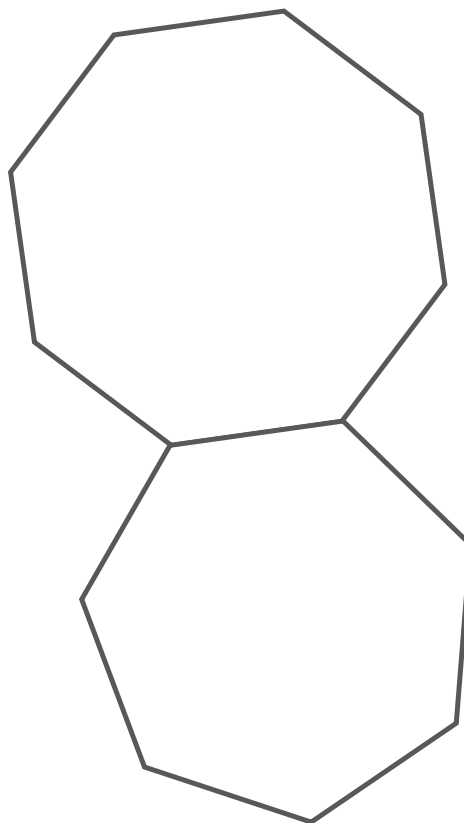
- The lava pool is made up of regular polygons.
- The perimeter of the octagon is 64m.



What is the perimeter of the whole lava pool?

.....

.....



What was your final score? .....

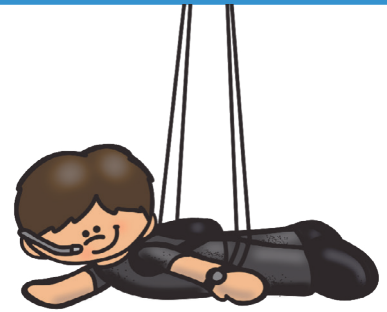
**END OF GAME – you must have been in good shape to get this far!**

# The Polygon Zone

## Answers

A polygon is a straight-sided shape. All sides are fully connected. When the sides and the angles are all the same size it is called a regular polygon.

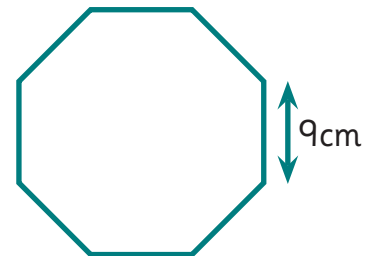
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How to calculate the perimeter of a regular polygon:  
number of sides x size of one side.

This is a regular octagon. It has 8 sides.  
One side is 9cm long.  
Perimeter =  $9 \times 8 = 72\text{cm}$



**TOP TIP:** Always count the number of sides carefully. Only sides which don't connect count.

## WELCOME TO THE TRAINING ZONE:

1. Complete the table to show you are ready for the challenges ahead.

Regular shape	Number of sides	Size of one side	Perimeter of shape
hexagon	.....6.....	10cm	...60cm..
square	.....4.....	...25cm..	100cm
.....pentagon.....	5	...30cm..	150cm
heptagon	.....7.....	50cm	...350cm..

# The Polygon Zone

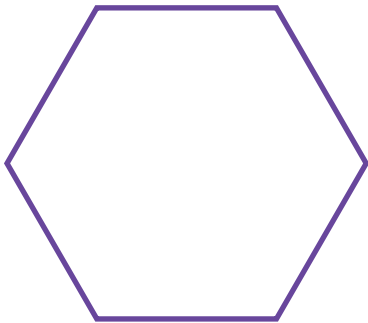
## Answers

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a)

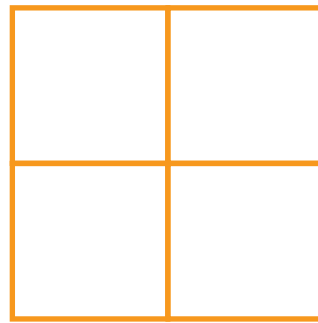


Size of one side:  
**4m**

Perimeter =

$$\dots\dots 4 \times 6 = 24m \dots\dots$$

b)

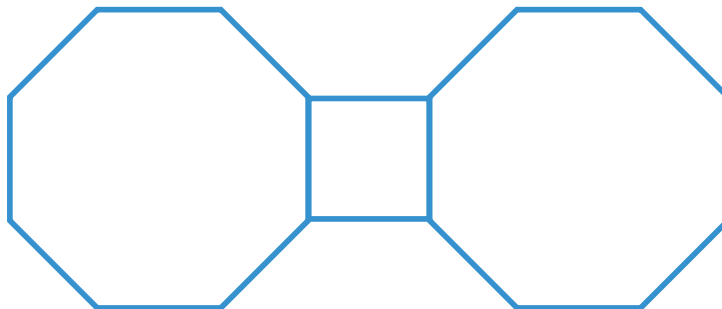


Size of one side of each square:  
**7m**

Perimeter of compound shape =

$$\dots\dots 8 \times 7 = 56m \dots\dots$$

c)



Size of one side of the square: **6m**

Perimeter of compound shape =  $\dots\dots 6 \times 16 = 96m \dots\dots$



# The Polygon Zone

## Answers

### ESCAPE FROM THE ZONE!

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Now you must work out the perimeter of this pool of lava to drain it away.

Score 5000 points for a correct answer and escape the zone!

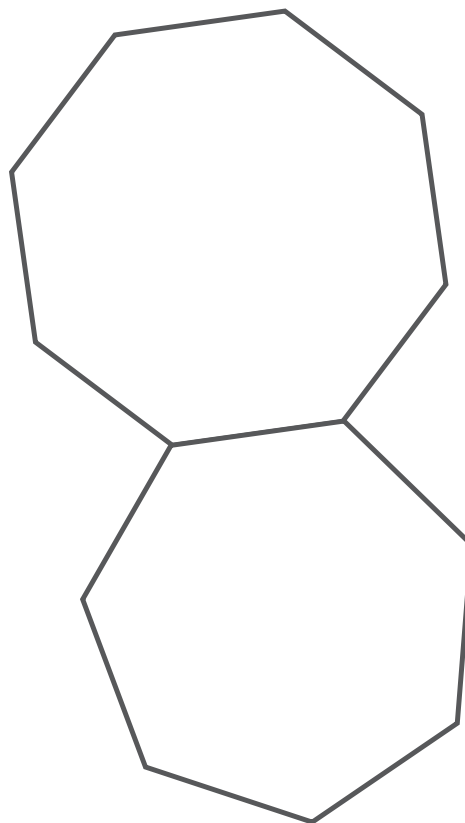
- The lava pool is made up of regular polygons.
- The perimeter of the octagon is 64m.



What is the perimeter of the whole lava pool?

$$64 \div 8 = 8$$

There are  $13 \times 8$  sides = 104m



What was your final score? .....

**END OF GAME – you must have been in good shape to get this far!**