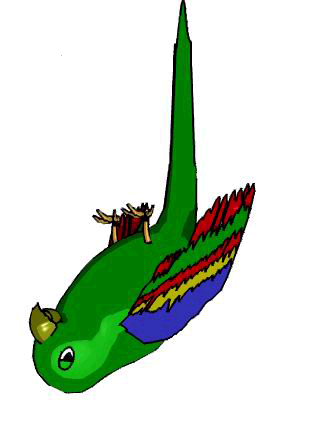
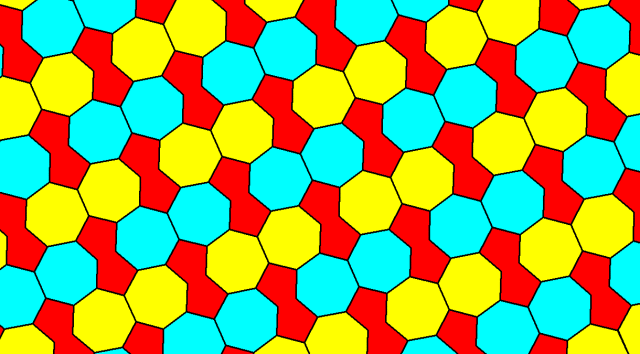
# Catchphrase

Write down what mathematical object this represents.



Underneath, write down the meaning and etymology (historic origin) of this word.

# Polygons



### Can you find a pattern like this in your house?

### Take a photo of it.

### We are going to learn about which shapes you can use to make such patterns and why.

### Prior Knowledge:

To know the names and properties of several quadrilaterals and other polygons

To know the difference between a regular and irregular polygon

### Activities:

Factsheet to learn from – read through for one minute, then test each other in pairs.

<https://quizlet.com/_883lbt?x=1qqt&i=1dpca9>

Example of how to test each other.

Test, self marked.

1. What is the name given to any four sided shape?
2. What properties define a square?
3. A rectangle is also a parallelogram. Why is a parallelogram not necessarily a rectangle?
4. What name is given to
   1. A five sided polygon?
   2. A six sided polygon?
   3. A seven sided polygon?
   4. An eight sided polygon?

1. What does it mean when a polygon is regular?
2. A four sided shape with exactly one pair of parallel sides is called a…
3. Sketch a kite and write down what properties define this shape
4. A four sided shape whose side lengths are all equal goes by what name?

### Prior Knowledge:

To know the angle-sum of a triangle

### Check:

Write down what the angles in a triangle add up to.

### Aims:

To work out the interior angle-sum of polygons

### Activities:

Examples:

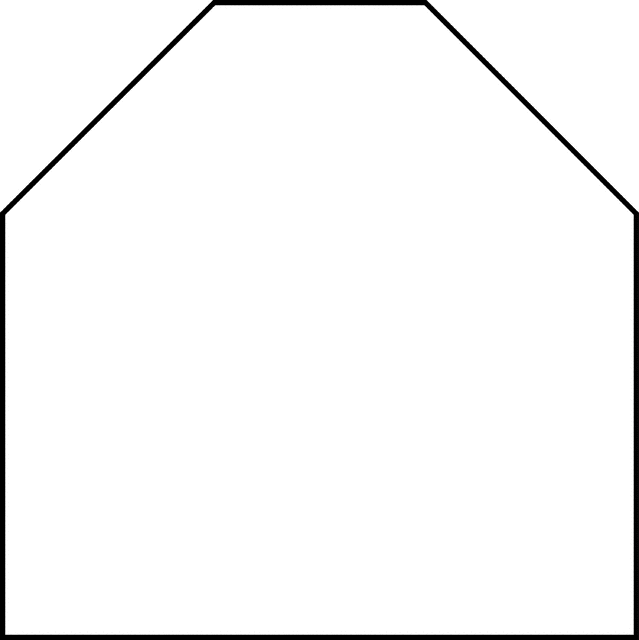
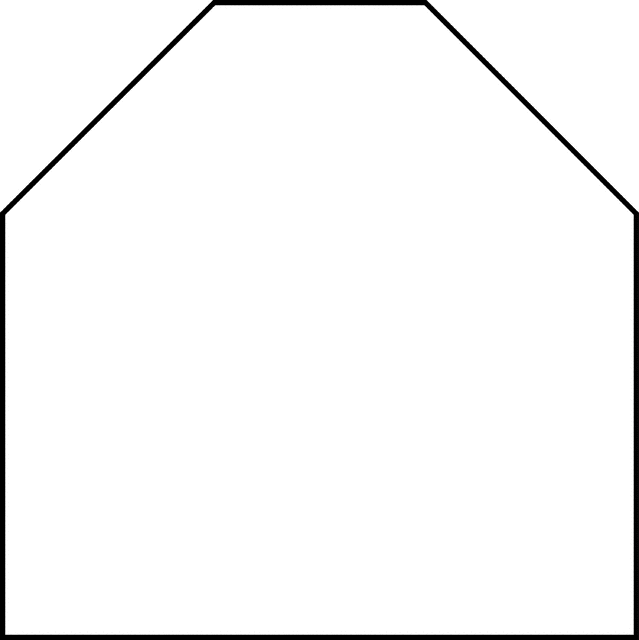
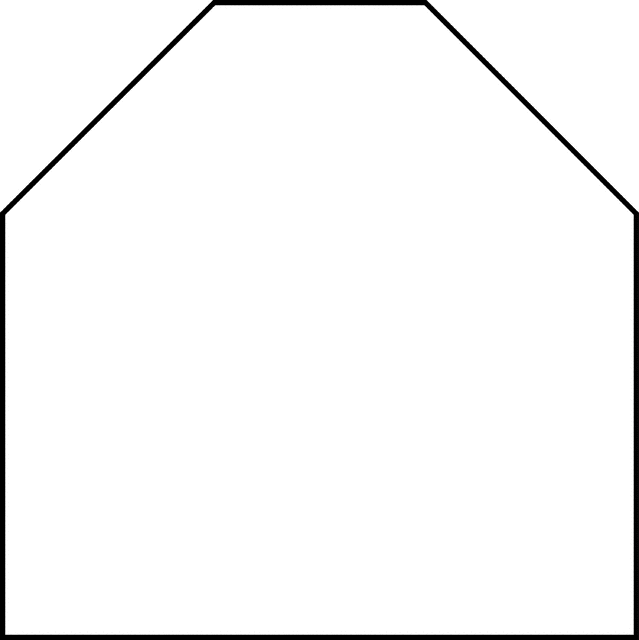
Quadrilateral (rectangle by right angles, irregular by splitting)

Pentagon: Example

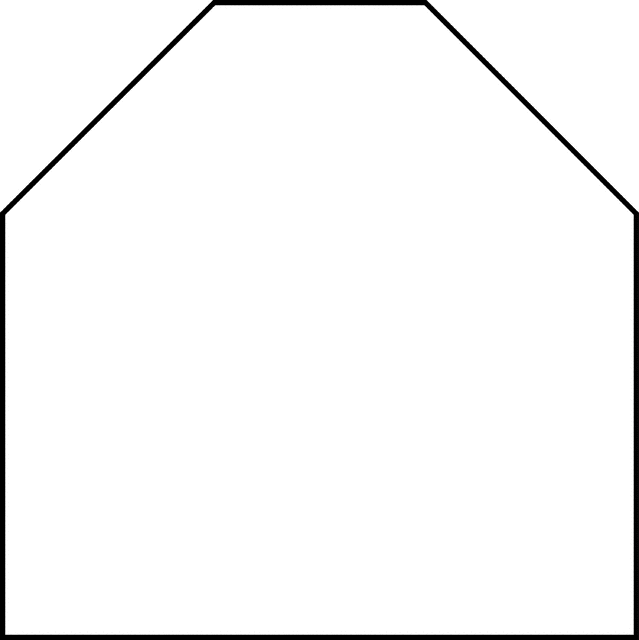
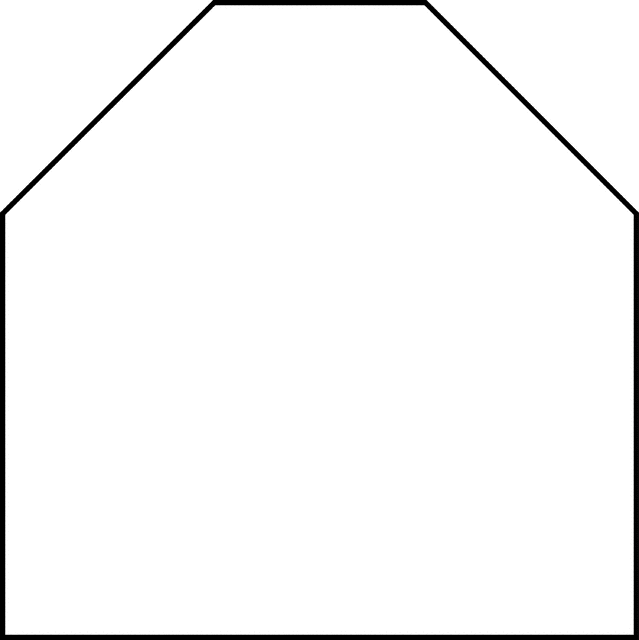
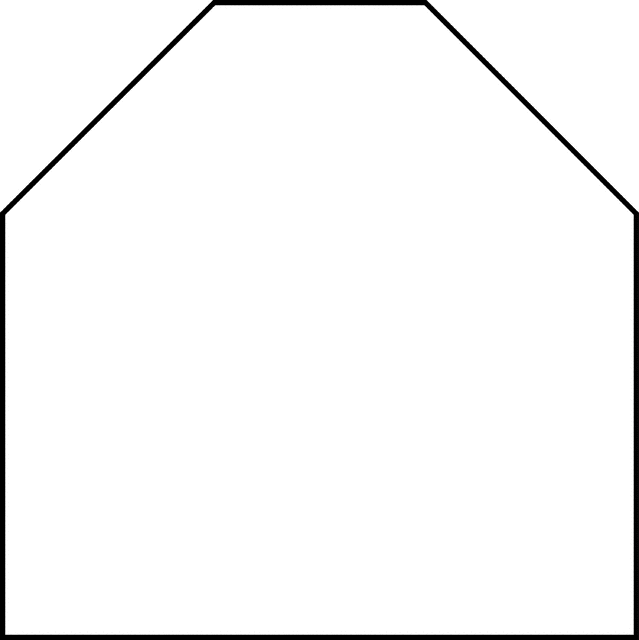
Pentagon: Non-example of what happens when you join too many vertices.

Which of the following ways of splitting up a hexagon into triangles will make it easiest to find its interior angle-sum?

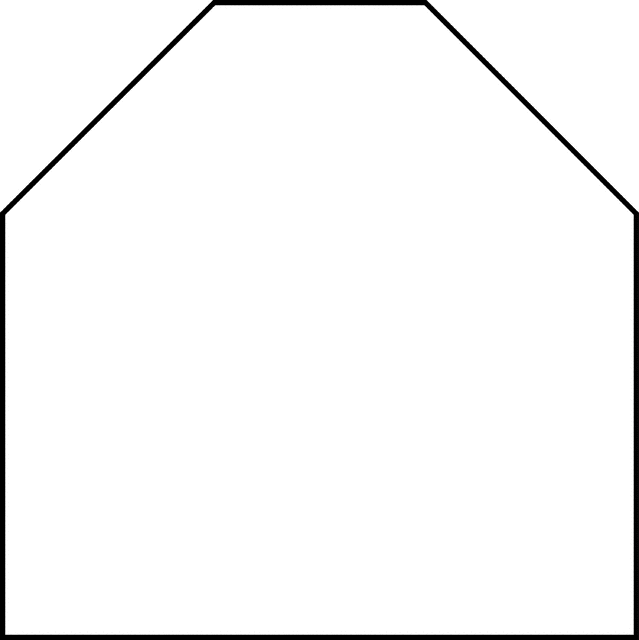
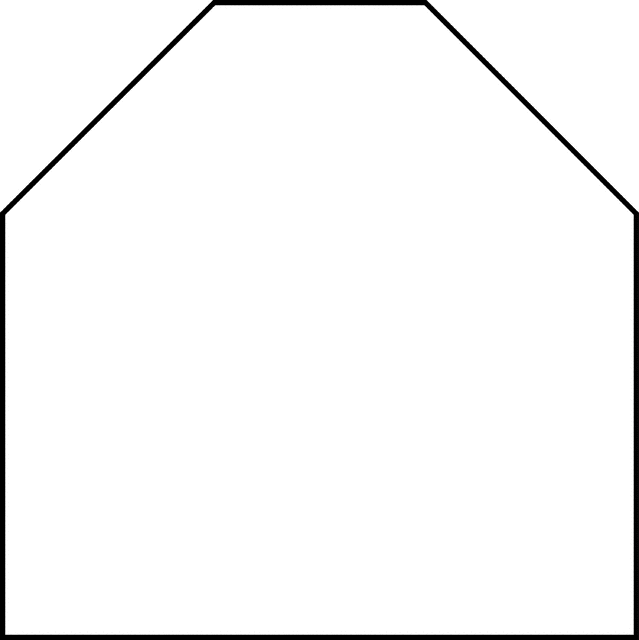
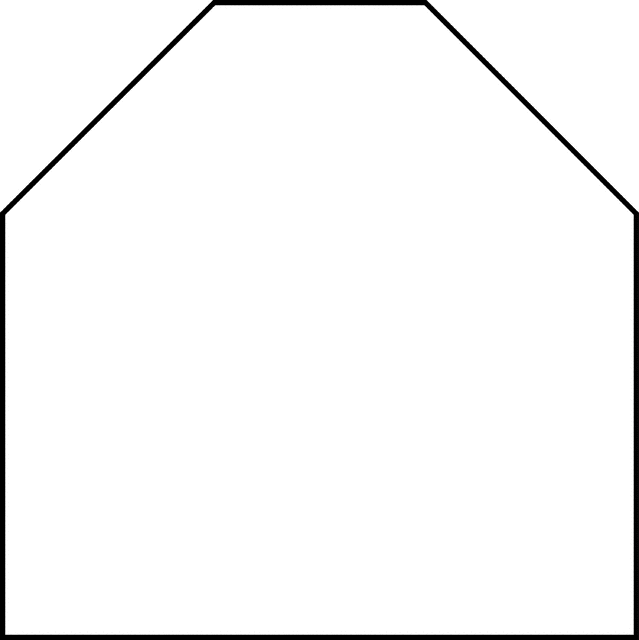
A B C

D E F

G H I

Discussion of alternative approaches:

* Using picture H - subtracting 360
* Using picture I - Splitting into quadrilaterals.

Practice: Worksheet section on interior angles

Extension if complete: Worksheet on tessellation

### Prior Knowledge:

To know the link between angles on a straight line

### Activities:

Write down what angles on a straight line add up to.

?

110°

Find the missing angle:

### Aims:

To know the definition of an exterior angle of a polygon

### Activities:

Teacher introduction.

Key points: Not the whole reflex angle, can be either side

### Aims:

To know the exterior angle-sum of a polygon

### Activities:

1. To the right is an equilateral triangle.

60°

60°

60°

120°

a) Explain how you know the angle labelled must be 120°

b) Label the other two exterior angles on the diagram.

c) What do the exterior angles add up to?

2. a) Sketch a rectangle.

b) Label all the interior angles on your diagram.

c) Draw the exterior angles on your diagram and find their value.

d) What do the exterior angles add up to?

3. Repeat for a pentagon.

Each interior angle is

4. Write down a rule that you believe about the sum of exterior angles.

5. Prove your rule.

Example of how to prove the exterior angle-sum of a pentagon.

### Assessment:

Draw a hexagon and split it into triangles.

Show how this helps you work out the interior angle-sum.

What is the exterior angle-sum?

With what other shapes could a hexagon tessellate?

