



Glencoe Geometry Chapter 6.1 & 10.1

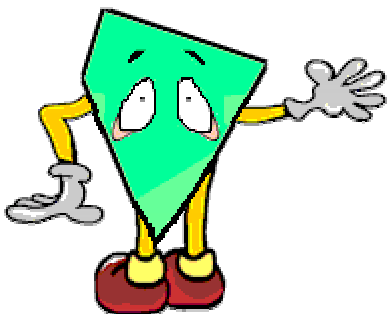
Parallelograms &

Tessellations

By the end of this lesson, you should be able to

1. Recognize and apply properties of parallelograms.
2. Recognize beautiful tessellations.

No more triangles today!! However, triangles belong to a larger family of closed, 2-dimensional geometric shapes consisting of a collection of line segments joined at their ends called _____.



<http://regentsprep.org>

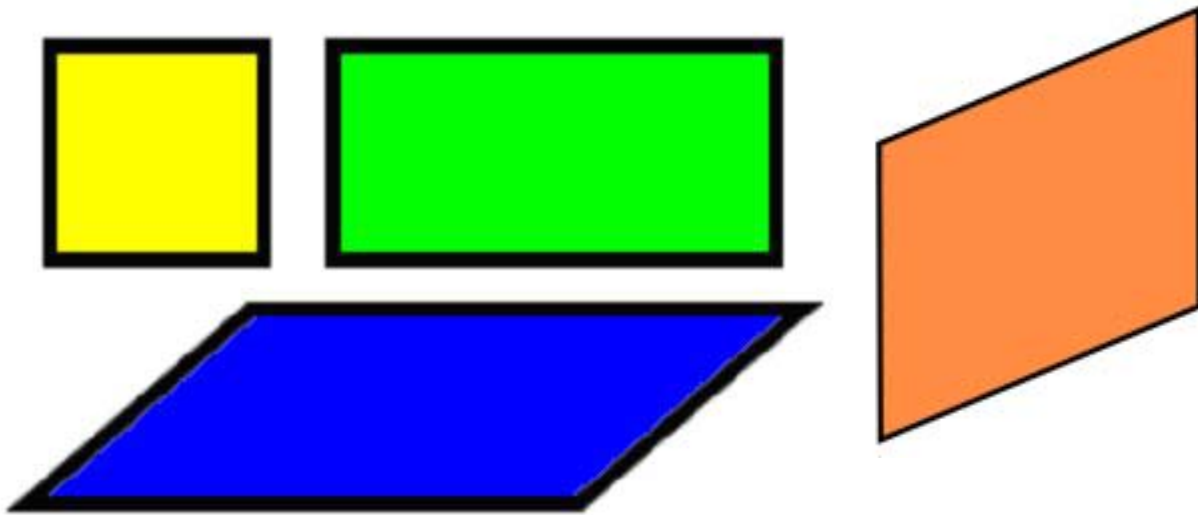
Today we are kicking it up a notch as we begin our study of four-sided polygons called

_____.

There are many types of four-sided shapes, but today we are looking at a very special type.

Parallelogram—a quadrilateral with *both* pairs of opposite sides parallel to each other.

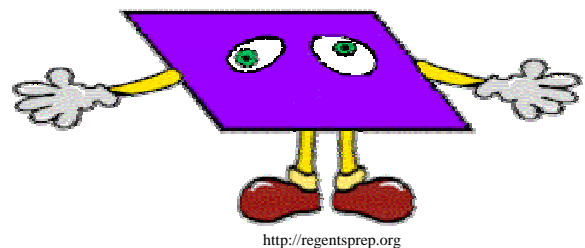
Examples:



Parallelograms have some important properties:

1. Opposite sides are congruent
2. Opposite angles are congruent
3. Consecutive angles are supplementary
4. The diagonals divide it into two congruent triangles
5. The diagonals bisect each other

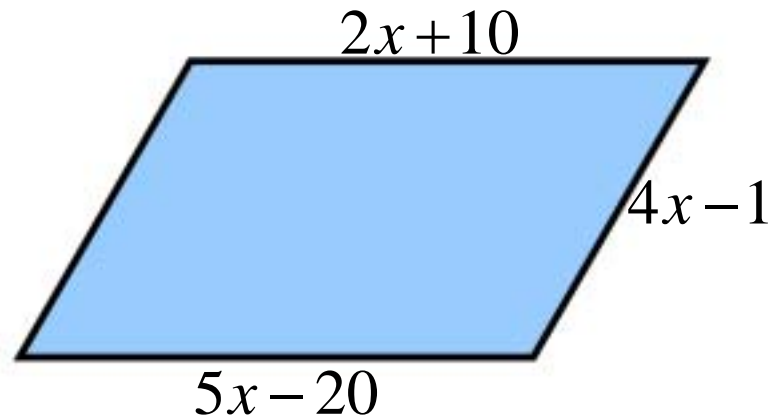
Let's work with some of these parallelograms!



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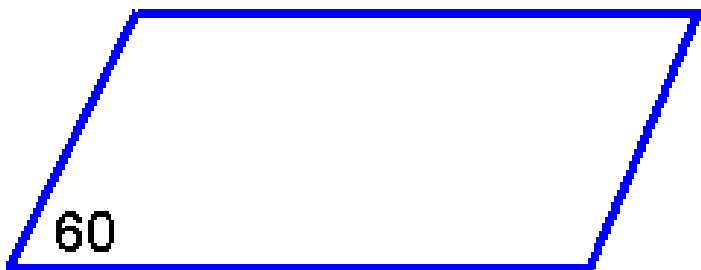
Example:

The opposite sides of a parallelogram are represented by $2x+10$ and $5x-20$. Find the length of unlabeled side.



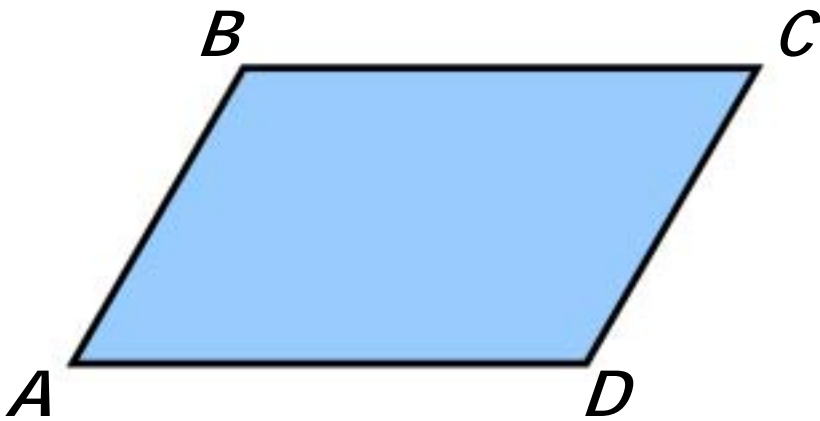
Example:

If one angle of a parallelogram is 60 degrees, find the number of degrees in the remaining 3 angles.



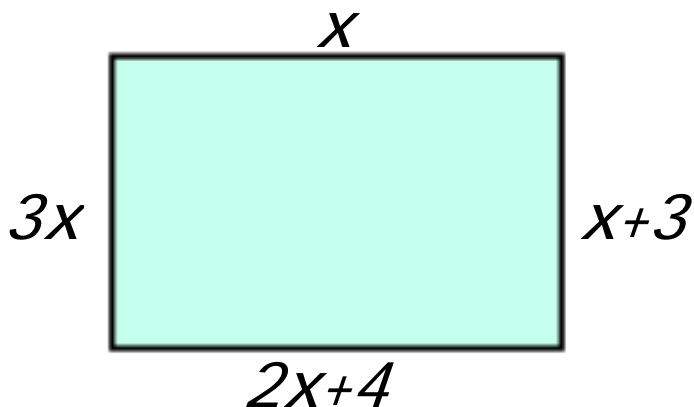
Example:

The measures of angles A and B of parallelogram ABCD are in the ratio of 2:7. Find the measures of angle A and angle B.



Example:

In quadrilateral PRST, the perimeter is 49. $PR=x$, $RS=x+3$, $ST=2x+4$, and $TP=3x$. Find the length of the shortest side of the quadrilateral.



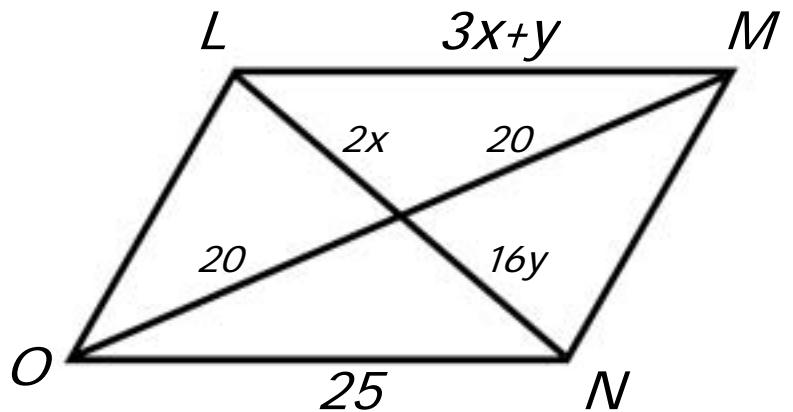
Example:

If $ABCD$ is a parallelogram and the slope of \overline{AB} is $\frac{1}{3}$, then the slope of \overline{CD} is _____.

- A. 3 B. $\frac{1}{3}$ C. $-\frac{1}{3}$ D. -3

Example:

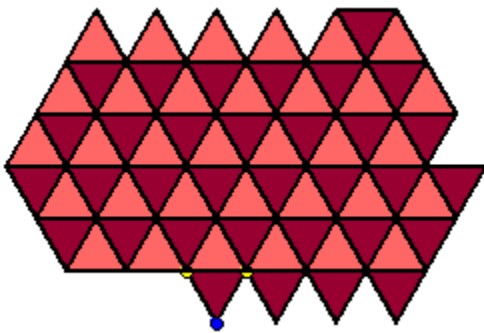
In parallelogram $LMNO$, find the values of x and y .



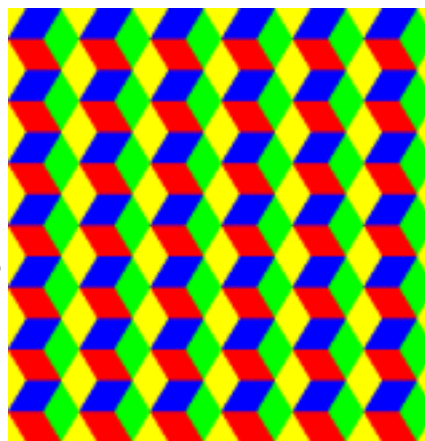
Say What??!!

A **tessellation**, or tiling, is created when a shape is repeated over and over again covering a plane without any gaps or overlaps.

These can be fun to create and are often used in art and design.



<http://mathforum.org/pubs/boxer/tess.html>



<http://gwydir.demon.co.uk/fo/tess/triex.htm>

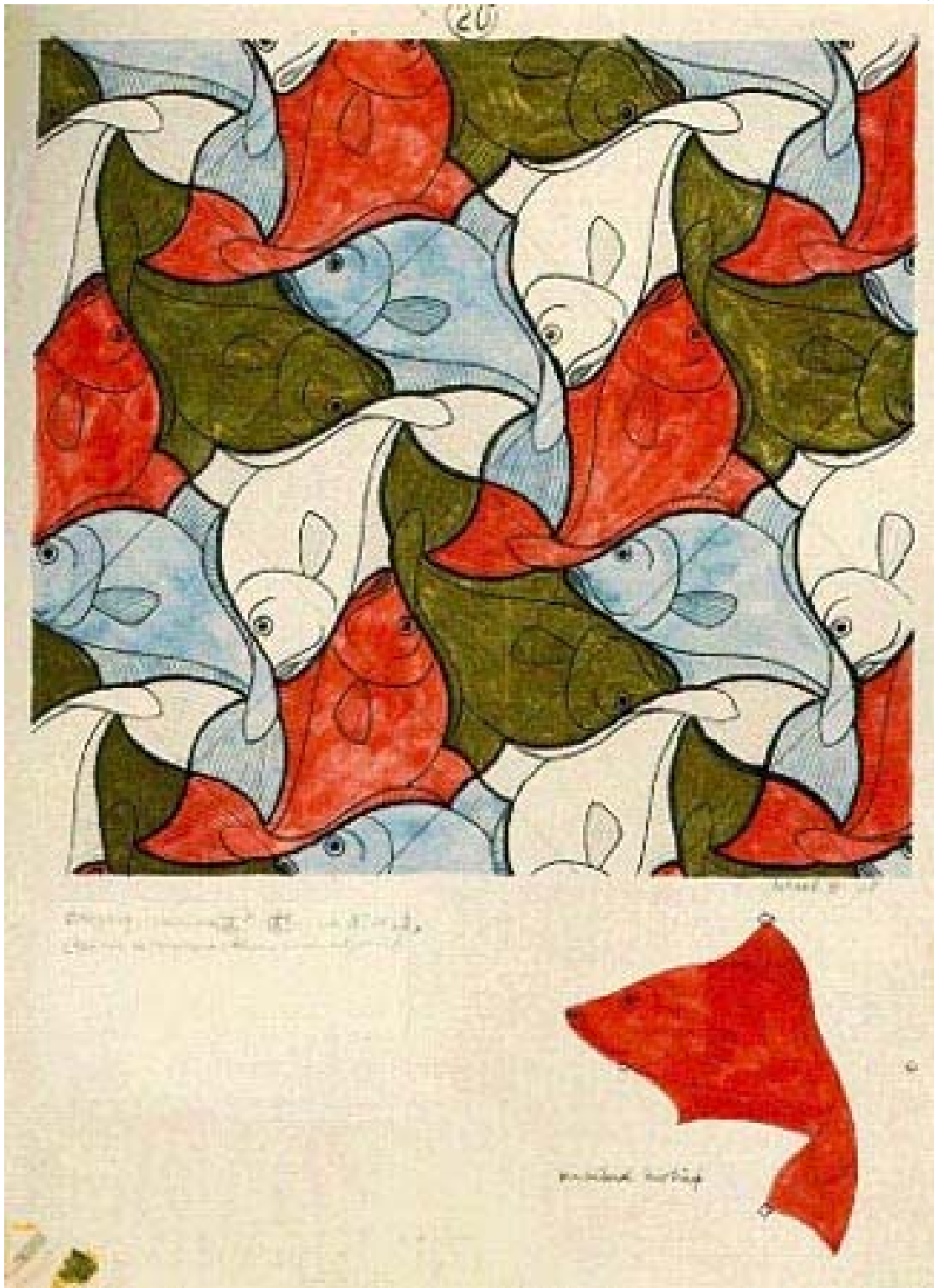


http://www.concretenetwork.com/concrete/concrete_patio/stamped_concrete_is_first_class.htm

M.C. Escher (1898-1972) is one of the world's most famous graphic artists whose art incorporated complex geometric patterns and many tessellations in his symmetry drawings.

Check out the official website at:

<http://www.mcescher.com/>



Escher's **SYMMETRY NO.20**

<http://www.mcescher.com/>



Escher's **Metamorphosis II** 1940

<http://www.mcescher.com/>



Escher's **Reptiles** 1943

<http://www.mcescher.com/>