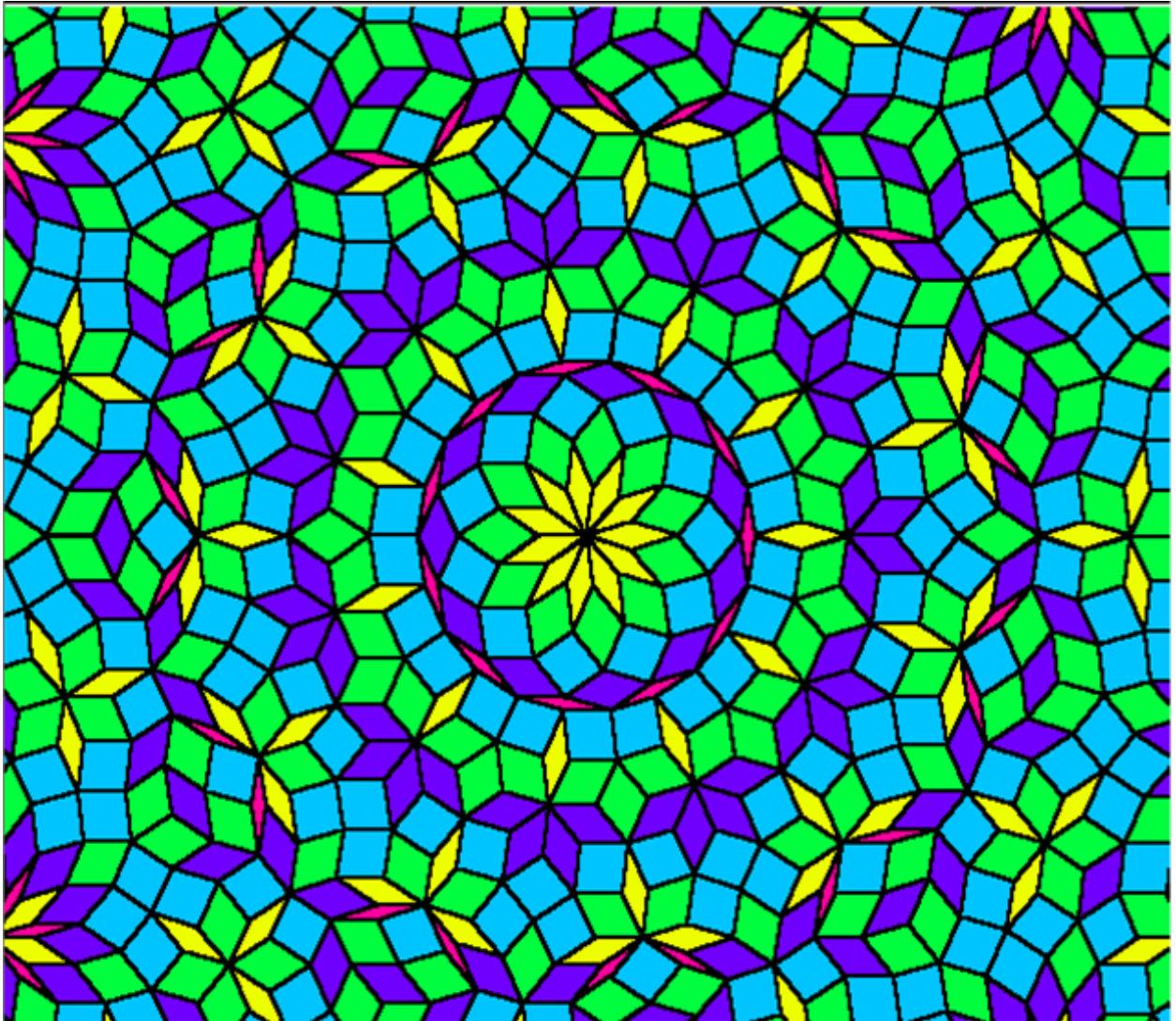


3

Patterns and Shapes



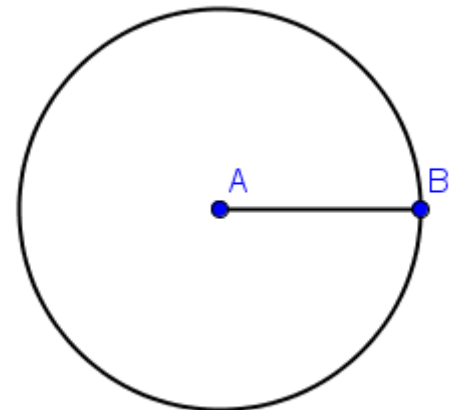
Geometric Shapes

A **Point** is the smallest of all shapes. It tells us where we are in space. The letter A is keeping it company so that it can be found.



Stars in the night sky are like our Sun. Because they are so far away they look like points of light.

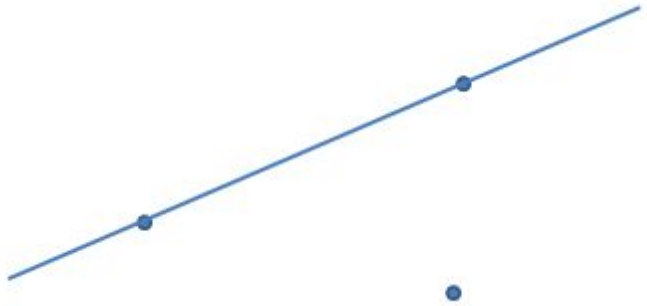
In this picture the point A is at the center of a **Circle** which is always the same distance from A.



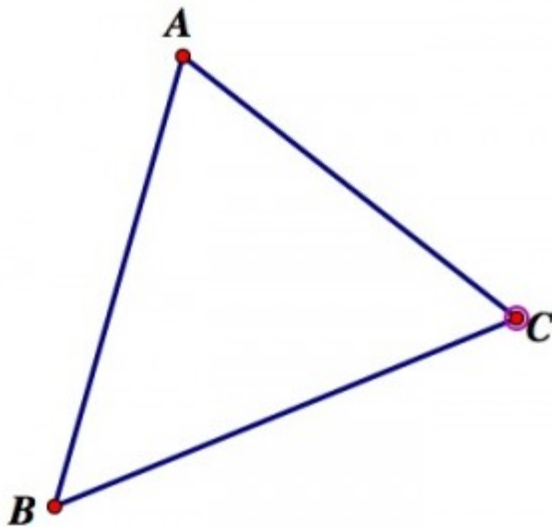
Here is a great big circle in London that can take you for a ride in the sky.

Can you see the center of that circle?

Two points can be joined by a **Straight Line**. It can also go outside the points.



How many lines could you draw using the 3 points shown in this picture?



Here are 3 more points with 3 lines drawn between them to form a **Triangle**. The triangle has three edges.

This Road Sign has the shape of a triangle. It tells people to let other cars at the road junction go first



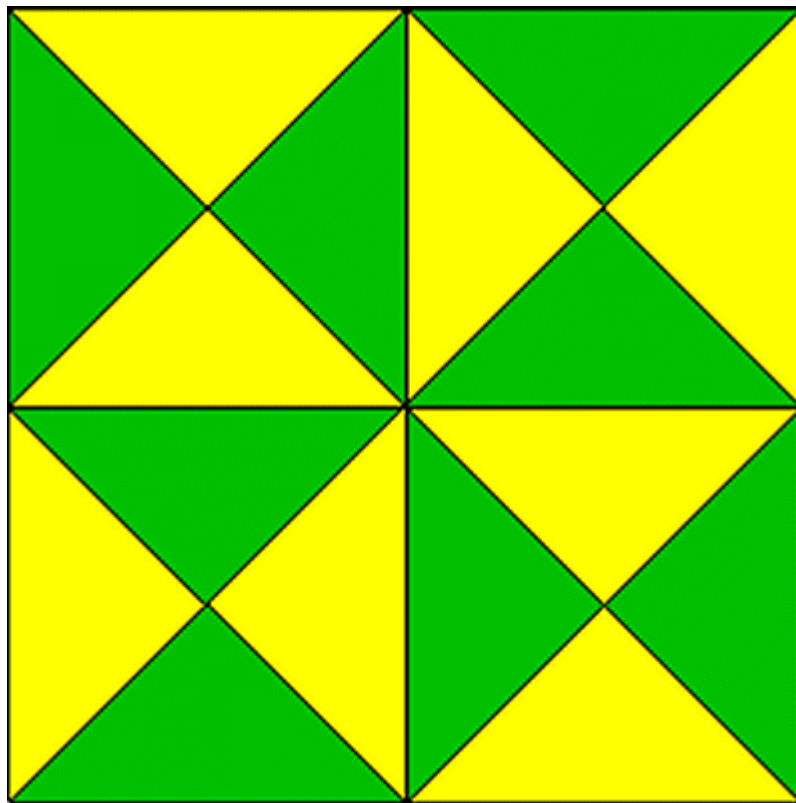
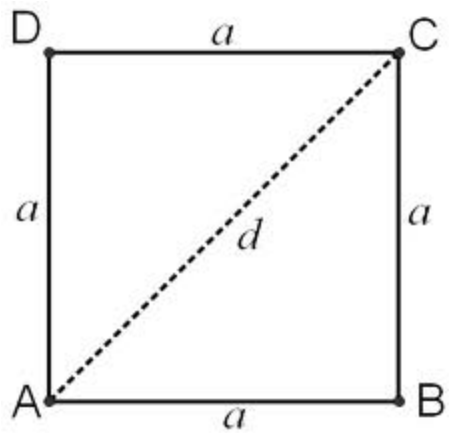
Do you sometimes eat a Triangle of pizza?



Or live in a House that looks like a Triangle?

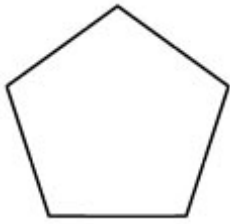


Now there are 4 points that are joined by straight lines to make a **Square**. Each edge of the square has the same length. The dashed line is a diagonal which divides the square into 2 triangles.



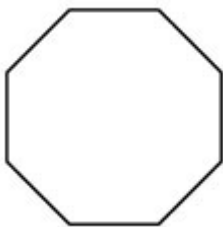
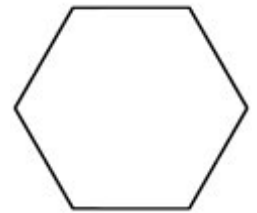
Here is a picture with squares and triangles. Can you count how many squares there are? Did you find 10? Now try and count the triangles. How many are green? Do some have both colors?

Here are some other flat shapes we can draw:

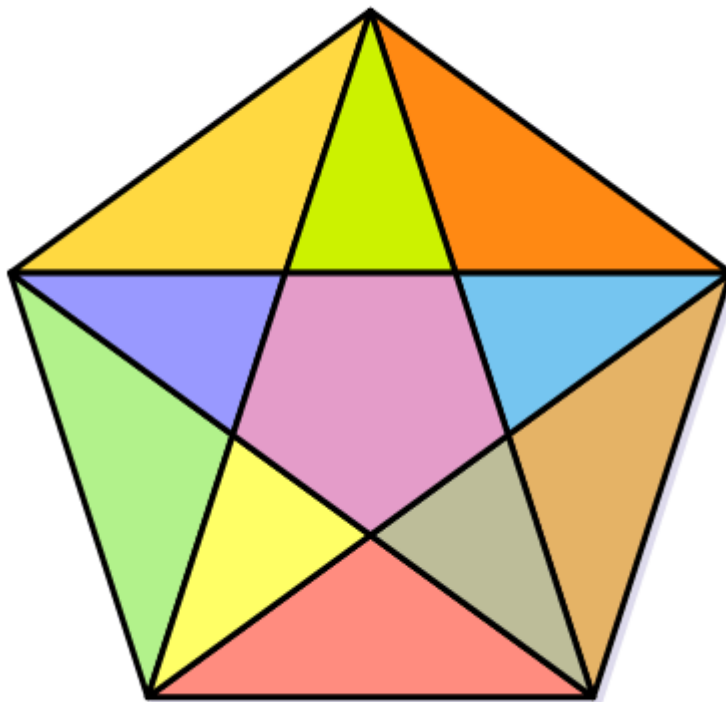


A **Pentagon** with 5 points, one at each corner, and 5 edges.

A **Hexagon** with 6 points and 6 edges.



An **Octagon** with 8 points and 8 edges.



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What shapes can you find in this colored picture?
There is a new shape called a **Rhombus** on each edge. Can you find them?



What shape is this
Stop sign?
Did you count the points
and edges?

Why is this
building called
the **Pentagon**?



How many points
and edges can
you see?



This San Francisco house
has the shape of an
Octagon.

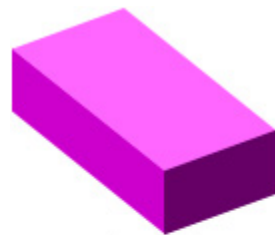
We can only see 4 of its
walls. How many can't we
see?

Does $8 - 4 = 4$?

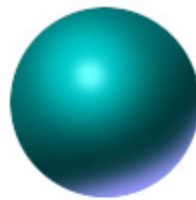
Solid shapes with special names



Can you use the picture below to give names to the wooden shapes shown above?



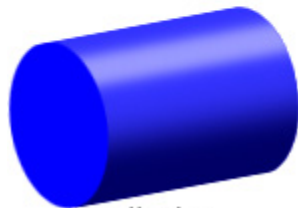
rectangular
prism



sphere



cone



cylinder



pyramid



cube

Did you notice that the wood **Cylinder** is standing up and that the wood **Prism** is triangular?

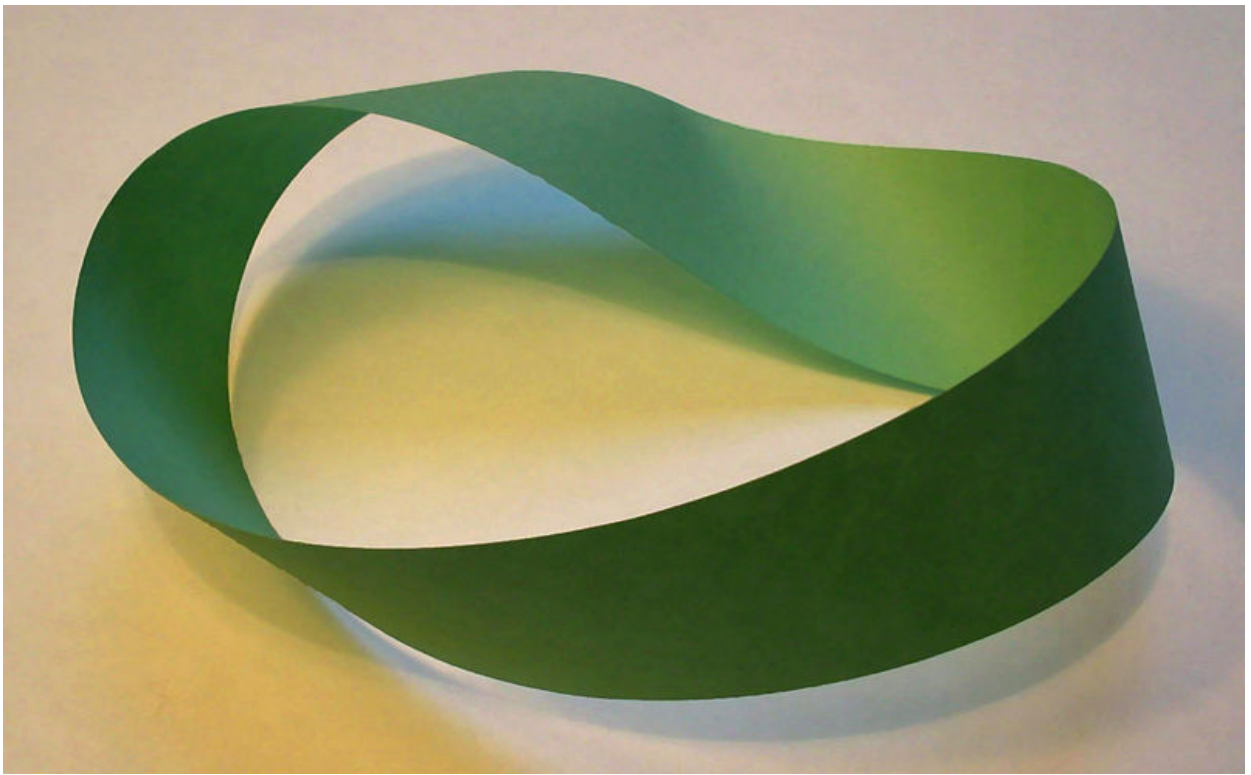
What shapes are the things shown below?



Do you know what the things are?

Are any of them good to eat?

This interesting shape has only 1 side and 1 edge



It is a **Mobius Strip**.

Make one from a strip of paper given 1 twist before sticking the ends together.

What happens if you make 2 twists?
Did you find 2 edges and 2 surfaces?

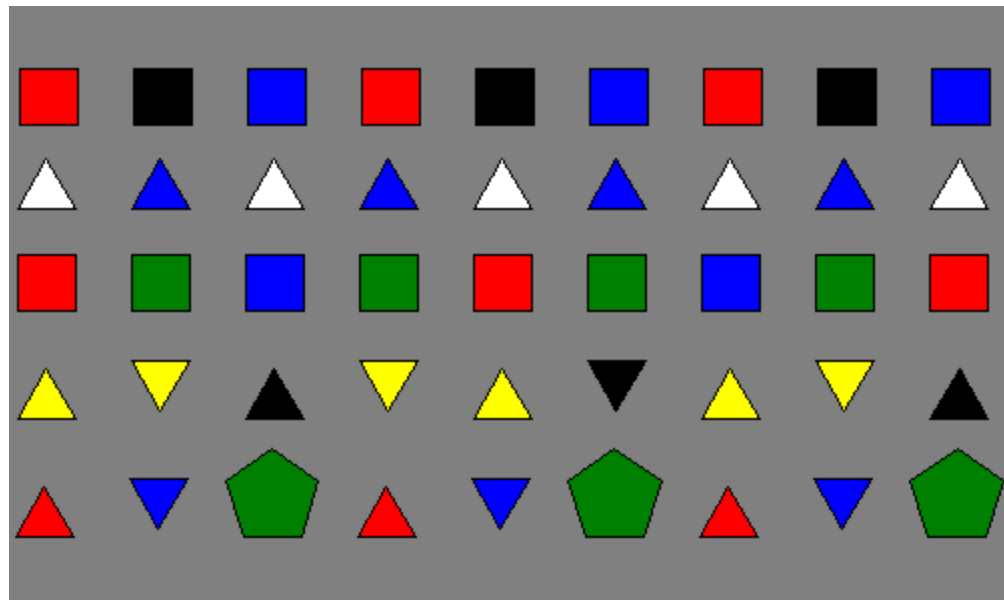
Does it change again with 3 twists before sticking?
How many edges and surfaces did you find?

Patterns

Patterns are things arranged in special ways.



In this picture, rectangles like bricks are arranged in pairs to make the pattern.



Each row of this picture has a different pattern.

Can you draw a new row, using just circles, that looks like the top row of the picture?

Does that pattern use 3 colors, **red**-black-**blue**?

Are they in a special order?

Should your circles do the same?



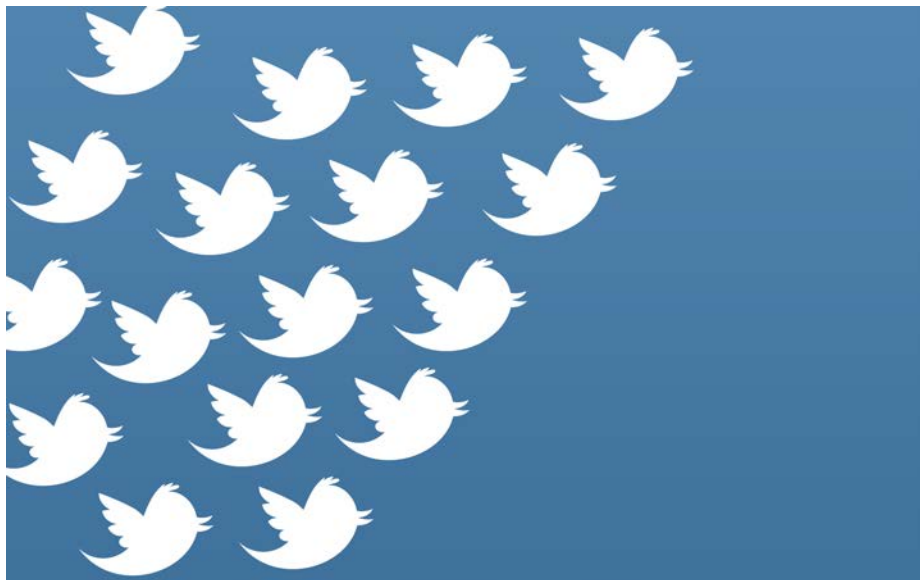
Here 4 people from the Alvin Ailey company are dancing and making a pattern with their arms and legs. You could do the same with some friends.



These 6 dancers from the Dance Theater of Harlem are making another pattern.



Birds fly in a pattern to make it easier to fly a long way. The bird leading the flock changes regularly.



Here is a picture of birds flying in a different pattern. Who do you think is leading the flock?

We can find patterns in the way that plants grow.



The leaves of this Cactus have a **triangular** shape and grow to give a **Spiral** pattern.

This tree trunk has a pattern of rings. One new ring is added for each year that the tree grows.

Can you count the age of the tree?
That's hard to do.





Spiders spin silk threads and make a web with a **circular** and **radial** pattern so that they can catch flying insects to eat.

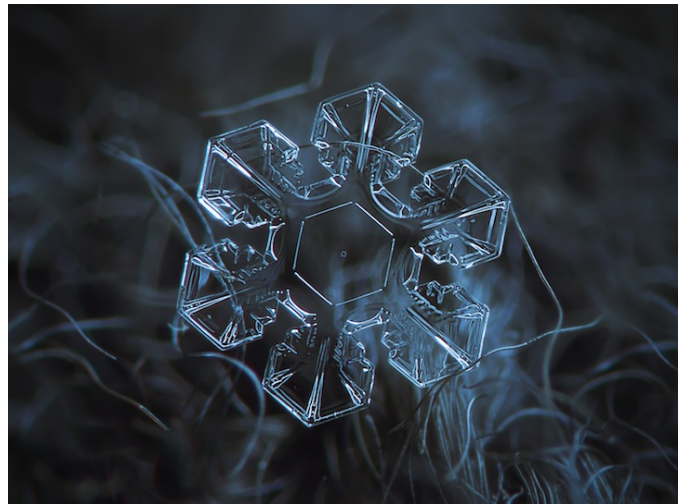


This spider is waiting at the center of his web for his lunch to arrive.

Snowflakes are frozen water and they can grow in the pretty shapes you can see in these pictures.



Do you think that these pictures show the same pattern?



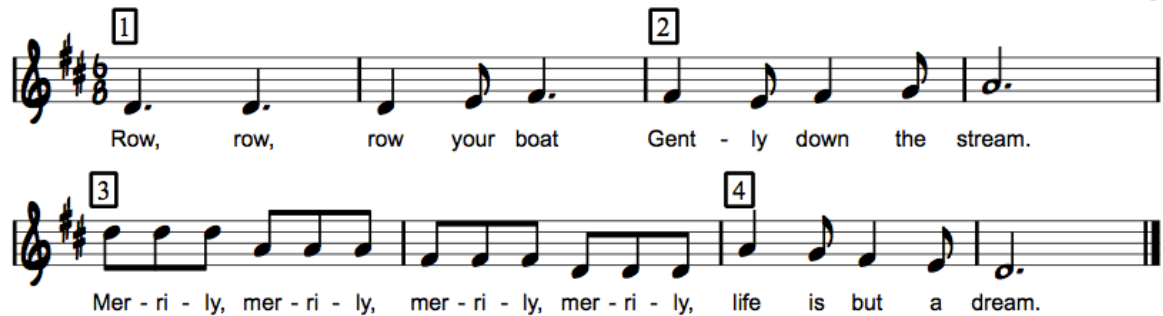
Do all of the flakes have six points?

Is that a **Hexagonal** pattern?

To help us sing songs, the **pattern** of the **music** and the **words** can be written on a sheet of paper.
Here are 3 songs you might want to sing.

Row Row Row Your Boat

Folk song



1 2

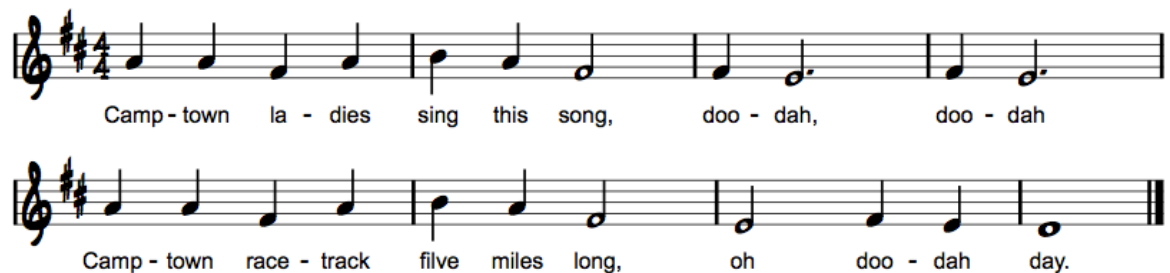
Row, row, row your boat Gent - ly down the stream.

3 4

Mer - ri - ly, mer - ri - ly, mer - ri - ly, mer - ri - ly, life is but a dream.

CAMPTOWN RACES

STEPHEN FOSTER



Camp - town la - dies sing this song, doo - dah, doo - dah

Camp - town race - track five miles long, oh doo - dah day.

FRERE JACQUES

FRENCH FOLK SONG



Fre - re Jac - ques, Fre - re Jac - ques, Dor mez - vous? Dor mez - vous?

Sonnez les ma tin - es, Son nez les ma tin - es, Din, Din, Don! Din, Din, Don!