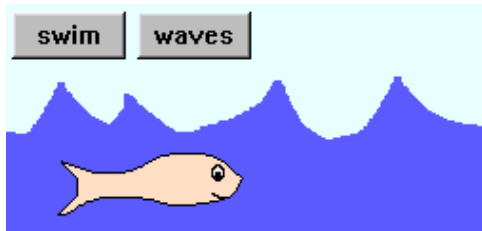


Swimming Fish

A MicroWorlds Activity Page



There are lots of ways for a fish to swim through ocean waves on a MicroWorlds page.

First, of course, you'll need to draw a fish and place it in the shapes center. (See

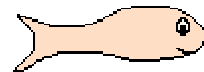
Make a Shape.)

Method 1: Move the fish in one direction.

1) Draw an ocean background.



2) Hatch a turtle. In the command center, type `rt 90` (right 90) and hit Enter, so the turtle faces to the right.

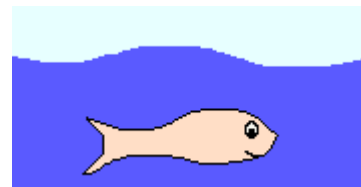


3) Click once on the fish shape and then on the turtle to give it the shape of the fish. Right-click the turtle and name it *fish*.

Name:	fish
Instruction:	fd 1 / 10
Do It:	<input type="radio"/> Once
	<input checked="" type="radio"/> Many Times

4) Give the turtle the instruction `fd 1 / 10` and set it to *many times*. Click OK.

5) Click the turtle and it will swim. Click it again to stop it. (You may try different fractions after `fd` to change the fish's speed.)



6) You can also click on the Procedures tab and write a *swim* procedure. (Hit Enter after each line.) Make a button called *swim* and set it to *many times*.

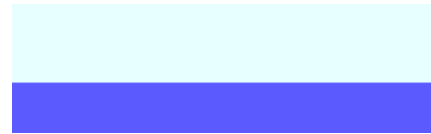
```
to swim  
fd 1 / 10  
end
```

Method 2: Keep the fish in one place and make the waves move instead!

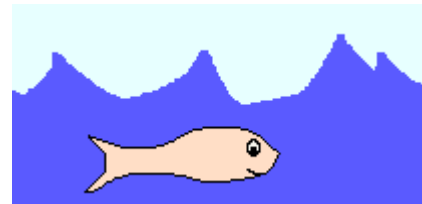
1) On a different page, draw some waves. Keep the sky area white. Copy and paste the waves into a shape.



2) Make a background with a straight line dividing sky and water.



3) Hatch 2 or 3 turtles and place the wave shape on each of them. Position them to hide the dividing line between sky and water, and so that one turtle is as far to the left as possible and another is as far to the right as possible. Hatch another turtle in the sky area; drag it on top of the waves and place the fish shape on it.



4) Write a *waves* procedure to set the waves in motion. (Try different numbers!)

```
to waves
ask [t1 t2 t3]
  [seth -60
   repeat 20 [fd 1 / 5]
   seth -120
   repeat 20 [fd 1 / 5]]
end
```

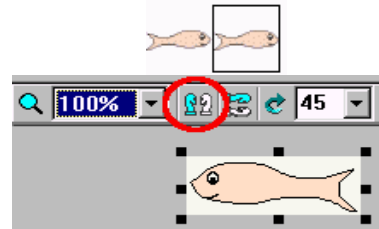
5) Make a *waves* button and set it to *many times*. Does the fish seem to be moving through the water?

Method 3: Make the fish swim back and forth.

1) Set up an ocean with waves as in Method 1 or Method 2.



2) Click once on the fish shape and copy it (CTRL-C), then click once on an empty shape and paste it (CTRL-V). Double-click to open that shape, then click the horse head to flip it. Name this shape *fish2*. Name the original fish shape *fish1*.



3) Write a *swim_and_turn* procedure so that when the fish gets near the edge of the page, it will turn around and swim the other way. Abs is absolute value.

```
to swim_and_turn
setsh "fish1 seth 90
forever [fd 1 / 10]
when [(abs xcor) > 230]
  [rt 180 changeshape]
end
```

```
to changeshape
if shape = "fish1
  [setsh "fish2 stop]
if shape = "fish2
  [setsh "fish1 stop]
end
```