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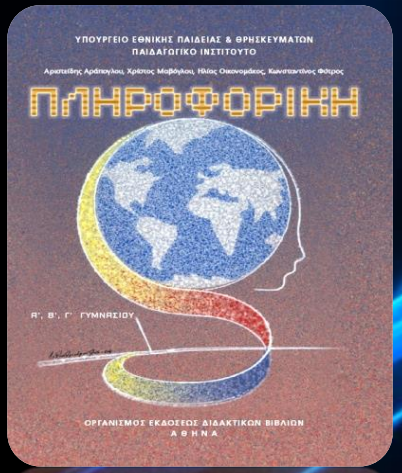
VCZ

SHAPES, CLIPART & GRAPHICS

CHAPTER 4

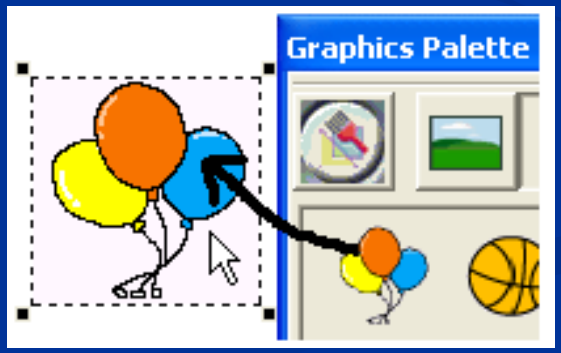


EVANGELOS C. ZIOULAS (IT TEACHER)

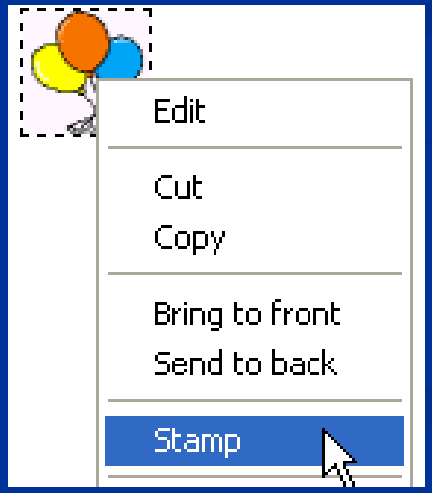
CLIPARTS ON THE BACKGROUND

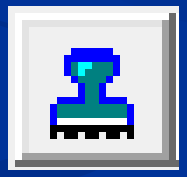
- The images from the **Clipart library** can be used as background images on our pages.
- Background images are not like turtles. They are **static** images and they **cannot be programmed**.
- In the **Painting/Clipart palette**, we can click on one of the three clipart buttons, **Backgrounds**, **Singles**, and **Sets**:

- We **drag the shape** of our choice from the Clipart palette to the page. The image appears on the page.
- We can **move** the image around and **resize** it by dragging one of its "corners".
- We should hold down the **Shift** key if we want the image to maintain the same proportion.



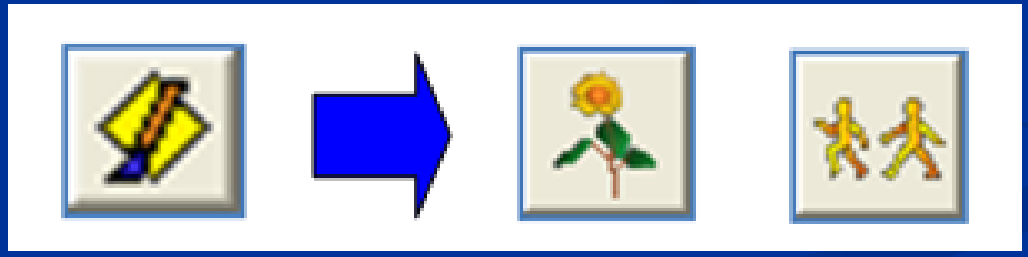
- When the image has the right position and size, we right-click on it and choose **Stamp** from the menu.
- The image is now **part of the background**. We can draw over it, erase it, etc.



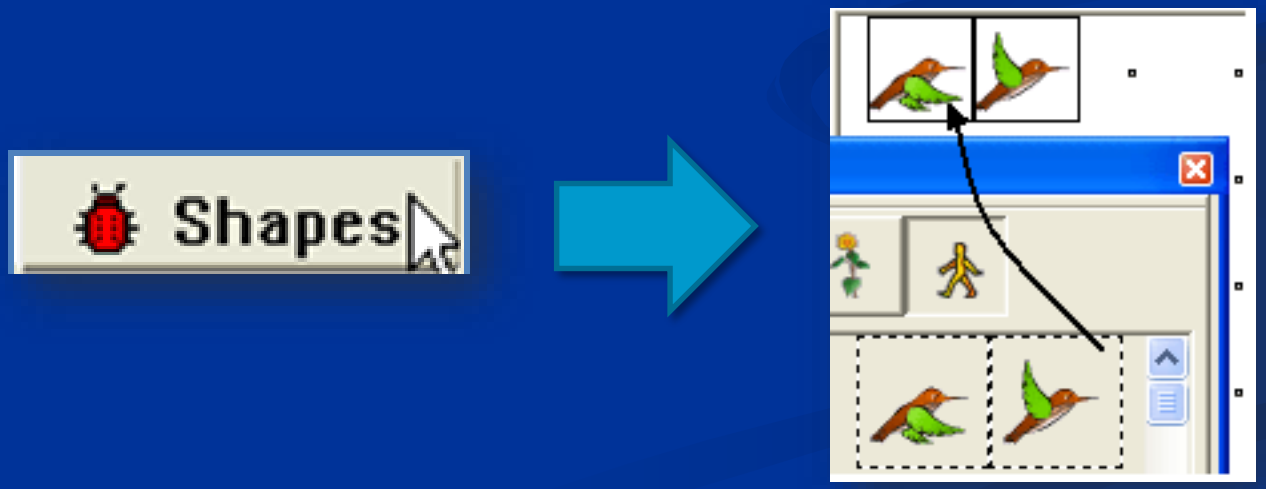


CLIPARTS AS PUBLIC SHAPES

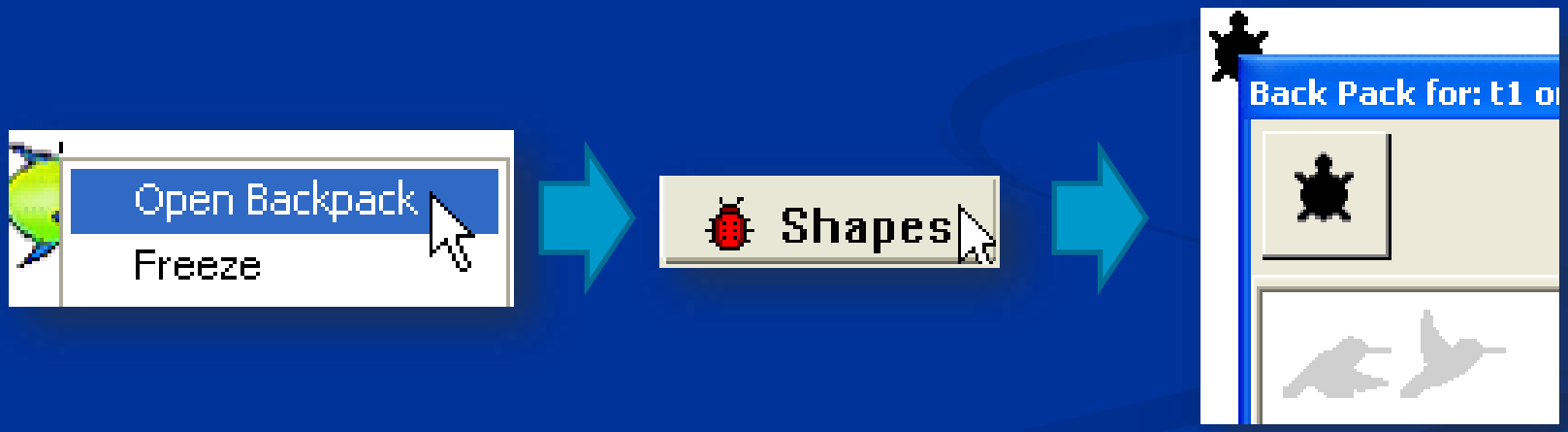
- A **Public shape** is a shape that any turtle in the project can use.
- Inside the **Clipart library** we click on either the **Singles** or the **Sets** shapes buttons:



- We open the project **Shapes** tab by clicking on this tab, in which we probably see a full panel of small dots, representing free spots for pasting shapes.
- Now we **drag** a few **shapes** from the Painting/Clipart palette to the **project's Shapes** tab. These shapes are available for any turtle to use.



- Now, we create one or more new turtles, we open the backpack of one of them and we click on the backpack's **Shapes** tab.
- We see the Public shapes in **light gray**.



- Each one of the shapes corresponds to a particular integer **number 1, 2, 3** …
- Using the command **setsh**, we can change the shape of a turtle.

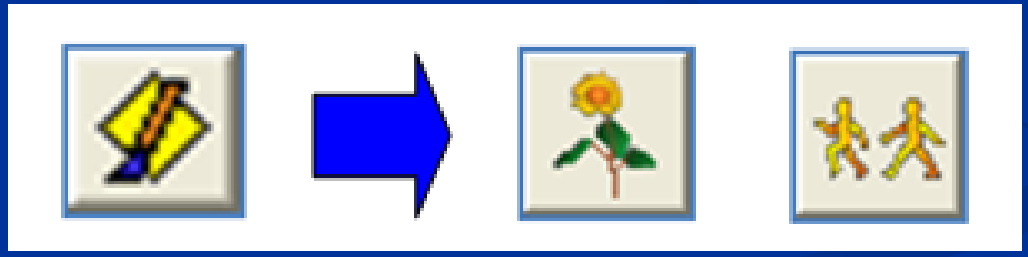
```
setsh 1
setsh 2
```

This commands mean:
Set the shape to 1
Set the shape to 2

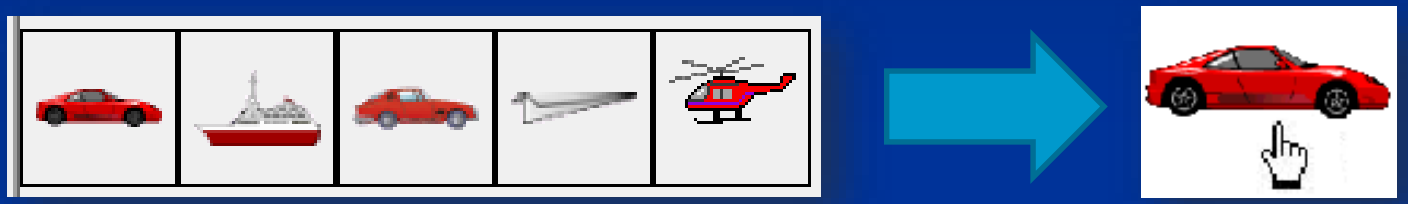
- Public shapes **are not "attached" to turtles**. They are saved with the project but they are not included in turtles if we export them.

CLIPARTS AS PRIVATE SHAPES

- A **Private shape** is a shape that can be used only by the turtle who "owns" it.
- Inside the **Clipart library** we click on either the **Singles** or the **Sets** shapes buttons:



- We select a few shapes; we click on one and holding down the **Shift** key we click on the last shape of the list that we wish to copy:



- Then, while the shapes are selected in the Painting/Clipart palette, we **click on the turtle**.

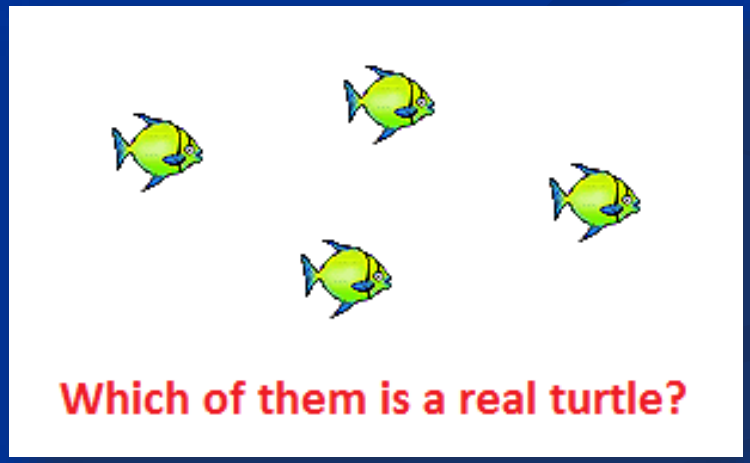
- We open the turtle's backpack and look at the contents of the **Shapes** tab. These shapes are now available for "this" turtle to use.

- Private shapes are "**attached" to turtles**. They are saved with the project and they are also included in turtles if we export them.

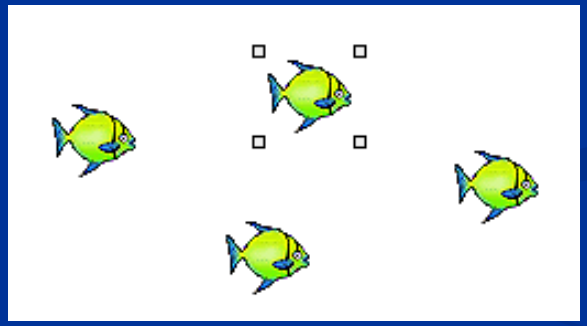
DIFFERENCES BETWEEN PUBLIC & PRIVATE SHAPES	
PUBLIC SHAPES	**PRIVATE SHAPES**
They can be used by **any turtle**	They can be used **only by the turtle who "owns"** those shapes (has the shapes in its backpack)
They are stored in the **project Shapes tab**. They appear in the Shapes tab of the turtle's backpack as **gray silhouettes** in order to let us know their shape numbers. However, they **cannot be** moved, deleted or **edited** from the turtle's backpack.	They are stored in a **turtle's backpack**. If there is a Private shape in the backpack Shapes tab that is "covering" a Public shape, the turtle always uses the **Private shape**. The private shape has **priority** over the project shape.

REAL TURTLES vs. STAMP SHAPES

- Clipart can be used as **turtle shapes** or simply dropped on the page as **graphics**.
- But, **how can we distinguish** a real turtle between a set of graphics?



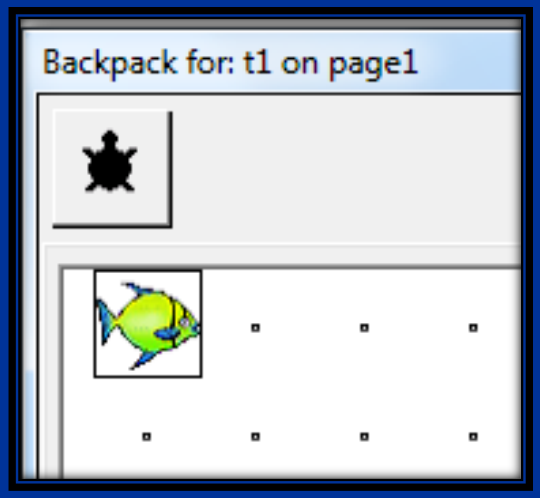
- To distinguish the turtle between the background clipart we choose **Select All** from the **Edit** menu.
- The **shapes with dots** at their corners **are turtles**. The shapes without the dots are background graphics.

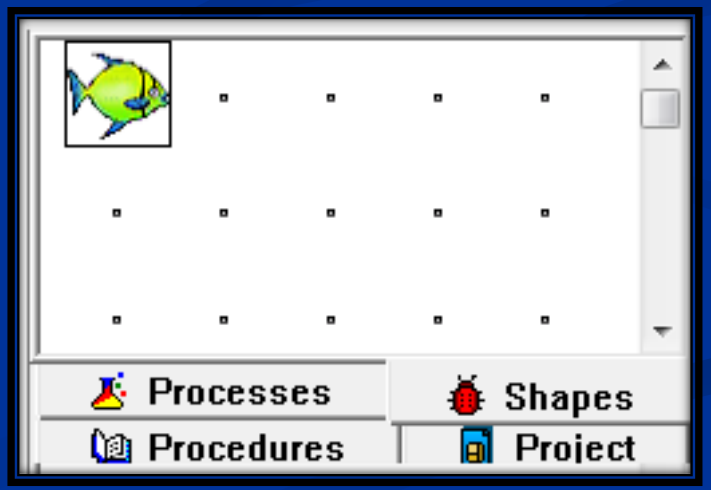


- We can move only the turtles simply by dragging them with the mouse.
- To clear or relocate the background graphics after they are stamped we need to use the **Painting tools**.

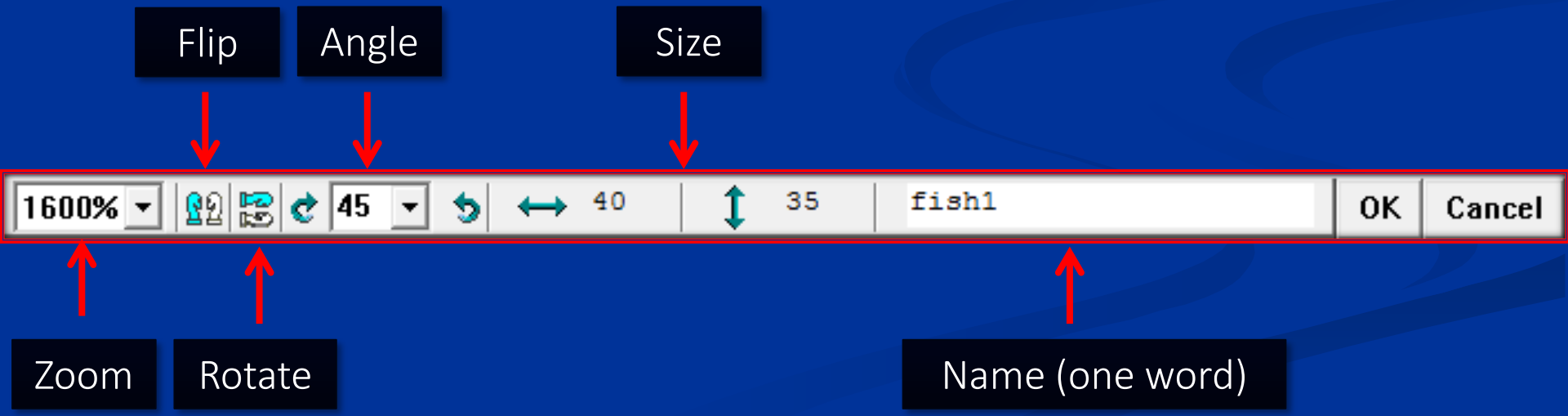
EDITING SHAPES

- The contents of the **Painting/Clipart** cannot be modified.
- If we need to modify a shape, we must first put it in the turtle's **backpack** or in the **project Shapes** tab. The same editing method works for both.



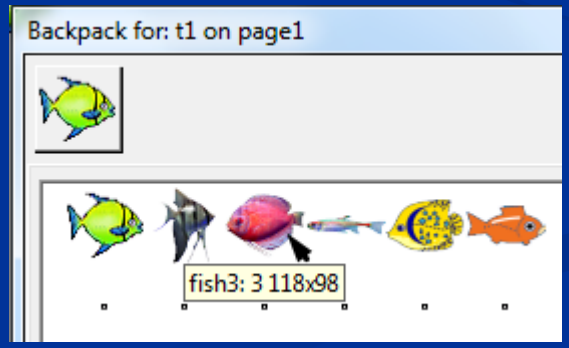


- To edit a shape in a turtle's backpack, we click on the **Shapes** tab.
- We can see the shape inside the Shapes tab; we **right-click** on it and choose **Edit** from the menu.
- The **Shape editor** opens.



SHAPE NAMES & NUMBERS

- To program a turtle to **use a specific shape**, we must know either the **shape's number** (its position in the Shapes tab) or the **shape's name**.
- To find out a shape's name and number, we put the **mouse pointer over a shape** in the backpack and then its **name**, **number** and **size** are displayed.



SETSH COMMAND

- We can also set the shape using commands.
- To do it, we click in the **Command Center** and type the following commands:

```
setsh 1
setsh 2
setsh "fish
```

We must not forget the quotation mark when we use the shape's name.

POSSIBLE ISSUES

- If a spot **number doesn't have a Private or a Public shape**, the turtle looks like a small dot.
- If we use a **shape name that does not exist**, we get an error message e.g.

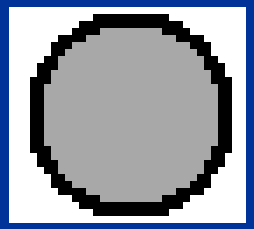
```
setsh "fishes
setsh does not like fishes as input
```

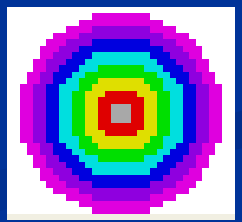
- If we **forget the quotation mark**, MicroWorlds thinks that the name is something to run (to execute) and displays an error message e.g.

```
setsh fish
I don't know how to fish
```

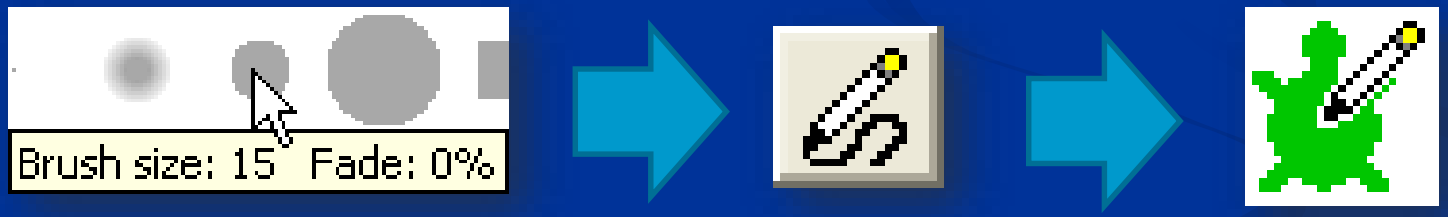
BRUSHES

- The Painting tools draw with the current brush from the **Brushes palette**.
- **Outlined brushes** use the current color, surrounded by a black outline.
- **Rainbow brushes** use the current color in their center.





- Turtles **cannot draw** using brushes, but we can use a brush to set the turtle's pen size:
- To do it, we click on a **brush** (if we leave the mouse pointer on a brush we get a description).
- Then we click on the **pencil** and finally on a **turtle**.



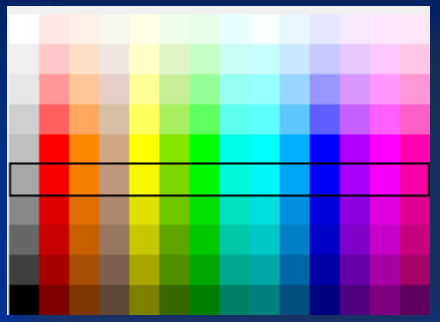
Note: Double click on the brush to edit it.

PATTERNS

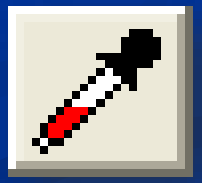
- The Painting tools can also draw with the current **pattern** if we select one.
- However, the turtles **cannot draw** with patterns.
- We may use a turtle to draw a figure on the page and then use the **Paint can** to fill the area with a pattern.

COLORS

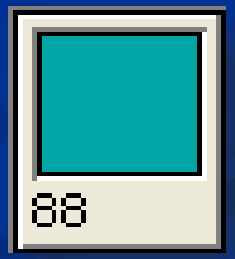
- To select a color for a painting tool, we click on a color in the **Colors palette**.



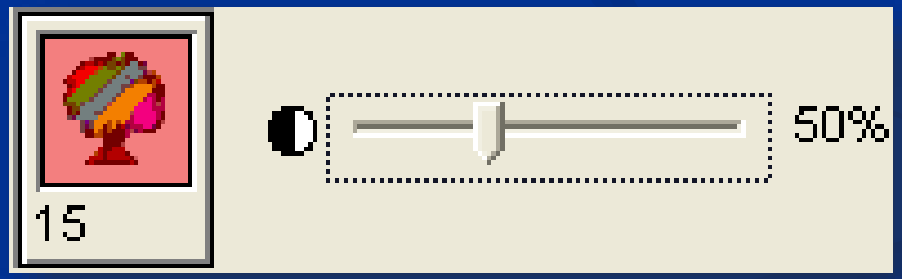
- We can also use the **Color picker** tool by clicking anywhere on the page.



- MicroWorlds finds the closest color in the Colors palette to the color on which we clicked. We can see the color in the **Color viewer**.

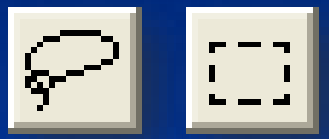


- Use the **Opacity slider** to change a color's opacity.
- The color number remains the same but the drawings made with any color are semi-transparent.
- The color viewer shows the effect of each level of transparency.



SELECT & RESIZE GRAPHICS

- To select background graphics, we choose a **selection tool**:

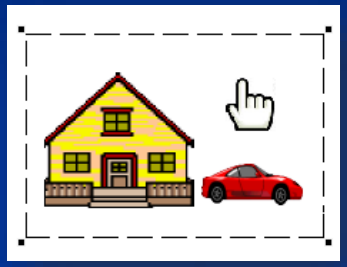


- We click on the background and **drag to select** a region around the desirable graphic.

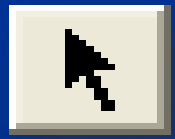
- To **resize** the selected graphics, drag one of its corners.

MOVE GRAPHICS

- To **move** the selected graphics, we drag it elsewhere.
- We hold down the **Ctrl** key if we want to leave a copy behind as we move the graphics.



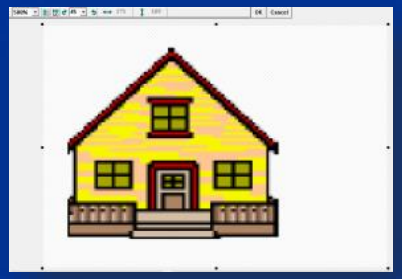
- We can **drag turtles** separately using the normal pointer:

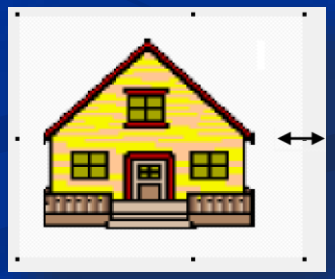


If we **stamp the turtles**, their shape becomes part of the background graphics

EDIT GRAPHICS

- We click on the background and drag to **select a region**.
- Then, we **click inside** the selected region to see it enlarged in the **graphics editor**.
- We use the appropriate tools to **zoom**, **flip**, **rotate** or **resize** the image.

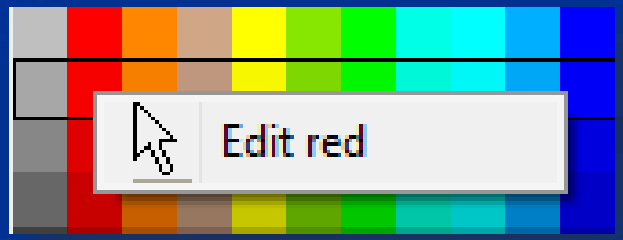




COLOR NAMES & NUMBERS

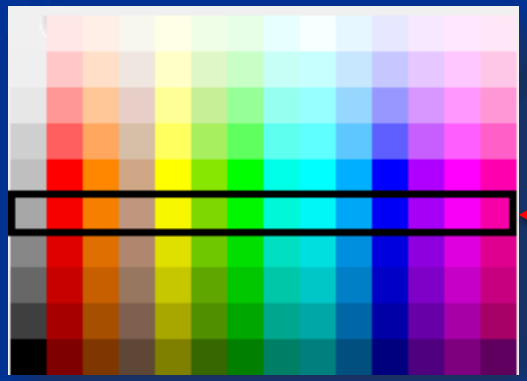
- We can use any of the **140 colors** of the **Colors palette** with the Painting tools, and we can use the **Pencil** tool to give these colors to turtles for drawing.
- To figure out **color names**, we **right-click** on any color in the Colors palette. The names are:

White, Gray, Black, Red, Orange, Brown, Yellow, Green, Lime, Turquoise, Cyan, Sky, Blue, Violet, Magenta, Pink.



- If we click on any color, we can see its number in the **Color viewer**:
- The **middle shades** (framed shades) are the color numbers ending with **5** and are those we get when we use color names.

Color Viewer



SETCOLOR - SETC

- The command **setcolor** (**setc** for short) accepts 15 color names and any number, including decimal, between **0** and **9999**.
- Since there are only 140 colors, the colors repeat when the number is greater than 140.

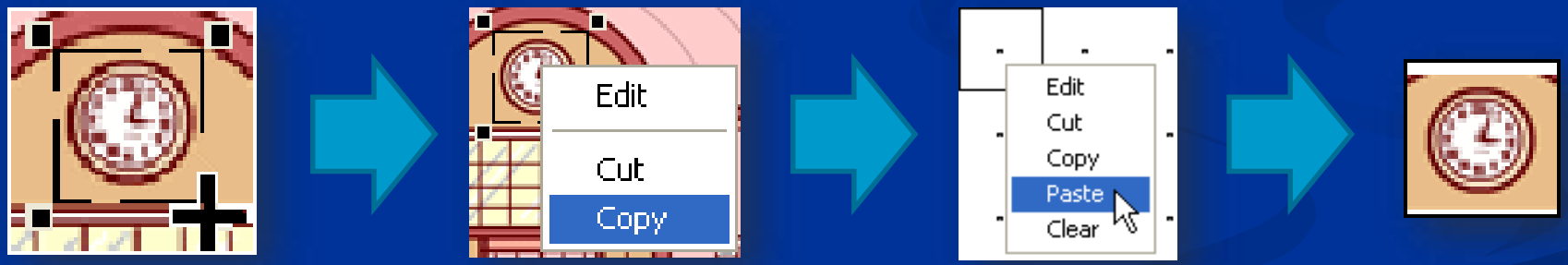
same commands

```
setc "red
```

```
setc 15
```

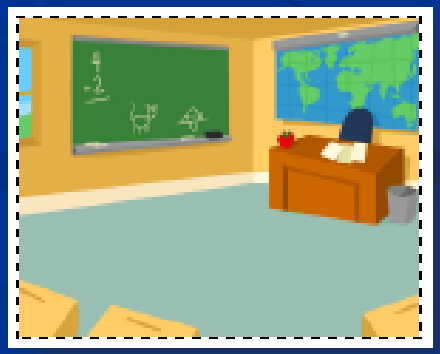
COPY GRAPHICS INTO A SHAPE

- We **select a region**, we **right-click** inside the region and choose **Copy** from the menu.
- Then, we click on the **Shapes** tab and **right-click** on an empty spot and choose **Paste** from the menu.

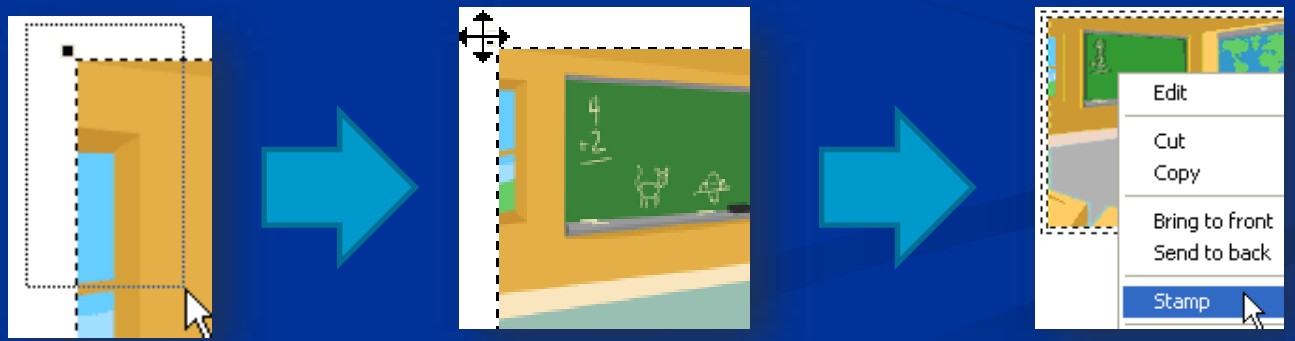


IMPORT PICTURES

- We choose **Import Picture** **from** the file menu to place a picture on the current page.
- When we click **Open**, the image appears on the page. The dashed frame indicates that this is a "**floating image**".
- As a "floating object", the image may cover other objects we have on that page. These other objects reappear once we stamp the image.



- To **resize** the image, we move it so we can see its "dashed" frame. Then we **select** the image by dragging around at least one of its edges.
- We resize the image by **dragging** one of its **corners**. We hold down the **Shift** key if we want to maintain the proportions of the image.
- Finally, when we finish with the size and position, we **right-click** on the image and choose **Stamp** or **Stamp Full Page** from the menu.



EXPORT PICTURES

- To export the graphical contents of a page, we choose **Export Picture…** from the **File** menu.
- If we don't specify a file type, the image will be saved in **PNG** format. We can also choose other formats such as **JPG**, **GIF** or **BMP** (required to display in web browsers).

When we export an image, only the background graphics will be exported.

WHEN WE EXPORT PICTURES…

This includes:	This excludes:
A background color set by the `setbg` command	Unstamped Turtles
Background graphics drawn by the turtles or with the Painting tools	Unstamped (floating) graphical elements (with "dashed" frames around it)
Stamped turtles	Buttons, text boxes and other objects
Stamped text	Graphics from the Wallpaper