This module uses a new Java applet **Color_Transformation**, Javascript, and forms to produce a complete module exploring transformation in the context of colors. The module begins with a discussion of how colors and images are represented on computers. The image used as an example shows scenery at Bryce Canyon in Utah but can easily be changed. To use a different image change the three lines below.

```javascript
var width             = 422
var height            = 285
var picture_filename  = "bryce.gif"
```

using the width, height, and file name of the image that you want to use.

The module is based on a form that enables students to control a Java applet, **Color_Transformation** that transforms the colors of an image. The form is shown below.
The html code for this form is shown below, although there is probably no need to change it.

```html
<form name = "response">
<table cellpadding = 10>
<tr>
<td><b><center>New color</center></b></td>
<td><b><center>constant</center></b></td>
<td><b><center>multiplier for original red</center></b></td>
<td><b><center>multiplier for original green</center></b></td>
<td><b><center>multiplier for original blue</center></b></td>
</tr>
<tr>
<td><b>Red</b></td>
<td><input type = "textfield" cols = "10" name = "red_constant" value = "Enter red constant"></td>
<td><input type = "textfield" cols = "10" name = "red_from_red" value = "Enter red from red"></td>
<td><input type = "textfield" cols = "10" name = "red_from_green" value = "Enter red from green"></td>
<td><input type = "textfield" cols = "10" name = "red_from_blue" value = "Enter red from blue"></td>
</tr>
<tr>
<td><b>Green</b></td>
<td><input type = "textfield" cols = "10" name = "green_constant" value = "Enter green constant"></td>
<td><input type = "textfield" cols = "10" name = "green_from_red" value = "Enter green from red"></td>
<td><input type = "textfield" cols = "10" name = "green_from_green" value = "Enter green from green"></td>
<td><input type = "textfield" cols = "10" name = "green_from_blue" value = "Enter green from blue"></td>
</tr>
<tr>
<td><b>Blue</b></td>
<td><input type = "textfield" cols = "10" name = "blue_constant" value = "Enter blue constant"></td>
<td><input type = "textfield" cols = "10" name = "blue_from_red" value = "Enter blue from red"></td>
<td><input type = "textfield" cols = "10" name = "blue_from_green" value = "Enter blue from green"></td>
<td><input type = "textfield" cols = "10" name = "blue_from_blue" value = "Enter blue from blue"></td>
</tr>
</table>
</form>
```
The Javascript code that opens a new window using the **Color_Transformation** applet to transform the colors according to the student’s instructions is shown below, although there is probably no need to make any changes except the changes discussed above to use a different image.

```javascript
<script language="JavaScript">
function respond()
{
    var width = 422
    var height = 285
    var picture_filename = "bryce.gif"

    var red_constant = document.response.red_constant.value
    var red_from_red = document.response.red_from_red.value
    var red_from_green = document.response.red_from_green.value
    var red_from_blue = document.response.red_from_blue.value

    var green_constant = document.response.green_constant.value
    var green_from_red = document.response.green_from_red.value
    var green_from_green = document.response.green_from_green.value
    var green_from_blue = document.response.green_from_blue.value

    var blue_constant = document.response.blue_constant.value
    var blue_from_red = document.response.blue_from_red.value
    var blue_from_green = document.response.blue_from_green.value
    var blue_from_blue = document.response.blue_from_blue.value

    var win = open("", "unusedname")

    win.document.clear()
    win.document.writeln("<html><head><title>Colors Transformed</title></head><body>")
    win.document.write("<p><center><applet code = 'Color_Transformation.class' width = ")
    win.document.write(width)
    win.document.writeln(" height = ")
    win.document.write(height)
    win.document.writeln("></center></applet>")
}
</script>
The real content of this module is in the ordinary html code introducing the topic and posing questions. We suggest that you experiment with sample_module.html and then modify the content. You may also want to change the image used.