GeoGebra – Lesson 7

Using GeoGebra

Publishing, Interactive Displays

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Coding thanks to: Steven Lapinski & GeoGebra Forum

Ideas thanks to: Robert Fant and his students!

Mathcast produced with: Camtasia Studio

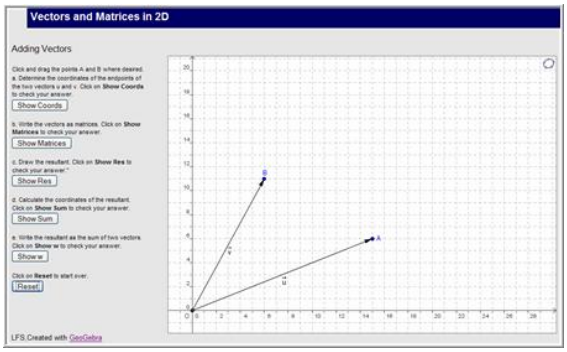
math247.jot.com

Key Concepts from GeoGebra

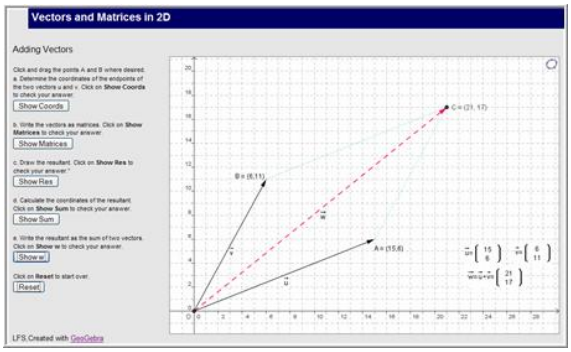
1. Exporting to an interactive .html/worksheet
2. Adapt the .html file using a pre-prepared .css sheet.
3. Make objects visible/invisible in the worksheet using pre-prepared javascript.

Key Concepts from Mathematics – none

Our goal



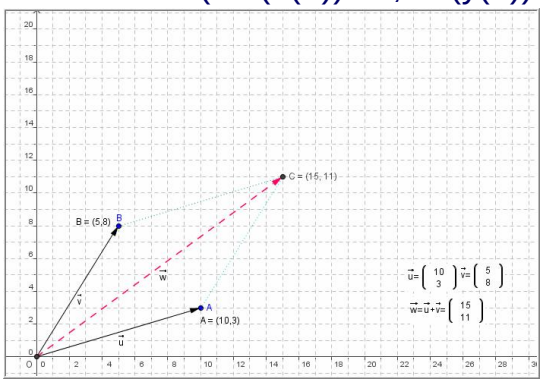
Html Export: When just loaded!



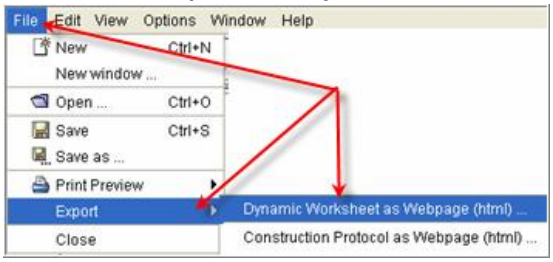
After clicking the buttons!

Script-o-matic

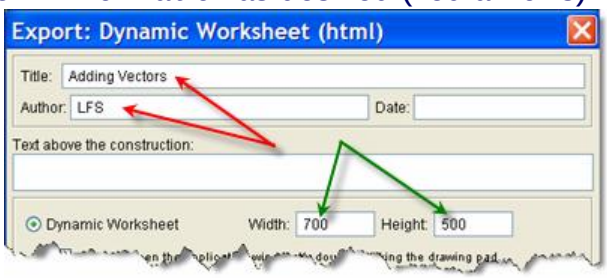
1. Open GeoGebra file from Lesson 6
    a. Click on File -> Open. Navigate to your file and open it.
    b. Don't worry that Geogebra has returned to its standard window size – our axes are just as we left them.
2. Alter our file slightly and then save.
    a. Double-click on points A and B and change the properties of show labels to show only the names.
    b. Add textboxes with the values of A and B and 'connect' them to these points.
    T7 will be "A = (" + (x(A)) + "," + (y(A)) + ")"
    T8 will be "B = (" + (x(B)) + "," + (y(B)) + ")"



    c. Click on File -> *Save as* and then type in the filename: lesson7
3. Export our file to html/ggb-worksheet
    a. Click on File -> *Export* -> Dynamic Worksheet as Webpage (html)



    b. Type in information as desired (red arrows).



    c. Change the dimensions to 700x500 (green arrows). These dimensions are good for the standard 1024x768 viewing window.

d. Choose the location – a subfolder is a good idea as 5 files will be generated and then we will add 1 more (and overwrite 2).

(lesson7.html, lesson7_worksheet.ggb, geogebra.jar, geogebra_jsci.jar and geogebra_properties.jar – we will add geogebraPage.css and overwrite lesson7.html (see 5 below) and then lesson7_worksheet.ggb (see 7 below))

4. Write our learning script.

Our script:

We write down our script for vector addition and the variable names of each of the variables we want to make visible/invisible in our script:

We start with just our two points A and B, our two vectors and their labels.

a. Determine the coordinates of the endpoints of the two vectors u and v. Click on Show Coords to check your answer. Hide A and B and show T7 and T8.
b. Write the vectors as matrices. Click on Show Matrices to check your answer.Show T1 and T2.
c. Draw the resultant. Click on Show Res to check your answer." Show c, d and w and T6.
d. Calculate the coordinates of the resultant. Click on Show Sum to check your answer." Show C .
e. Write the resultant as the sum of two vectors. Click on Show w to check your answer. Show T3.

5. Arrange our html file nicely using a pre-prepared style (.css)
   a. Download the zipped file: lesson7.zip
   b. Extract and copy the files geogebraPage.css[1] and lesson7.html into the folder with your exported html. (answer yes when it asks whether to replace existing file lesson7.html…) *Skip down to 7 or if you want to know what has changed read below.*

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6. Open lesson7.html file in the web authoring tool of your choice – we are using the freeware Nvu: http://www.nvu.com/index.php

   Look at the source code

   a. Between the lines in the head part:
      - <meta name="generator" content="GeoGebra"> and <style type="text/css"><!--body { font-family:H….

      the following line has been added:
      - <link rel="stylesheet" type="text/css" href="geogebraPage.css">

      This line loads the style sheet.

[1] Adapted from the one used on e.g. http://teachers.henrico.k12.va.us/math/GeoGebra_Site/circles/Protractor1.html

b. Between the lines in the body part

- <body> and
  <table border="0" width="700">

the following lines have been added:

```
<div id="Top">Vectors and Matrices in 2D</div>
<div id="left-content">Adding Vectors<br><br>
<p>Click and drag the points A and B where desired.<br></p>
<p>a. Determine the coordinates of the endpoints of the two vectors u and v.
Click on <b>Show Coords</b> to check your answer. </p>
<form> <input value="Show Coords"
onClick="document.ggbApplet.setVisible('A', false);
document.ggbApplet.setVisible('B', false);
document.ggbApplet.setVisible('T7', true);
document.ggbApplet.setVisible('T8', true);" type="button"></form>
<p>b. Write the vectors as matrices. Click on <b>Show Matrices</b> to check
your answer.</p>
<form> <input value="Show Matrices"
onClick="document.ggbApplet.setVisible('T1', true);
document.ggbApplet.setVisible('T2', true);" type="button"></form>
<p>c. Draw the resultant. Click on <b>Show Res</b> to check your answer."</p>
<form> <input value="Show Res" onClick="document.ggbApplet.setVisible('c',
true); document.ggbApplet.setVisible('d', true);
document.ggbApplet.setVisible('w', true);
document.ggbApplet.setVisible('T6', true);" type="button"></form>
<p>d. Calculate the coordinates of the resultant. Click on <b>Show Sum</b> to
check your answer.</p>
<form> <input value="Show Sum" onClick="document.ggbApplet.setVisible('C',
true);" type="button"></form>
<p>e. Write the resultant as the sum of two vectors. Click on <b>Show w</b>
to check your answer.</p>
<form> <input value="Show w" onClick="document.ggbApplet.setVisible('T3',
true);" type="button"> </form>
<p>Click on <b>Reset</b> to start over.</p>
<form> <input value="Reset" onClick="document.ggbApplet.reset();"
type="button"></form>
<br><span style="font-size: small;">LFS, Created with <a href="http://
www.geogebra.at/" target="_blank">GeoGebra</a></span><p></p>
</div>
<div id="right-content">
```

These add the top, the left content with our script and puts the geogebra window into the right content.

Note: the button code and the action taken is in the "form".
The name of the object is in the single quotes: 'A' (case sensitive!)
and the value false=hide and true=show.
For example, for the button Show Coords, we have

```
<form> <input value="Show Coords"
onClick="document.ggbApplet.setVisible('A', false);
document.ggbApplet.setVisible('B', false);
document.ggbApplet.setVisible('T7', true);
document.ggbApplet.setVisible('T8', true);" type="button"></form>
```

c. The part of the code that calls your geogebra file has also been altered. The new part is shaded.

```
<applet name="ggbApplet" code="geogebra.GeoGebraApplet"
  codebase="./" archive="geogebra.jar" height="500" width="700">
<param name="filename" value="lesson7_worksheet.ggb">
<param name="framePossible" value="false">
<param name="showAlgebraInput" value="false">
<param name="language" value="en">
<param name="country" value="US">
<param name="showMenuBar" value="false">
<param name="showResetIcon" value="true">
```

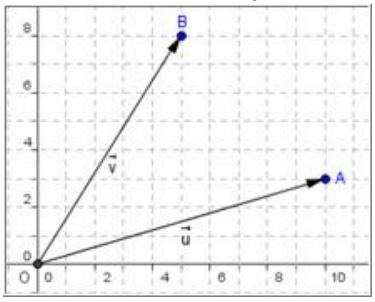
Note: the filename of geogebra file is: lesson7_worksheet.ggb

d. Down at the bottom in the body part, between the lines:

- </table>
  </body>
  the line has been added
-

This closes the right-content div tag.

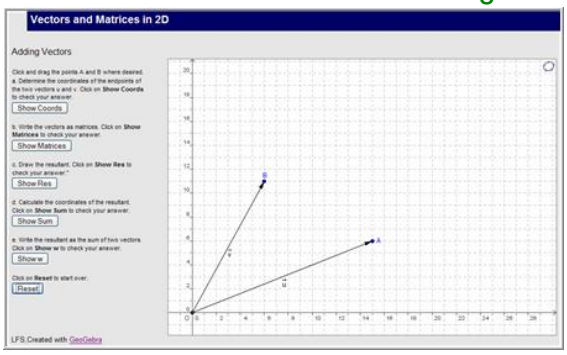
7. Getting ready to test it.
    a. In GeoGebra, open the file lesson7_worksheet.ggb and hide everything (right-click, deselect 'Show object') but O, the two vectors, their labels and their endpoints.



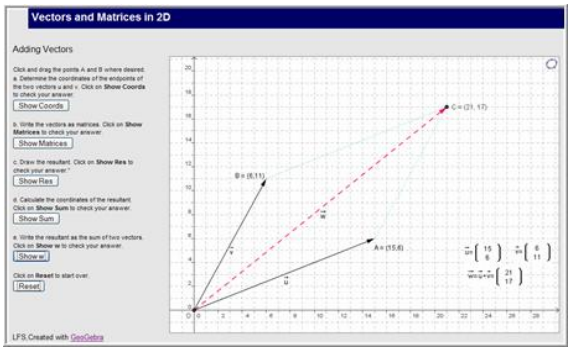
Your file should look like this – you will have the whole of the axes…

    b. Save this file.
8. You are done.

Try out the new lesson7.html – open your folder and double-click on this file. You should have something like:



When just loaded!



After clicking the buttons!

9. Upload it somewhere to show it off ☺