

Tessellation Project

Part I. Construct your base shape

Parallelogram:

- 1) Select the segment tool from the toolbar at the left of the screen.
- 2) Click and drag to create a segment to be the bottom of your parallelogram. Make it about _____ long.
- 3) Draw the left side of your parallelogram by clicking at the left endpoint and dragging up and at a slight angle. Make this side slightly different in length.
- 4) Click in any blank part of the screen to deselect the segment. Then choose the arrow tool in the toolbar.
- 5) Click the left endpoint of the bottom; hold down the shift and then click the right endpoint. (You must select the endpoints *in this order*.)
- 6) Under the TRANSFORM menu select MARK VECTOR.
- 7) Click in any blank part of the screen to deselect the endpoints.
- 8) Click on the left side; hold down shift and then click its top endpoint.
- 9) Under TRANSFORM select TRANSLATE. Click OK.
- 10) Use the segment tool to connect the remaining sides.

Regular Hexagon:

- 1) Select the segment tool from the toolbar at the left of the screen.
- 2) Click and drag to create a segment to be the bottom of your regular hexagon. Make it about _____ long.
- 3) Select the arrow tool from the toolbar.
- 4) Double click on the left endpoint of your segment to choose it as the center of rotation.
- 5) Click on the segment; hold down shift and then click on both endpoints.
- 6) Under TRANSFORM, choose ROTATE, then specify the number of degrees as 120.
- 7) Now double click the top endpoint of the rotated segment to choose it as the new point of rotation.
- 8) Repeat steps 6 & 7 until the figure is complete.

Part II. Construction of your Tessellation Shape

Translations:

- a) Starting at any endpoint, use the segment tool to draw **8-10** connected segments between this endpoint and the next endpoint. (Segments may be inside, outside or back & forth across the side.)
- b) Click in any blank portion of the screen to deselect the last segment.
- c) Select the arrow tool from the toolbar.
- d) Hold down shift while you select one endpoint of the altered side and the corresponding endpoint of the parallel side.

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- e) Under TRANSFORM select MARK VECTOR.
- f) Click in any blank portion of the screen to deselect the points.
- g) Hold down shift while you select all the 8-10 segments and their points
- h) Under TRANSFORM select TRANSLATE. Then click OK.
- i) Click in any blank portion of the screen to deselect the points and segments.
- j) Now repeat steps a through h to modify the remaining sides.
- k) Hold down shift while you select all the sides of the *original* shape.
- l) Under DISPLAY select HIDE SEGMENTS.

Part III. Adjusting Your Tessellation

- 1) Chose the arrow tool from the toolbar.
- 2) Click and hold on any point while you move it around.
- 3) Continue moving points around until you end up with an interesting shape. It should resemble something recognizable.

(Remember that you will be able to add interior lines to give details to your shape but not exterior lines.)

At any stage, you can go back by selecting EDIT and UNDO. This can be done repeatedly to go back several steps.

- 4) Have your figure checked by me before proceeding.

Part IV. Producing Your Tessellation Pattern (Putting the pieces together)

(If you have not had your figure checked after completing part III, have your it checked before going any further.)

- a) Choose the arrow tool from the toolbar.
- b) Hold down shift while you select all the points. (NOT segments)
- c) Under DISPLAY select hide points.
- d) Click and drag a box around your entire figure to select it all.
- e) Under EDIT select COPY.
- f) Under EDIT select PASTE.
- g) Now click and *hold down* on any part of the *pasted* figure. (Do NOT release!)
- h) Drag the figure until it fits “puzzle style” with the original, then release the mouse button.
- i) Repeat steps f through g until you have a total of 12-16 figures in your pattern. (3 or 4 rows of 3 each). You may have to temporarily set the figure on the page and move the slider bars to the region you need then continue moving the figure.

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- j) Under FILE select PRINT PREVIEW and then SCALE TO FIT PAGE.
- k) Check your design with me.
- l) Save your design using your name.
- m) Save your design to disk. You will have to change the directory to A: in order for your design to be saved to disk.
- n) Under FILE select PRINT PREVIEW and then SCALE TO FIT PAGE.
- o) Print your design.