

Question 1:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Edges	2	0	2	0	3	3	2	4	2	2	4	2	2	2	0	1	1	2	2	3	2	2	2	4	3	2
T's	2	1	0	0	1	1	0	2	0	0	2	0	0	0	0	1	1	2	0	1	0	0	0	4	1	0

Question 2:

- Find a circle shape.
- Not effected.
- Shapes calculation:

Circle:

$$\frac{4\pi a^2}{(2\pi a)^2} = 1$$

Square:

$$\frac{4\pi a^2}{(4a)^2} = \frac{\pi}{4}$$

Hexagon:

$$\frac{4\pi \frac{3\sqrt{3}}{2} a^2}{(6a)^2} = \frac{\sqrt{3}\pi}{6}$$

Doesnt assist in distinguishing polygons.

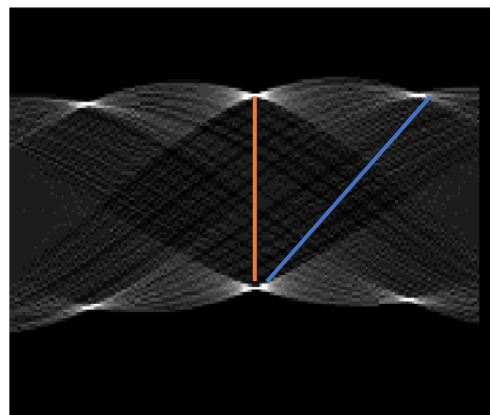
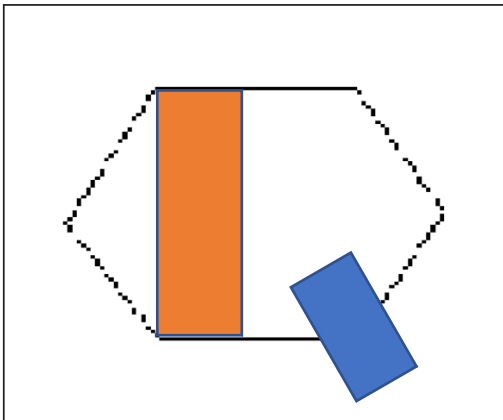
Question 4:

If the image would move or rotate or change sizes, than the property would change and therefore be irrelevant.

Question 5:

- If the square will shift +45 degrees then all the maximum points will move 45 degrees right on the Angle axis.
- If We will draw a line between 2 maximums points, this line will fit to a Filling of the two lines, in the original picture, starting from the crossing point and its width is up to its value.

Example:



Question 6:

- Yes, in fact for these 2 pictures we can only use  $M_{00}$ . Because it's a binary image we will get the Area of the two shapes which is clearly different.
- For shapes with Symmetry to their center only  $M_{00}$  will be valid, the rest will be zeroed.  
Therefore:
  - Same size shapes will have same moments.
  - Different size shapes will have different moments.

Question 8:

- a) Quantifying the cornerity for each pixel in the image. We do that by calculating the gradient for the window (M) and than Quantifying the matrix (R).
- b) Finding the pixels with the cornerity value higher than a threshold. The threshold is being set compared to the mean of the cornerity value of all the pixels.