## Week 4 – Tut B

Assumptions

* Octagon and Pentagon we consider for this case study are regular polygons.
* Use formulas below!

Octagon

area = 2.0 \*(1.0 + Math.sqrt(2)) \* Math.pow(side, 2);

perimeter = numberOfSides \* side;

Pentagon

area = 0.25 \* Math.sqrt(5\*(5+2 \* Math.sqrt(5))) \* Math.pow(side, 2);

perimeter = numberOfSides \* side;

A regular polygon

<https://www.mathsisfun.com/shape.html>

A polygon is a 2D shape with straight sides.

To be a regular polygon all the sides and angles must be the same:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| |  | | --- | | **<<interface>> Shape** | |  | | *+ abstract area(): double*  *+ abstract perimeter(): double* | | |
| |  | | --- | | **<<abstract>> RegularPolygon** | | # sideLength: double  # numOfSides: int | | + RegularPolygon(sideLength: double, numOfSides: int)  + perimeter (): double // override  + toString(): String // override | | |
| |  | | --- | | **Pentagon** | | * static final NUM\_OF\_SIDES = 5 | | + Pentagon(sideLength: double)  + area(): double // override  + toString(): String // override | | |  | | --- | | **Octagon** | | * static final NUM\_OF\_SIDES = 8 | | + Octagon (sideLength: double)  + area(): double // override  + toString(): String // override | |