

Foundations of Math II

2.4

p. 99 # 4-7, 10, 13, 15, 16

4.



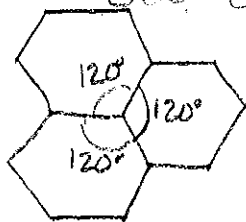
A hexagon has an angle sum of:

$$(6-2)180^\circ = 720^\circ$$

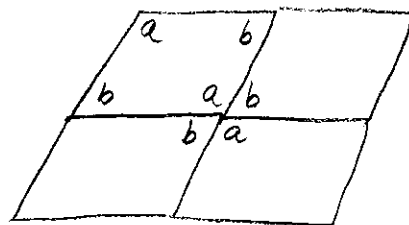
So in a regular hexagon, each angle is:

$$\frac{720^\circ}{6} = 120^\circ$$

If you place 3 hexagons together, the corner will have 360° so they will fit together perfectly.



5. Yes. Opposite angles are equal in a parallelogram and all 4 angles add to equal 360° so they will fit together



6. A loonie has 11 sides
Sum of angles = $(11-2)180^\circ = 1620^\circ$
Each angle = $\frac{1620^\circ}{11} = 147.3^\circ$

7. sum of angles = 140°
 $\frac{(n-2)180^\circ}{n} = 140^\circ$

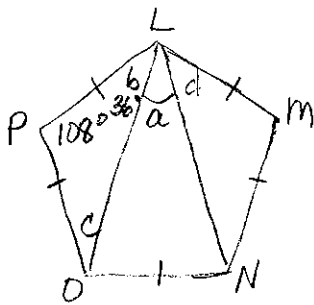
$$(n-2)180^\circ = 140^\circ n$$

$$180^\circ n - 360^\circ = 140^\circ n$$

$$\frac{-360^\circ}{-40^\circ} = \frac{-40^\circ n}{-40^\circ}$$

$$9 = n$$

10. p. 99 cont.



a) Find L_a .

Pentagon has $(5-2)180^\circ = 540^\circ$
 each angle has $\frac{540^\circ}{5} = 108^\circ$

So angle $P = 108^\circ$

ΔPLD is isosceles, with 2 equal angles and 2 equal sides

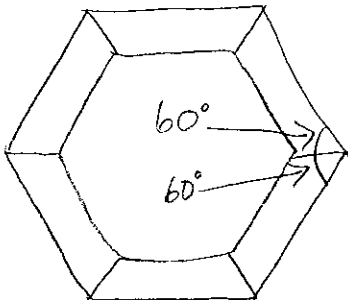
$$\text{So } L_b = L_c = \frac{180 - 108}{2} = 36^\circ$$

It's the same for ΔLMN so $L_d = 36^\circ$

$$L_a = 108^\circ - 36^\circ - 36^\circ = 36^\circ$$

b) Because ΔPLD and ΔMLN have the same angles and sides they are congruent. That means $LO = LN$ and ΔLON is isosceles.

13.

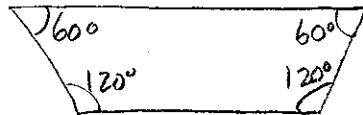


a) A hexagon has an angle sum:

$$(6-2)180^\circ = 720^\circ$$

$$\text{Each angle is } \frac{720^\circ}{6} = 120^\circ$$

$$\text{Each side of the angle is } \frac{120^\circ}{2} = 60^\circ$$



so that is the cut needed for each board

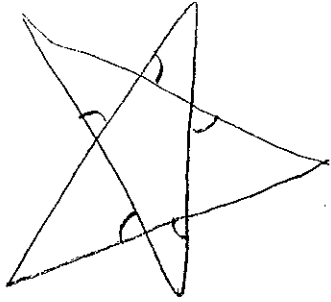
b) An octagon angle sum = $(8-2)180^\circ = 1080^\circ$

$$\text{Each angle is } \frac{1080^\circ}{8} = 135^\circ$$

$$\text{Each side of the angle is } \frac{135^\circ}{2} = 67.5^\circ$$

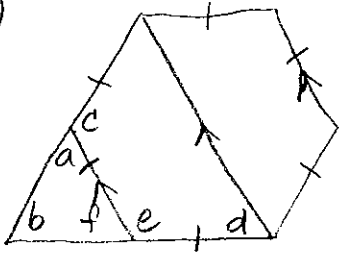


15. p. 99 cont.



These are all exterior angles
so they add to 360° because
the exterior angles of all
polygons is 360°

16. a)



$$Lc = 120^\circ$$

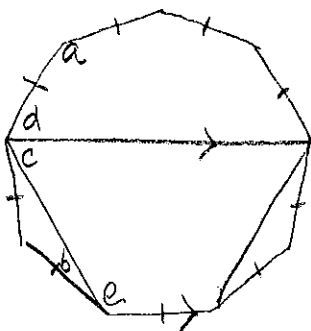
$$La = 60^\circ$$

$$Ld = 60^\circ$$

$$Lb = 60^\circ$$

the angle of a regular ^{hexagon}
supplementary to Lc
supplementary to $Le = 120^\circ$
 $Lf = 60^\circ$ supplementary to Le
 $180^\circ - La - Lf$

b)



$$La = 140^\circ$$

$$Lb = 20^\circ$$

$$Lc = 60^\circ$$

$$Ld = 60^\circ$$

angle of a regular 9-sided polygon
 $\frac{180^\circ - 140^\circ}{2}$

$$Le = 140^\circ - 20^\circ = 120^\circ$$

supplementary to Le

$$140^\circ - 60^\circ - 20^\circ$$