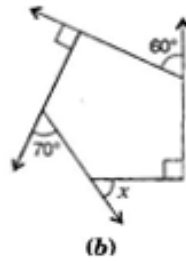
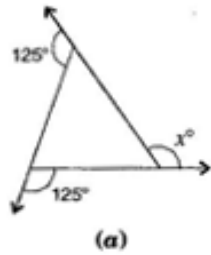




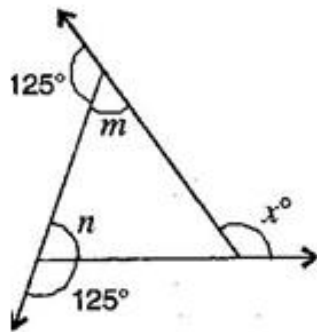
NCERT solutions for class 8 Maths Understanding Quadrilaterals Ex-3.2

Q1. Find x in the following figures:



Ans: (a) Here, $125^\circ + m = 180^\circ$

[Linear pair]



$$\Rightarrow m = 180^\circ - 125^\circ = 55^\circ$$

And $125^\circ + n = 180^\circ$

[Linear pair]

$$\Rightarrow n = 180^\circ - 125^\circ = 55^\circ$$

\therefore Exterior angle x°

= Sum of opposite interior angles

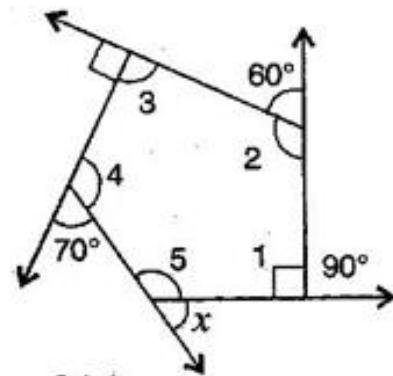
$$\therefore x^\circ = 55^\circ + 55^\circ = 110^\circ$$

(b) Sum of angles of a pentagon

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

$$= (5-2) \times 180^\circ$$

$$= 3 \times 180^\circ = 540^\circ$$



By linear pairs of angles,

$$\angle 1 + 90^\circ = 180^\circ \quad \text{.....(i)}$$

$$\angle 2 + 60^\circ = 180^\circ \quad \text{.....(ii)}$$

$$\angle 3 + 90^\circ = 180^\circ \quad \text{.....(iii)}$$

$$\angle 4 + 70^\circ = 180^\circ \quad \text{.....(iv)}$$

$$\angle 5 + x = 180^\circ \quad \text{.....(v)}$$

Adding eq. (i), (ii), (iii), (iv) and (v),

$$x + (\angle 1 + \angle 2 + \angle 3 + \angle 4 + \angle 5) + 310^\circ = 900$$

$$\Rightarrow x + 540^\circ + 310^\circ = 900^\circ$$

$$\Rightarrow x + 850^\circ = 900^\circ$$

$$\Rightarrow x = 900^\circ - 850^\circ = 50^\circ$$

Q2. Find the measure of each exterior angle of a regular polygon of:

(a) 9 sides

(b) 15 sides

Ans: (i) Sum of angles of a regular polygon =

$$(n - 2) \times 180^\circ$$

$$= (9 - 2) \times 180^\circ = 7 \times 180^\circ = 1260^\circ$$

Each interior angle =

$$\frac{\text{Sum of interior angles}}{\text{Number of sides}} = \frac{1260^\circ}{9} = 140^\circ$$

$$\text{Each exterior angle} = 180^\circ - 140^\circ = 40^\circ$$

(ii) Sum of exterior angles of a regular polygon =

$$360^\circ$$

Each interior angle =

$$\frac{\text{Sum of interior angles}}{\text{Number of sides}} = \frac{360^\circ}{15} = 24^\circ$$

Q3. How many sides does a regular polygon have, if the measure of an exterior angle is 24° ?

Ans: Let number of sides be n .

Sum of exterior angles of a regular polygon = 360°

Number of sides =

$$\frac{\text{Sum of exterior angles}}{\text{Each interior angle}} = \frac{360^\circ}{24^\circ} = 15$$

Hence, the regular polygon has 15 sides.

Q4. How many sides does a regular polygon have if each of its interior angles is 165° ?

Ans: Let number of sides be n .

$$\text{Exterior angle} = 180^\circ - 165^\circ = 15^\circ$$

Sum of exterior angles of a regular polygon = 360°

Number of sides =

$$\frac{\text{Sum of exterior angles}}{\text{Each interior angle}} = \frac{360^\circ}{15^\circ} = 24$$

Hence, the regular polygon has 24 sides.

Q5. (a) Is it possible to have a regular polygon with of each exterior angle as 22° ?

(b) Can it be an interior angle of a regular polygon? Why?

Ans: (a) No. (Since 22 is not a divisor of 360°)

(b) No, (Because each exterior angle is $180^\circ - 22^\circ = 158^\circ$, which is not a divisor of 360°)

Q6. (a) What is the minimum interior angle possible for a regular polygon? Why?

(b) What is the maximum exterior angle possible for a regular polygon?

Ans: (a) The equilateral triangle being a regular polygon of 3 sides has the least measure of an interior angle of 60° .

\therefore Sum of all the angles of a triangle

$$= 180^\circ$$

$$\therefore x + x + x = 180^\circ$$

$$\Rightarrow 3x = 180^\circ$$

$$\Rightarrow x = 60^\circ$$

(b) By (a), we can observe that the greatest exterior angle is $180^\circ - 60^\circ = 120^\circ$.

***** END *****