1. Find the sum of the interior angles of a polygon with…

a) 10 sides   **b)** 15 sides   **c)** 20 sides

2. Find the measure of each interior angle of a regular polygon with…

a) 7 sides   **b)** 12 sides

3. How many sides does a polygon have if the sum of its interior angles is…

a) 540°   **b)** 1800°   **c)** 3060°

4. What properties does a regular polygon have?

5. Complete the following table

# of Sides	Interior Angle Sum	Measure of One Interior Angle (regular polygon)	Sum of Exterior Angles	Measure of One Exterior Angle (regular polygon)
n				
14				
24				
17				
	1080°			
	900°			
	5040°			
	1620°			
		150°		
		120°		
		156°		
				10°
				7.2°
				90°
				5°

6. A furniture-maker is designing a hexagonal table.

a) At what angle will the adjacent sides of the table meet if its shape is a regular hexagon?

b) Do you think the angles between the adjacent sides of the table will all be equal if one pair of opposite sides are twice as long as the other sides.

7. Find the measure of each interior angle of…
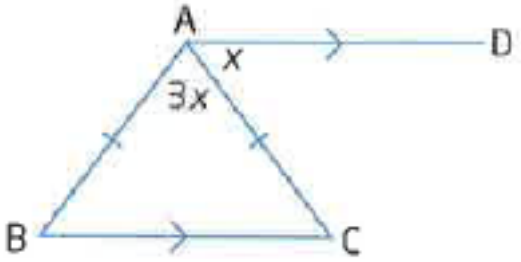
a) A regular 10-sided polygon

b) A regular 16-sided polygon

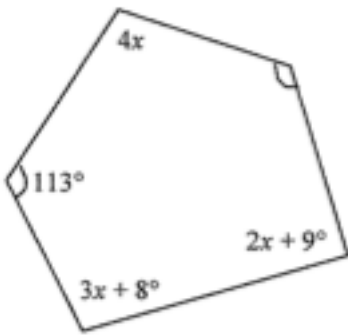**c)** A regular 20-sided polygon

d) A regular polygon with n sides

8. Can you determine the number of sides a polygon has from the sum of its exterior angles? Explain your reasoning.
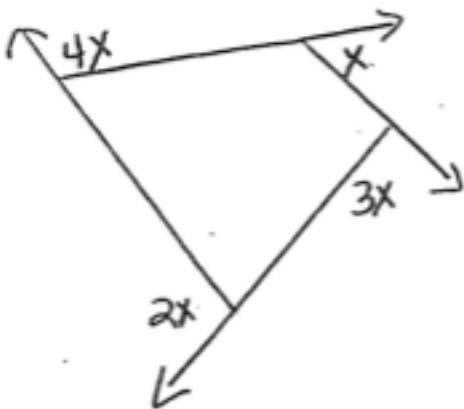
9. Determine the measure of angle BCA

10. Find the value of x

11. Find the value of x

Answers

1) a) 1440° b) 2340° c) 3240°

2) a) 128.6° b) 150°

3) a) 5 sides b) 12 sides c) 19 sides

4) equal interior angles, equal exterior angles, and equal sides

5)

# of Sides	Interior Angle Sum	Measure of One Interior Angle (regular polygon)	Sum of Exterior Angles	Measure of One Exterior Angle (regular polygon)
n	$180(n-2)$	$\dfrac{180(n-2)}{n}$	360	$\dfrac{360}{n}$
14	2160	154.3	360	25.7
24	3960	165	360	15
17	2700	158.8	360	21.2
8	1080°	135	360	45
7	900°	128.6	360	51.4
30	5040°	168	360	12
11	1620°	147.3	360	32.7
12	1800	150°	360	30
6	720	120°	360	60
15	2340	156°	360	24
36	6120	170	360	10°
50	8640	172.8	360	7.2°
4	360	90	360	90°
72	12600	175	360	5°

6) a) 120° b) Answer may vary. The angles don't change.

7) a) 144° b) 157.5° c) 162° d) $\dfrac{180(n-2)}{n}$

8) No; the sum is 360 degrees for all convex polygons.

9) 36°

10) 33

11) 36