Part A: Write down the number of sides for each given polygon.

1. triangle 3

2. heptagon 7

3. hexagon 6

4. decagon 10

5. quadrilateral 4

6. octagon 8

7. nonagon 9

8. pentagon 5

9. dodecagon 12

*Part B: Find the **sum** of the **interior angles** of each polygon.* __FORMULA:__ $n-2(180)$

10. 154-gon $152(180) = 27,360°$

11. decagon $8(180) = 1,440$

12. 17-gon $15(180) = 2,700$

*Part C: Find the measure of **each interior angle** of the following **regular** polygons.*
__FORMULA/PROCESS:__ $\dfrac{(n-2)180}{n}$

13. triangle $\dfrac{180}{3} = 60$

14. 25-gon $\dfrac{23 \cdot 180}{25} = 165.6$

15. 11-gon $\dfrac{9 \cdot 180}{11} = 147.3$

Part D:
WHAT IS THE **SUM** OF THE **EXTERIOR** ANGLES OF ANY POLYGON?? 360
*Find the measure of **each exterior** angle of the given **regular** polygon.* __FORMULA:__ $\dfrac{360}{n}$

16. 62-gon 5.8

17. 18-gon 20

18. heptagon 51.4

*Part E: Given the measure of one interior angle of a **regular** convex polygon, find the measure of one of the exterior angles.* __FORMULA:__ $180-(\text{interior angle})$ $180-X$

19. Interior angle: 22°
    Exterior angle: 158

    $\dfrac{n-2(180)}{n} = 22$

    $180n - 360 = 22n$

    $158n = 360$

    $n = 2.3$

20. Interior angle: 145°
    Exterior angle: $35°$

21. Interior angle: 71°
    Exterior angle: 109°

*Part F: Given the measure of one exterior angle of a **regular** convex polygon, find the measure of one of the interior angles. **FORMULA:** $180° - x$*

22. Exterior angle: 53°
    Interior angle: 127°

23. Exterior angle: 145°
    Interior angle: 35°

*Part G: Given the sum of the measures of the interior angles of a convex polygon, find the number sides in each polygon. **FORMULA/PROCESS:** $(n-2) \cdot 180 = x$*

24. 4500 (27)

$180n - 360 = 45000$
$ + 360 \quad + 360$
$180n = 45360$

25. 10800 (62)

26. 1620 (11)

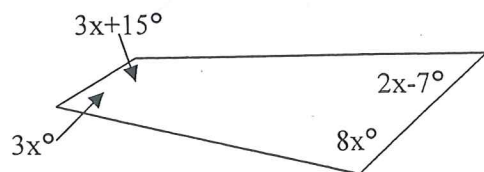*Part H: Given an exterior angle measure of a **regular** polygon, find the number of sides. **FORMULA/PROCESS:** $\frac{360}{n} = x$*

27. 22.5° $\frac{360}{22.5}$ (16)

28. 45° $\frac{360}{45} =$ (8)

29. 10° $\frac{360}{10} =$ (36)

Part I: Find x in each problem.

30.

3x+15°
2x-7°
3x°
8x°

(3x) + (3x) + 15 + (2x) - 7 + (8x)

$16x + 8 = 360$

$x = 22$

31.

4x°
2x+14°
3x°
x°
2x+10°
540°
2 3 4 5)
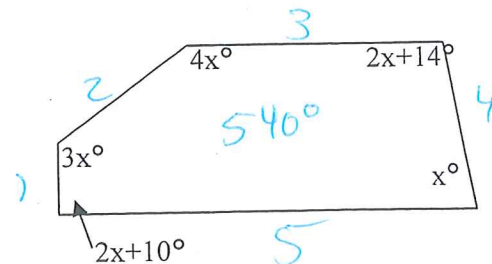
$2x + 10 + 3x + 4x + 2x + 14 + x = 540$

$12x + 24 = 540$

$12x = 516$

$x = 43$