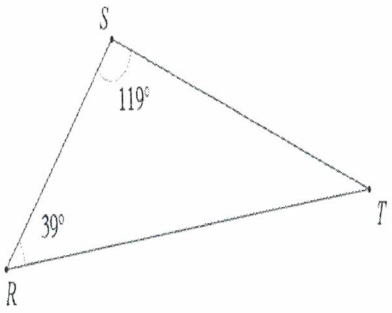
Geometry (E)
Polygon Angles and Angle Sums

Name: KEY

Period: ____

TRIANGLE



1. Determine the sum of the interior angles of polygon SRT

180°

2. Determine the sum of the exterior angles of polygon SRT

360°

3. Determine the measure of angle T

180 - 39 - 119 $m\angle T = 22°$

4. Determine the measures of the exterior angles

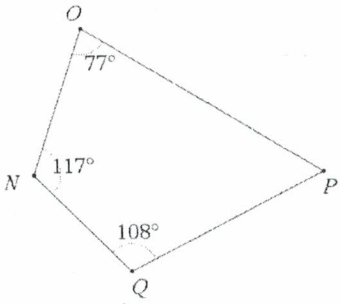
Exterior to angle R 141°

Exterior to angle S 61°

Exterior to angle T 158°

$= 360°$ ✓

QUADRILATERAL



5. Determine the sum of the interior angles of polygon NOPQ

$180(4-2) = 360°$

6. Determine the sum of the exterior angles of polygon NOPQ

360°

7. Determine the measure of angle P

$360 - 77 - 117 - 108$ $m\angle P = 58°$

8. Determine the measures of the exterior angles

Exterior to angle N 63°

Exterior to angle O 72° 103

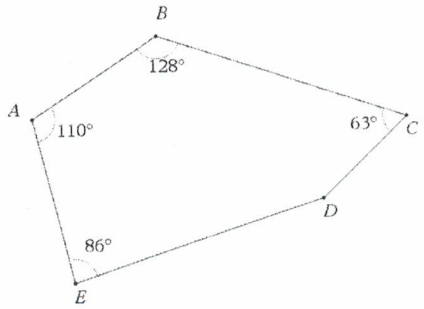
Exterior to angle P 122°

Exterior to angle Q 103° 72

$= 360°$ ✓

72 and 103 are flipped.

PENTAGON



9. Determine the sum of the interior angles of polygon ABCDE

$180(5-2) = 540°$

10. Determine the sum of the exterior angles of polygon ABCDE

360°

11. Determine the measure of angle D

$540 - 110 - 128 - 86 - 63$ $m\angle D = 153°$

12. Determine the measures of the exterior angles

Exterior to angle A 70°

Exterior to angle B 52°

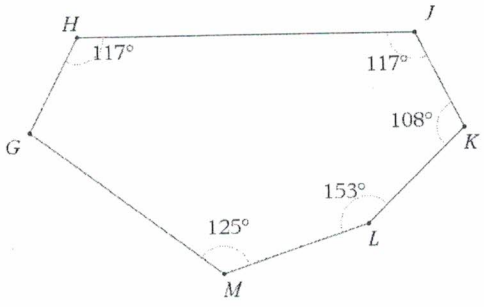
Exterior to angle C 117°

Exterior to angle D 27°

Exterior to angle E 94°

$= 360°$ ✓

HEXAGON



13. Determine the sum of the interior angles of polygon GHJKLM

$180(6-2) = 720°$

14. Determine the sum of the exterior angles of polygon GHJKLM

360°

15. Determine the measure of angle G

$720 - 117 - 117 - 108 - 153 - 125$ $m\angle G = 100°$

16. Determine the measures of the exterior angles

Exterior to angle G 80°

Exterior to angle H 63°

Exterior to angle J 63°

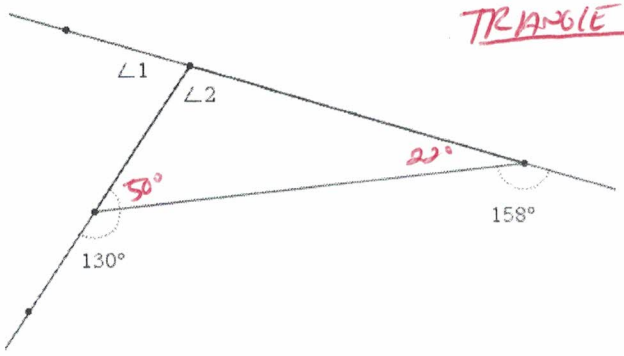
Exterior to angle K 72°

Exterior to angle L 27°

Exterior to angle M 55°

$= 360°$ ✓

TRIANGLE



17. Which of the numbered angles (1 or 2) is an exterior angle?

∠1

18. Which of the numbered angles is an interior angle (1 or 2)?

∠2

19. Determine the measure of angle 1 using two different methods

Method 1

$m\angle 1 = 50 + 22$

$m\angle 1 = 72°$

EXTERIOR ∠ THM

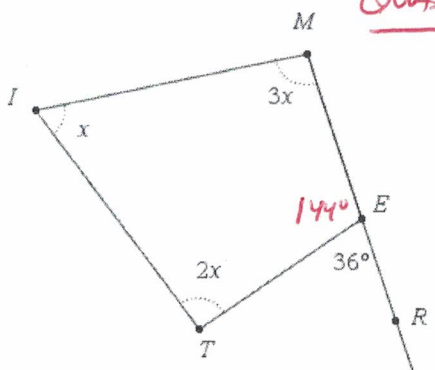
Method 2

$m\angle 1 + 130 + 158 = 360$

$m\angle 1 = 72°$

SUM EXTERIOR ∠s = 360

QUADRILATERAL



20. Determine the value of x

$x + 2x + 3x + 144 = 360$

$6x = 216$

$x = 36$

21. Determine the measures of the angles

Angle T 72°

Angle I 36°

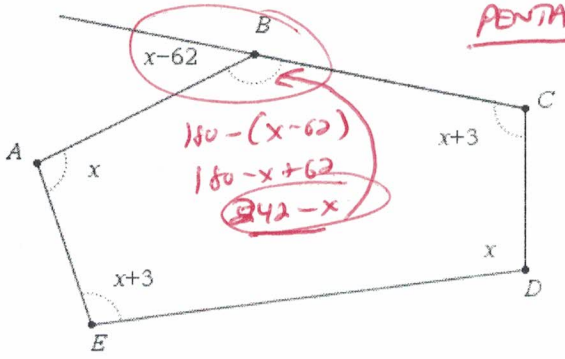
Angle M 108°

Angle TEM 144°

INTERIOR!

$= 360°$ ✓

PENTAGON



$180 - (x - 62)$

$180 - x + 62$

$242 - x$

22. Determine the value of x

Sum ∠s = $180(5-2) = 540°$

$242 - x + x + 3 + x + x + 3 + x = 540$

$3x + 248 = 540$

$3x = 292$

$x = 97.\overline{3}$

23. Determine the measures of the angles

angle A $97.\overline{3}$

angle ABC $144.\overline{6}$

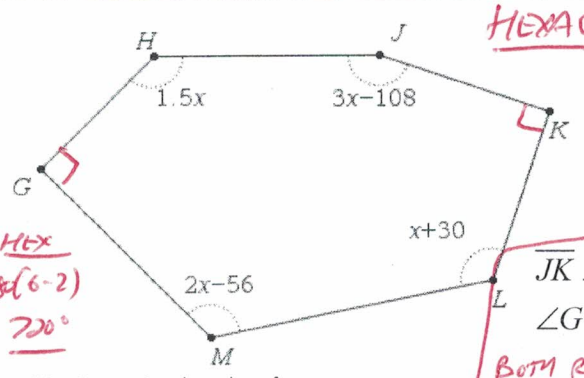
angle C $100.\overline{3}$

angle D $97.\overline{3}$

angle E $100.\overline{3}$

$= 540°$ ✓

HEXAGON



HEX

$180(6-2)$

720°

$\overline{JK} \perp \overline{KL}$

$\angle G \cong \angle K$

BOTH RIGHT ∠s!!

24. Determine the value of x

$90 + 1.5x + 3x - 108 + 90 + x + 30 + 2x - 56 = 720$

$7.5x + 46 = 720$

$7.5x = 674$

$x = 89.8\overline{6}$

25. Determine the measures of the angles

angle G 90°

angle H $134.8°$

angle J $161.6°$

angle K 90°

angle L $119.8\overline{6}°$

angle M $123.7\overline{3}°$

$= 720°$ ✓