Name: KEY Date: _____ Period: _____

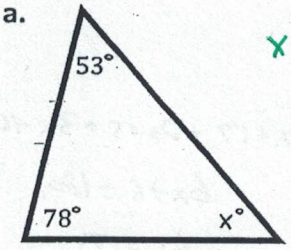
CCGPS Analytic Geometry
Notes: Interior and Exterior Angles of Triangles
Homework: Attached worksheet

Essential Question: What are the steps to finding the measure of interior and exterior angles of a polygon?

The **Triangle Angle Sum Theorem** states that the sum of the angles in a triangle is 180°.

Examples: Find the value of x.

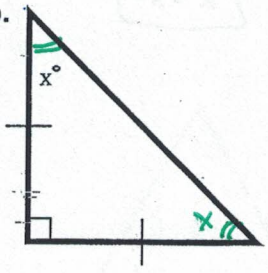
a.



$x + 53 + 78 = 180$

$x = 49$

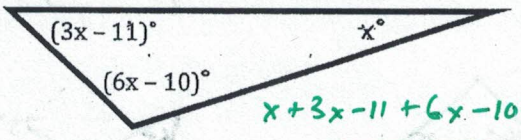
b.



$x + x + 90 = 180$

$x = 45$

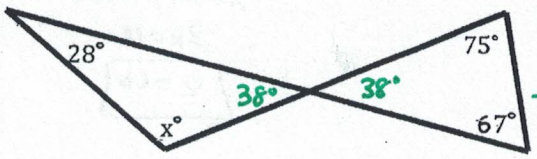
c.



$x + 3x - 11 + 6x - 10 = 180$

$x = 20.1$

d.



$75 + 67 + y = 180$

$y = 38$

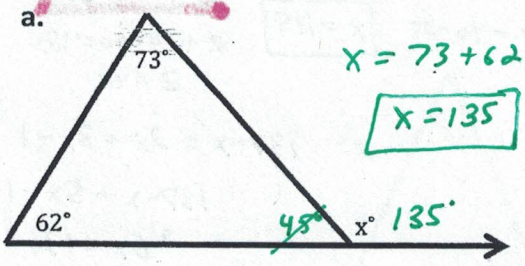
$x + 28 + 38 = 180$

$x = 114$

The **Exterior Angle Theorem** states that the measure of an exterior angle of a triangle is EQUAL to the sum of the measures of the two non-adjacent interior angles.

Examples: Find the value of x.

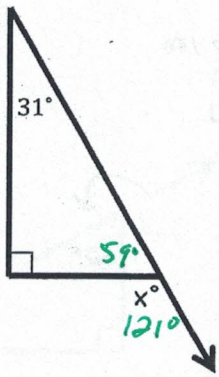
a.



$x = 73 + 62$

$x = 135$

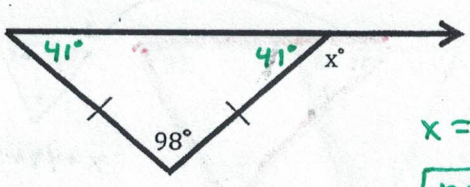
b.



$x = 31 + 90$

$x = 121$

c.



$x = 41 + 98$

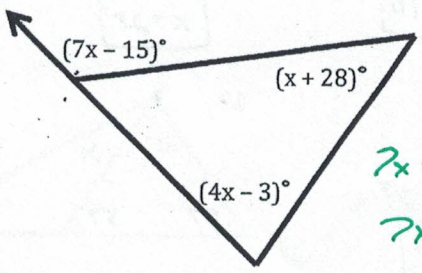
$x = 139$

$y + y + 98 = 180$

$2y = 82$

$y = 41$

d.



$7x - 15 = x + 28 + 4x - 3$

$7x - 15 = 5x + 25$

$2x = 40$

$x = 20$

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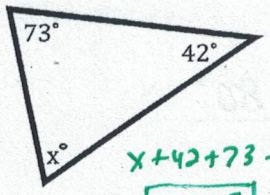
CCGPS Anlaytic Geometry
Homework: Interior and Exterior Angles of Triangles

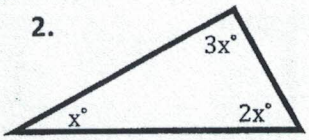
Directions: Find the value of x.

1.



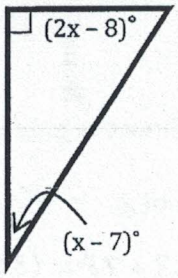
x+42+73 = 180
x = 65

2.



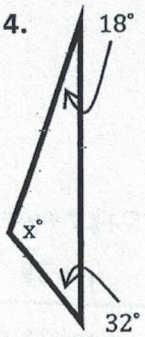
x+2x+3x = 180
x = 30

3.



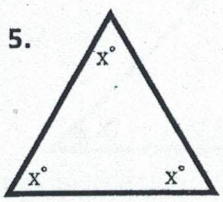
x-7 + 2x-8 + 90 = 180
3x = 105
x = 35

4.



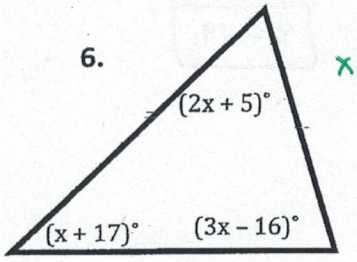
x + 18 + 32 = 180
x = 130

5.



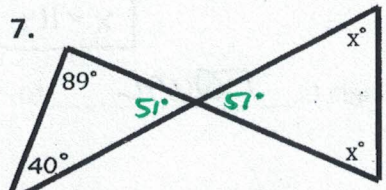
x+x+x = 180
3x = 180
x = 60

6.



x+17 + 2x+5 + 3x-16 = 180
6x+6 = 180
6x = 174
x = 29

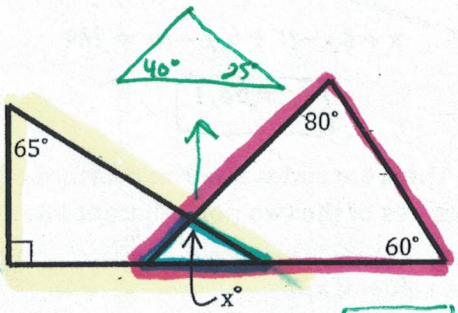
7.

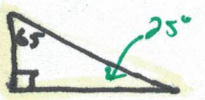


y + 40 + 89 = 180
y = 51

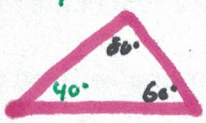
x + x + 51 = 180
x = 64.5

8.





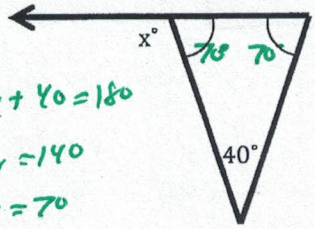
y + 65 + 90 = 180
y = 25



z + 80 + 60 = 180
z = 40

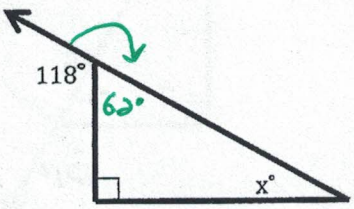
x = 180 – 40 – 25
x = 115

9.



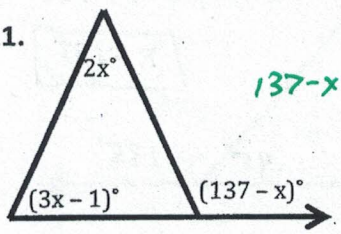
y + y + 40 = 180
2y = 140
y = 70
x = 70 + 40
x = 110

10.



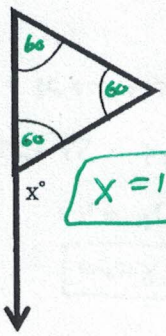
118 = 90 + y
x = 28

11.



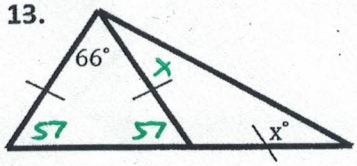
137 - x = 2x + 3x - 1
137 - x = 5x - 1
6x = 138
x = 23

12.



x = 120

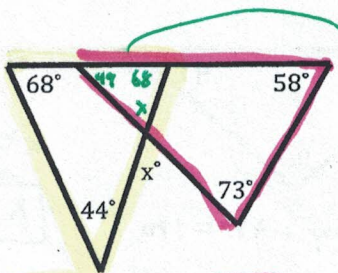
13.



y + y + 66 = 180
y = 57

57 = x + x
x = 28.5

14.



x + 49 + 68 = 180
x = 63