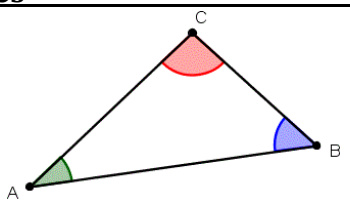
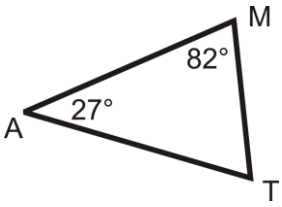
Unit 4-Lesson 3:Triangle Angle Sum Theorem/Classifying Triangles

Triangle Angle-Sum Theorem



- The sum of the measures of the angles in a triangle is **180°**
  - $m\angle A + m\angle A + m\angle A = 180°$

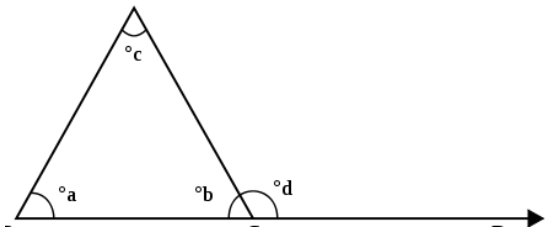
Example: Find the measure of ∠T in ΔATM.



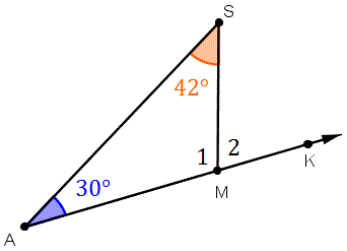
- $m\angle T =$ **71°**

Triangle Exterior Angle Theorem

- The measure of each exterior angle of a triangle equals the **SUM** of the measure of its **REMOTE** interior angles
  - $m\angle a + m\angle c = m\angle d$

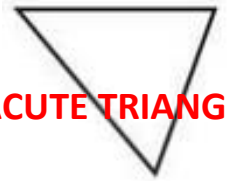


Example: Find the measure of exterior angle 2 in ΔSAM.



- $m\angle 2 =$ **72°**

Classifying Triangles

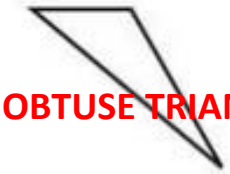


ACUTE TRIANGLE

3 acute angles

RIGHT TRIANGLE

1 right angle

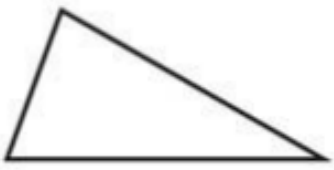


OBTUSE TRIANGLE

1 obtuse angle

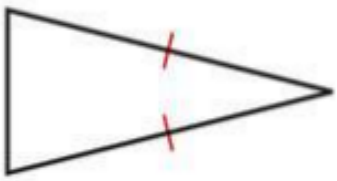
EQUIANGULAR TRIANGLE

3 congruent angles



No congruent sides

SCALENE TRIANGLE



At least 2 congruent sides

ISOSCELES TRIANGLE

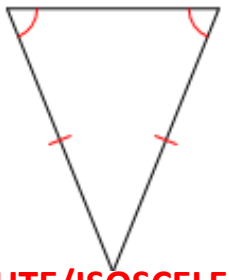
3 congruent sides

EQUIANGULAR TRIANGLE

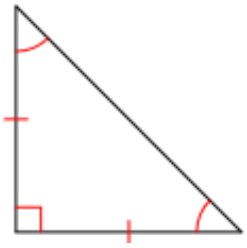
Classify each triangle below. Any congruent sides or angles are identified.

1) 

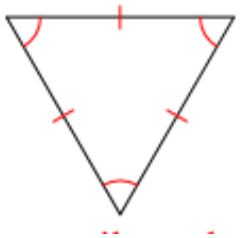
RIGHT/SCALENE

2) 

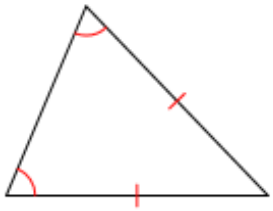
ACUTE/ISOSCELES

3) 

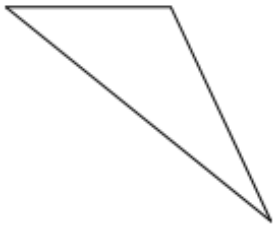
RIGHT/ISOSCELES

4) 

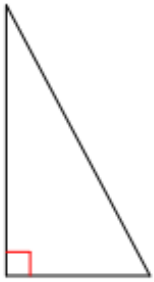
REGULAR

5) 

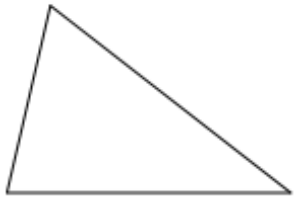
ACUTE/ISOSCELES

6) 

OBTUSE/ SCALENE

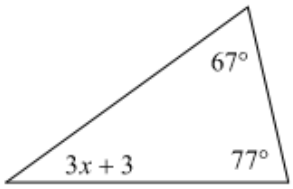
7) 

RIGHT/SCALENE

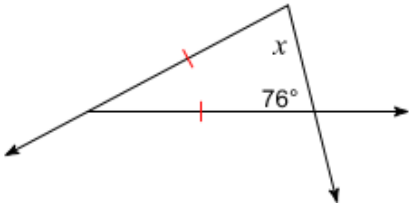
8) 

ACUTE/SCALENE

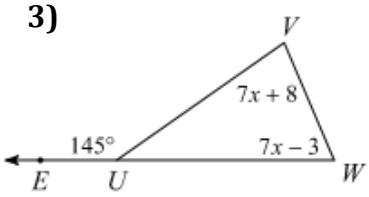
Find the value of x in each triangle below.

1) 

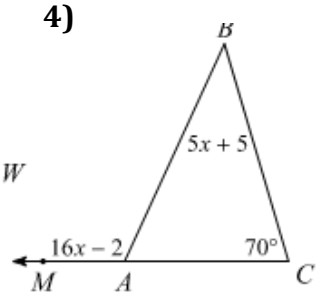
x= 11

2) 

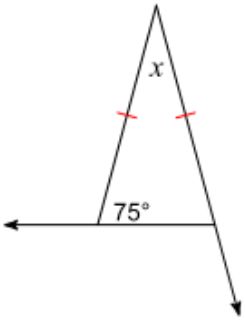
x= 76

3) 

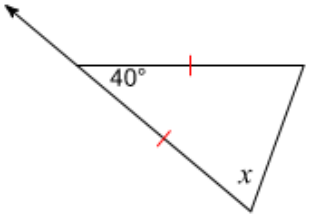
x= 10

4) 

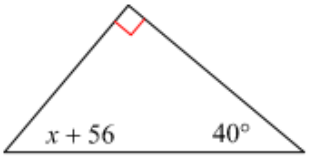
x= 7

5) 

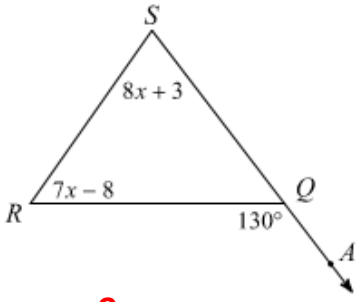
x= 30

6) 

x= 70

7) 

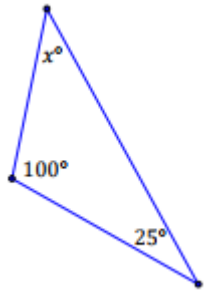
x= -6

8) 

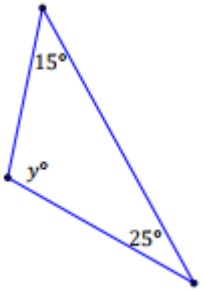
x= 9

Unit 4-Lesson 3: Classwork/Homework

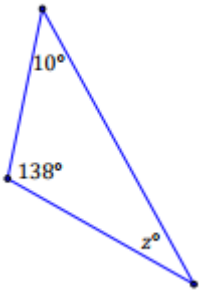
Solve for the missing variable

1. 

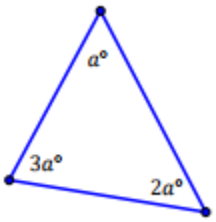
x= 70

2. 

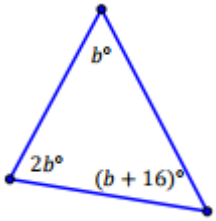
y= 140

3. 

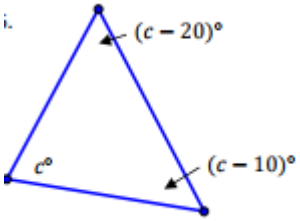
z= 32

4. 

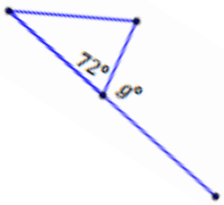
a= 30

5. 

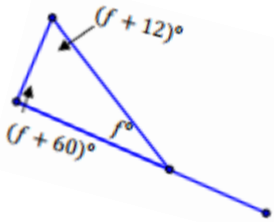
b= 41

6. 

c= 70

7. 

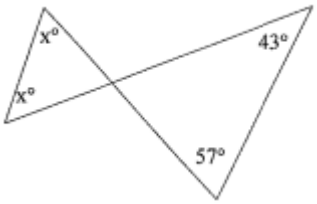
g= 108

8. 

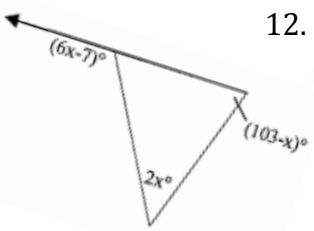
f= 36

9. 

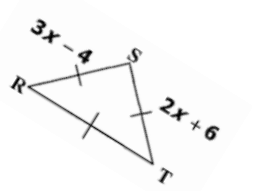
x= 27

10. 

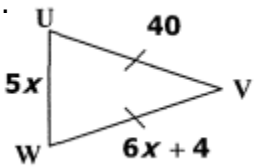
x= 50

11. 

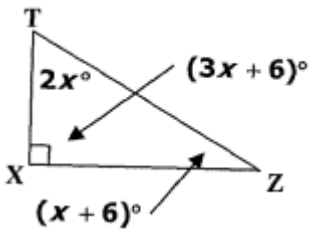
x= 22

12. 

x= 10

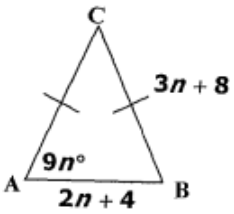
13. 

x= 6

14. 

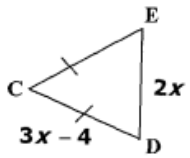
x= 28

15. perimeter = 84

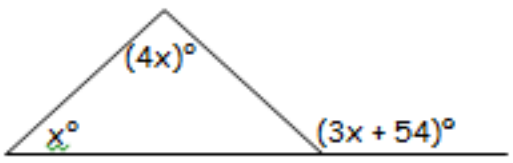


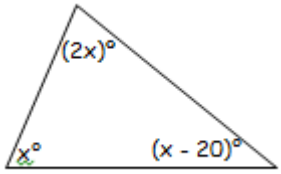
n= 8

16. $\overline{CE} + \overline{ED} + \overline{DC} = 88$



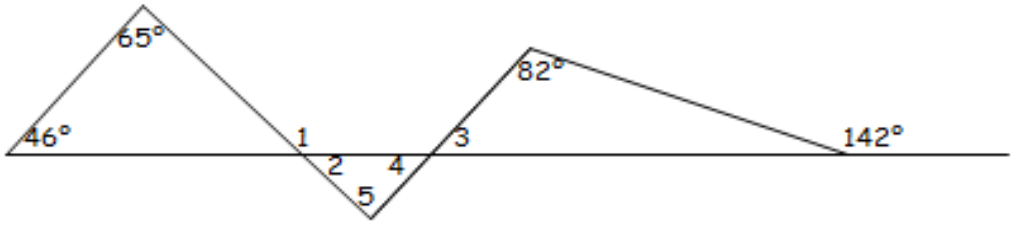
x= 12

17. 

18. 

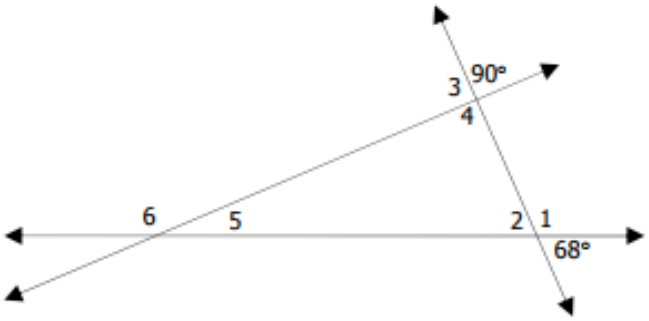
x= 27 x= 50

19.



$m\angle 1 =$ 111 $m\angle 2 =$ 69 $m\angle 3 =$ 60 $m\angle 4 =$ 60 $m\angle 5 =$ 51

20.

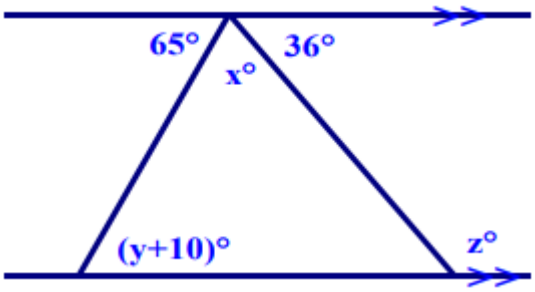


$m\angle 1 =$ 112 $m\angle 2 =$ 68

$m\angle 3 =$ 90 $m\angle 4 =$ 90

$m\angle 5 =$ 22 $m\angle 6 =$ 68

21.

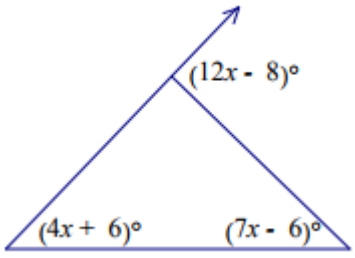


x= 79

y= 55

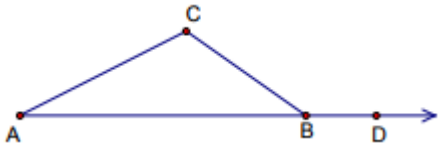
z= 144

22.



x= 8

23. In the diagram of $\triangle ABC$, $m\angle C = (x^2 + 5x - 10)^\circ$, $m\angle A = (3x)^\circ$, and $m\angle CBD = (6x + 89)^\circ$. Find $m\angle A$.



x= 9 $m\angle A =$ 55