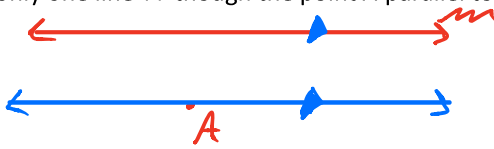


Transversals – Parallel Lines and Triangles

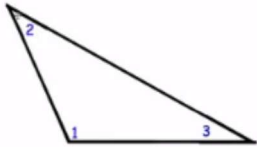
Notes Section 3.4

Name _____

Postulate – Given a line m and a point A not on the line, there is only one line n through the point A parallel to the line m

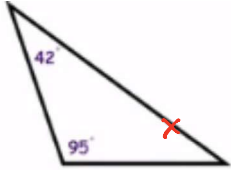


Angle Sum Theorem (aka Triangle Sum Theorem) – The sum of the interior angles of a triangle is 180° .



$$m\angle 1 + m\angle 2 + m\angle 3 = 180^\circ$$

Ex 1: Find the missing angle.



$$x + 42^\circ + 95^\circ = 180^\circ$$

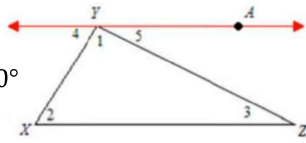
$$x + 137^\circ = 180^\circ$$

$$x = 43^\circ$$

Ex 2: Complete the proof.

Given: $\triangle XYZ$, $\overrightarrow{YA} \parallel \overrightarrow{XZ}$

Prove: $m\angle 1 + m\angle 2 + m\angle 3 = 180^\circ$



1) $\triangle XYZ$
 $\overrightarrow{YA} \parallel \overrightarrow{XZ}$

1) Given

2) $\angle 4$ and $\angle AYX$ are a linear pair

2) Def'n of linear pair

3) $\angle 4$ and $\angle AYX$ are supplementary

3) Supplement Theorem

4) $m\angle 4 + m\angle AYX = 180$

4) Def'n of Supplem.

5) $m\angle 1 + m\angle 5 = m\angle AYX$

5) Angle Add'n post.

6) $m\angle 4 + m\angle 1 + m\angle 5 = 180$

6) Subst

7) $m\angle 5 = m\angle 3$
 $m\angle 4 = m\angle 2$

7) Alt. Int \angle Th'm

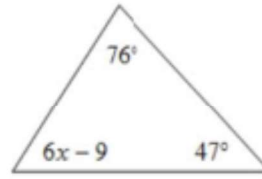
8) $m\angle 2 + m\angle 1 + m\angle 3 = 180$

8) Subst. prop of $= \mathbb{R}$

9) $m\angle 1 + m\angle 2 + m\angle 3 = 180$

9) Commutative prop of $= \mathbb{R}$

Ex 3: Find the value of x .



$$(6x - 9) + (76) + (47) = 180$$

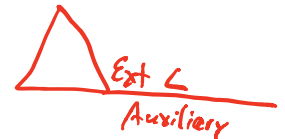
$$6x + 114 = 180$$

$$6x = 66$$

$$x = 11$$

Auxiliary Line – When you extend a segment in a figure.

Exterior Angle of a Polygon –



Remote Interior Angles –



$\angle 2$ and $\angle 3$ are remote interior angles to $\angle 1$

Exterior Angle Theorem – The measure of an exterior angle is equal to the sum of its two remote interior angles.

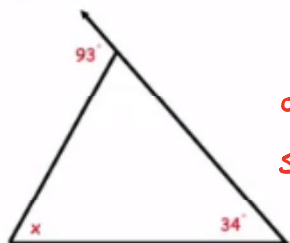


Transversals – Parallel Lines and Triangles

Notes Section 3.4

Name _____

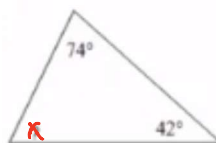
Ex 4: Find $m\angle 1$



$$93 = x + 34$$

$$59 = x$$

Ex 6: Find the missing angle.

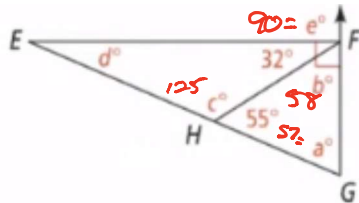


$$x + 74 + 42 = 180$$

$$x + 116 = 180$$

$$x = 64$$

Ex 5: Find the value of all the variables.



$$e + 90 = 180$$

$$e = 90$$

$$32 + b = 90$$

$$b = 58$$

$$a + 55 + 58 = 180$$

$$a + 113 = 180$$

$$a = 57$$

$$c + 55 = 180$$

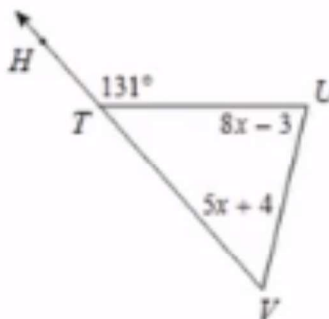
$$c = 125$$

$$d + 32 + 125 = 180$$

$$d + 157 = 180$$

$$d = 23$$

Ex 7: Find the value of x.



$$131 = (8x - 3) + (5x + 4)$$

$$131 = 13x + 1$$

$$130 = 13x$$

$$10 = x$$