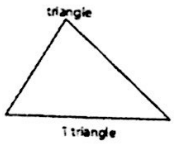
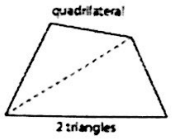
Review Worksheet II

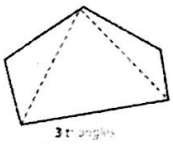
1. Go back and study the proofs from Review Worksheet I!!!

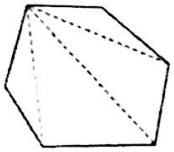
Interior Angles

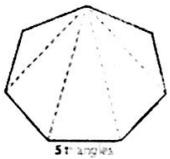
Number of Sides	Name of Polygon
3	Triangle
4	Quadrilateral
5	Pentagon
6	Hexagon
7	Heptagon
8	Octagon
9	Nonagon
10	Decagon
12	Dodecagon
n	*n*-gon

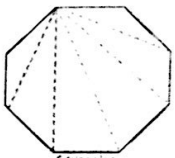






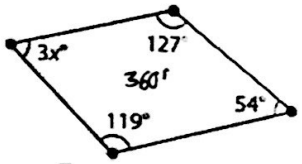






To find the SUM of the interior angles of a polygon you use the formula 180(n – 2) where n is the number of sides in the polygon. This formula is based on the number of triangles you can draw by drawing in diagonals from one vertex.

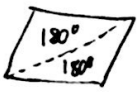
2.



$3x+127+119+54=360$

$3x=60$ $\boxed{x=20}$

3. Draw and label a quadrilateral with one diagonal and show how to find the sum of the interior angles. Do the same for a pentagon with two diagonals from the same vertex.



$180\times2=360$

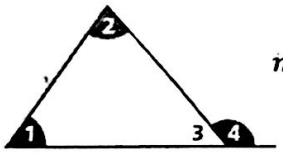
$180\times3=540$

4. How many sides does a polygon with an interior angle sum of 2700° have?

$\frac{(n-2)180}{180}=\frac{2700}{180}$ $n-2=15$ (15 triangles) $n=17$ 17 sides

5. What is the measure of an interior angle of a regular pentagon?

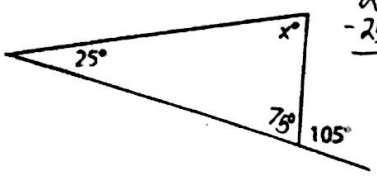
Exterior Angles



$m\angle1+m\angle2=m\angle4$

The SUM of the exterior angles of a polygon is 360°

6. Find the value of x.

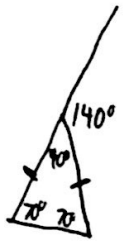


$25+x=105$

$-25\quad -25$

$\boxed{x=80}$

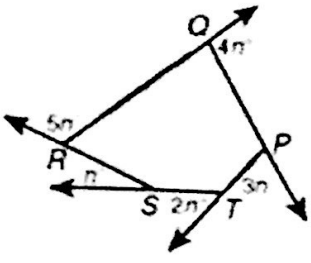
7. You know that one of the exterior angles of an isosceles triangle is 140°. The angle measures of the triangle could be



40° 70° 70° or

40° 40° 100°

8. Find the value of n.



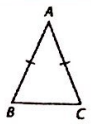
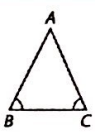
$5n+4n+3n+2n+n=360$

$\frac{15n}{15}=\frac{360}{15}$

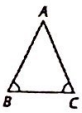
$\boxed{n=24}$

Isosceles and Equilateral Triangles

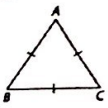
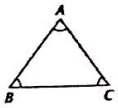
Isosceles Triangle Theorem

If  then 

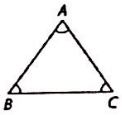
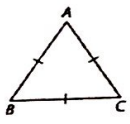
Converse of the Isosceles Triangle Theorem

If  then 

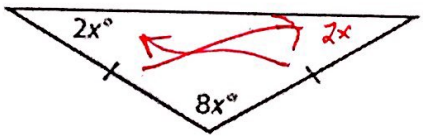
Equilateral Triangle Theorem

If  then 

Converse of the Equilateral Triangle Theorem

If  then 

9. Find the value of x.

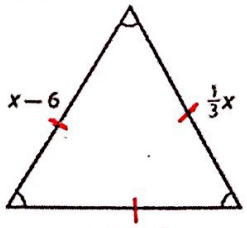


$2x+2x+8x=180$

$\frac{12x}{12}=\frac{180}{12}$

$x=15$

10. Find the value of x.



$x-6=\frac{1}{3}x$

$-x \quad -x$

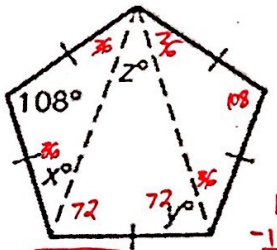
$-6=-\frac{2}{3}x$

$-6\cdot-\frac{3}{2}$

$=+\frac{18}{2}=9$

$x=9$

11. Find the value of x, y, and z.



$x=36$ $z=36$

$y=72$

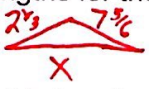
$180-108=72$

$72\div2=36$

Triangle Inequalities

12. Find the range of possible side lengths for the third side given the first two side lengths are $2\frac{1}{3}$ and $7\frac{5}{6}$.

$x>5\frac{3}{6}\rightarrow5\frac{1}{2}$



$7\frac{3}{6}+2\frac{3}{6}=9\frac{6}{6}\rightarrow10\frac{1}{6}$

$x<10\frac{1}{6}$

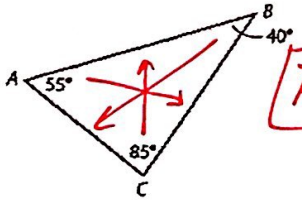
$5\frac{1}{2}<x<10\frac{1}{6}$

$=2\frac{2}{6}$

13. Can a triangle be made from the side lengths 3, 3, and 6? Explain.

No; 3+3 is not greater than 6

14. Order the side lengths from smallest to largest.

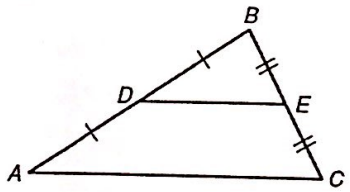


$\overline{AC}, \overline{BC}, \overline{AB}$

Special Segments

Know the difference between an altitude, a median, and a midsegment.

Use the Triangle Midsegment Theorem to name parts of the figure.



15. a midsegment of $\triangle ABC$ — $\overline{DE}$
16. a segment parallel to $\overline{AC}$ — $\overline{DE}$
17. a segment that has the same length as $\overline{BD}$ — $\overline{AD}$
18. a segment that has half the length of $\overline{AC}$ — $\overline{DE}$
19. a segment that has twice the length of $\overline{EC}$ — $\overline{BC}$

Find each measure.

20. HI 9.1
21. $m\angle HIF$ 58°
22. $m\angle HGD$ 122°
23. DF 35