Unit 7, Day 01 Angles of Polygons Skills Practice

Name Master E

Date _____ Block _____

1-5: Write the definition for each term and draw a picture to illustrate it.

1. Polygon A closed figure formed by a finite # of coplanar segments called sides 

2. Convex Polygon A polygon with each interior angle less than 180 degrees 

3. Concave Polygon A polygon that is not convex. It will always have at least one reflex interior angle (an angle between 180 & 360 degrees) 

4. Regular Polygon A polygon that has ≅ sides & angles 

5. Irregular Polygon A polygon that does not have ≅ sides and angles 

6-9: Find the sum of the measures of the interior angles of each convex polygon. $(n-2)180$

6. Nonagon $n=9$
$7(180)$
$1260°$

7. Heptagon $n=7$
$5(180)$
$900°$

8. Decagon $n=10$
$8(180)$
$1440°$

9. 13-gon
$11(180)$
$1980°$

10-13: The measure of an interior angle of a regular polygon is given. Find the number of sides for each polygon.

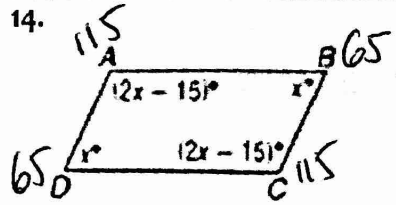
10. 108°
$108/72$
$360 \div 72 = 5$

11. 120°
$120°/60$
$\frac{360}{60} = 10$

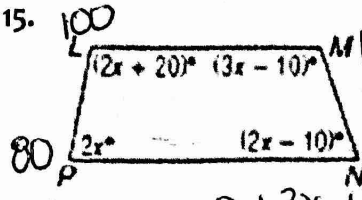
12. 150°
$150°/30$
$\frac{360}{30} = 120$

13. 156°
$156°/24$
$\frac{360}{24} = 15$

14-17: Find the measure of each interior angle using the given information.

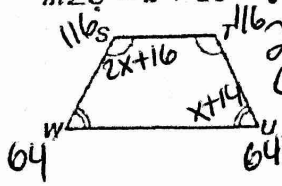
14. 

$x+2x-15+x+2x-15=360$
$6x-30=360$
$6x=390$
$x=65$

15. 

$2x+2x-10+3x-10+2x+20=360$
$9x=360$
$x=40$

16. quadrilateral $STUW$ with $\angle S \cong \angle T$, $\angle U \cong \angle W$, $m\angle S = 2x + 16$, $m\angle U = x + 14$



$2(2x+16)+2(x+14)=360$

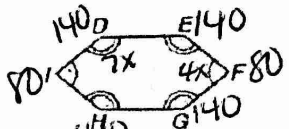
$4x+32+2x+28=360$

$6x+60=360$

$6x=300$

$x=50$

17. hexagon $DEFGHI$ with $\angle D \cong \angle E \cong \angle G \cong \angle H$, $\angle F \cong \angle I$, $m\angle D = 7x$, $m\angle F = 4x$



$<\text{Sum} = 4(180) = 720$

$4(7x)+2(4x)=720$

$28x+8x=720$

$36x=720$ $x=20$

18-21: For each regular polygon given, find the measure of an interior angle and an exterior angle.

18. quadrilateral $n=4$

$I = 90$

$E = 90$

19. Pentagon $n=5$

$I = 180-72 = 108$

$E = \frac{360}{5} = 72$

20. Dodecagon $n=12$

$I = 180-30 = 150°$

$E = \frac{360}{12} = 30°$

21. 18-gon

$I = 180-20 = 160$

$E = \frac{360}{18} = 20$

22-25: Given the number of sides of each regular polygon, find the measure of an interior and an exterior angle. Round to the nearest tenth if necessary.

22. 8

$I = 180-45 = 135$

$E = \frac{360}{8} = 45$

23. 9

$I = 180-40 = 140$

$E = \frac{360}{9} = 40$

24. 13

$I = 180-27.7 = 152.3$

$E = \frac{360}{13} \approx 27.7$

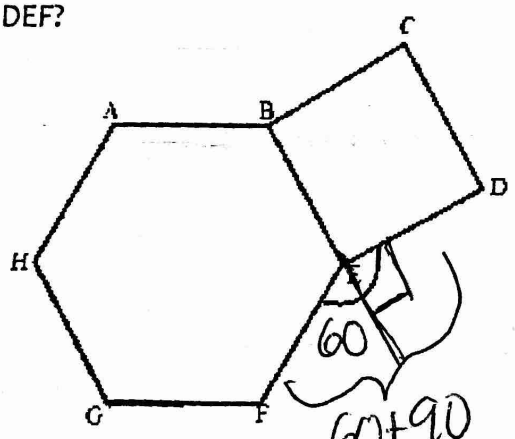
25. 20

$I = 180-18 = 162$

$E = \frac{360}{20} = 18$

26-27: Apply your knowledge of regular polygons to answer each question.

26: Regular Hexagon ABEFG and regular quadrilateral BCDE meet at vertices B and E and share a common edge BE. What is the measure of angle DEF?

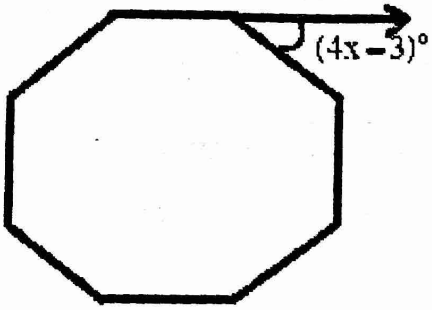


$\frac{360}{6}$

$60+90$

$150°$

27. Find the value of x in the regular octagon.



$8(4x-3)=360$

$32x-24=360$

$32x=384$

$x=12$