Chapter 7 Practice Test Honors Geometry 2007 Name: Key

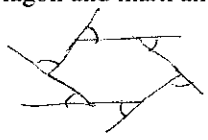
1. The sum of the angles of a triangle is 180.

2. If we know the measure of an exterior angle of a triangle, what can we say about the remote interior angles?

= sum of remote int ∠s

3. Define exterior angle. ∠ that is adjacent & Supp. to an int ∠ of a polygon

4. Draw a hexagon and mark all of its exterior angles. (and you can mark their vertical ∠s also)



5. The Midline Theorem tells us that a segment joining the midpoints of two sides of a triangle is parallel to the third side, and ½ as long.

6. Given: ΔXYZ and ΔDEF with $\angle X \cong \angle D$ and $\angle Y \cong \angle E$. What can we conclude?

$\angle Z \cong \angle F$ What theorem allows us to conclude this?

No choice

7. Give the number of sides/angles in these polygons:

a. Triangle 3
b. Heptagon/Septagon 7
c. Pentagon 5
d. Hexagon 6
e. Nonagon 9
f. Pentadecagon 15
g. Octagon 8
h. Dodecagon 12
i. Decagon 10
j. Ondecagon 11

8. Write the formulas to find the following information about polygons:

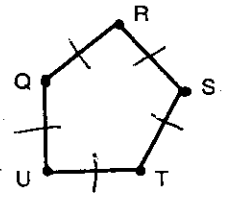
a. Sum of the interior angles of a polygon $(n-2)(180)$
b. Sum of the exterior angles of a polygon 360
c. Number of diagonals in a polygon $\frac{n(n-3)}{2}$
d. Number of triangles that can be formed using diagonals at one vertex of a polygon $n-2$
e. Measure of an exterior angle of an equiangular/regular polygon $\frac{360}{n}$
f. Measure of an interior angle of an equiangular/regular polygon $180-\frac{360}{n}$ or $\frac{(n-2)(180)}{n}$

9. What is the interior angle measure of a regular heptagon? $128\frac{4}{7}^\circ$ What formula did you use to solve this? → $\text{ext}\angle = \frac{360}{7} = 51\frac{3}{7}$ $\text{int}\angle = 180 - 51\frac{3}{7}$

10. How many diagonals does an dodecagon have? $\frac{(12-3)(12)}{2} = 9(6) = 54$

11. Is the figure below a regular polygon? If not, explain. _____

not necessarily → we don't know about the ∠s.



QR=RS=ST=TU=UQ

12. Sometimes, Always, or Never: The angles of every equilateral polygon can be determined.

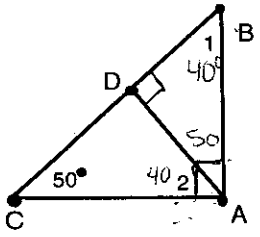
13. What is the measure of each exterior angle of an equiangular pentagon? 72° What formula did you use? $\frac{360}{5} = 72°$

14. If one exterior angle of a triangle is 65° and one interior angle is 25°, then the measure of the largest exterior angle is 155°.

140 40 155 25 165

15. Find m ∠1 and m ∠2, given that $\angle CAB = 90$ and $\angle BDA = 90$

m∠1 = 40°
m∠2 = 40°



16. Find the sum of the interior angles in a regular polygon with an exterior angle measuring 24° regular pentadecagon

$\frac{360}{24} = 15$

17. Sometimes, Always, or Never: The exterior angles of every regular polygon can be determined.

18. The measures of four of the angles of a pentagon are 80, 110, 100, and 120. What is the measure of the fifth angle?

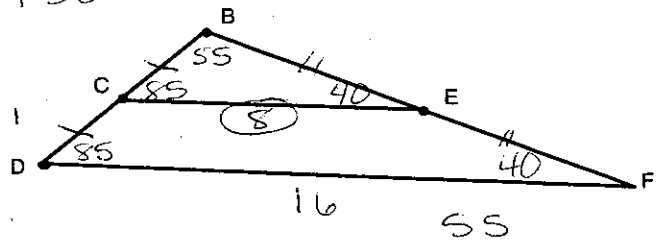
130°

Sum of m∠s = 540
540 − 410 = 130

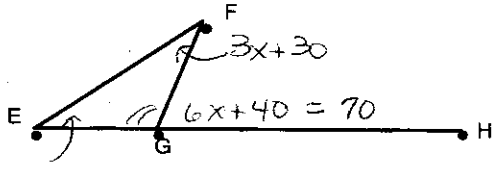
80
110
100
120
410

19. Given: C is the midpoint of $\overline{BD}$
E is the midpoint of $\overline{BF}$
DF = 16
m∠D = 85, m∠B = 55,
Find: CE, m∠BCE, and m∠BEC

8 85° 40°



55
85
140



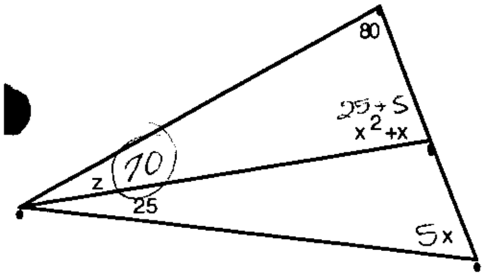
20. If $\angle E = (7x - 10)$, $\angle F = (3x + 30)$, and $\angle FGH = (6x + 40)$, find $\angle EGF$.

110°

7x−10

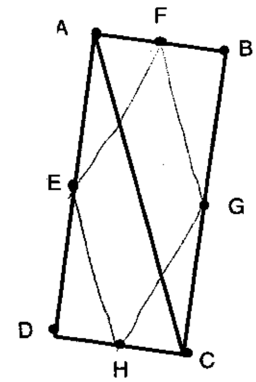
6x+40 = 3x+30+7x−10
6x+40 = 10x+20
20 = 4x
5 = x

Key



21. Solve for z.
z = 70°

$x^2 + x = 25 + x$
$x^2 = 25$
$x = \pm 5$ so $x = 5°$



22. . Given: ABCD is a rectangle
E, F, G, H are midpoints
DB =30

What figure is formed when the midpoints are connected? What are the lengths of the sides when the midpoints are connected? Justify your answer completely.

Since diag of rect are ≅, all midlines are ≅.
∴ must be a rhombus with sides = 15

23. For the following figures, find the name of the quadrilateral formed by connecting the midpoints of the sides in order.

a) Square Square (diagonals of a square are ≅ & ⊥)

b) Isosceles Trapezoid rectangle (diagonals of a isosceles trapezoid are ≅)

c) Any Convex Quadrilateral ▱ (diagonals of a convex quadrilateral are intersecting

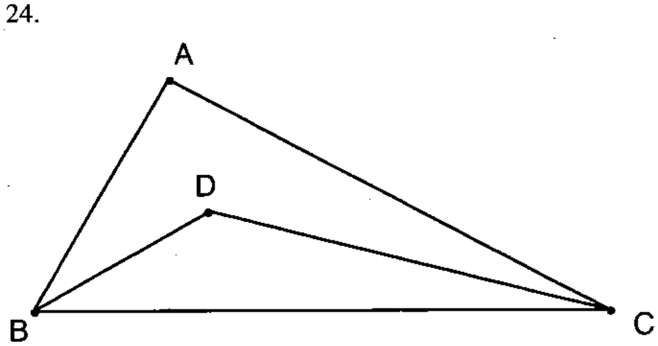
d) Kite rectangle (diagonals of a kite are ⊥)

e) Rhombus rectangle (diagonals of a rhombus are ⊥)

f) Non-Isosceles Trapezoid ▱ (diagonals of non isosceles trapezoid are intersecting

g) Parallelogram ▱ (diagonals of parallelogram are intersecting

24.



~~20~~ 24 Given: ∠ABC is bisected by $\overrightarrow{BD}$
∠ACB is bisected by $\overrightarrow{CD}$

a) If ∠A is an angle in a regular polygon (n = 3, 4, 5, or 6), then what can the values of ∠BDC be?

60° 90° 108

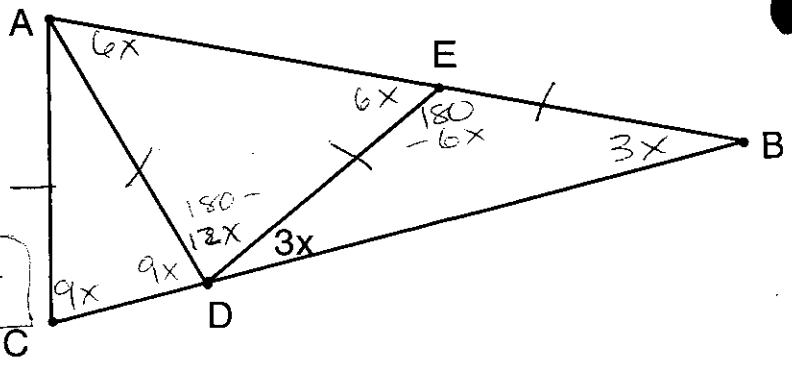
120° ... 120°, 135°, 144°, 15

b) Can ∠BDC ever be an angle in a equiangular polygon? If so, which polygons?

120 → equiang. hex
135 → equiang octagon
144° → equiang decag
150° → equiang dodeca

25. . Find x.

$\overline{AB} \cong \overline{CB}; \overline{AC} \cong \overline{AD} \cong \overline{DE} \cong \overline{EB}$

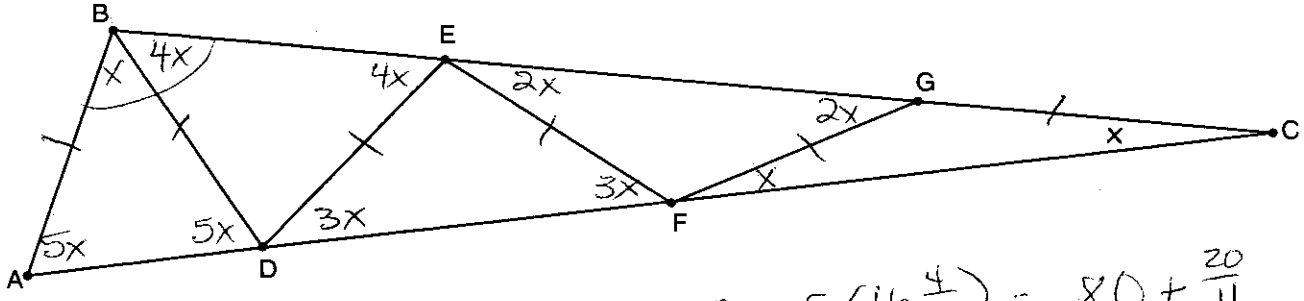


$9x + 9x + 3x = 21x = 180$

$x = \frac{180}{21}$

$x = \frac{60}{7}$ or $8\frac{4}{7}$

26. Triangle ABC is an isosceles triangle with base AB. Find x and the m∠CBA.



$5x + 5x + x = 180$

$11x = 180$

$x = 16\frac{4}{11}$

$m\angle CBA = 5(16\frac{4}{11}) = 80 + \frac{20}{11}$

$m\angle CBA = 81\frac{9}{11}°$

27. Construct the following polygons….use a separate piece of paper.
    a. Regular triangle
    b. Regular quadrilateral
    c. Regular hexagon
    d. Regular octagon