Name ___Key___

Period _____

1. How many sides does a polygon have if the sum of the measures of its interior angles is 900° ?

$$S_i = (n-2)180$$
$$900 = 180n - 360$$
$$+360 \qquad +360$$

$$1260 = 180n$$
$$\frac{1260}{180} = \frac{180n}{180}$$

$$n = \frac{1260}{180}$$

$$180\overline{)1260}^{7}$$
$$\underline{1260}$$
$$0$$

$$\boxed{n = 7}$$

2. The ratio of measure of the angles of a triangle is 2:3:4. Find the measure of the largest angle.

$$2x + 3x + 4x = 180$$
$$\frac{9x}{9} = \frac{180}{9}$$

$$x = 20$$

$$largest = 4x = 4(20) = \boxed{80°}$$

3. If each exterior angle of a regular polygon has a measure of 18°, find the number of sides of the polygon.
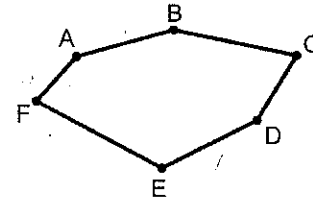
$$E = \frac{360}{n}$$
$$18 = \frac{360}{n}$$
$$\frac{18}{1} = \frac{360}{n}$$

$$18n = 360$$
$$n = \frac{360}{18}$$

$$18\overline{)360}^{20}$$
$$\underline{36}$$
$$00$$

$$\boxed{n = 20}$$

4. What is the sum of the exterior angles of polygon ABCDEF?

$$S_E = \boxed{360°}$$

(doesn't matter how many sides)

5. Find the sum of the measures of the interior angles of a hexagon.

$$n = 6 \qquad S_i = (n-2)180$$
$$(6-2)180$$
$$(4)180$$

$$180 \times 4 = 720 \qquad \boxed{720°}$$

6. How many diagonals can be drawn in a pentagon? n = 5

$$d = \frac{n(n-3)}{2} = \frac{5(5-3)}{2} = \frac{5(2)}{2} = \boxed{5}$$

7. B is the midpoint of $\overline{AC}$ and E is the midpoint of $\overline{AD}$.
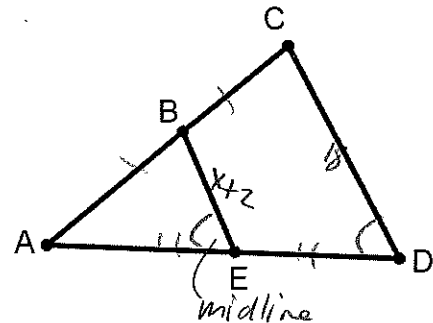
$BE = x + 2$
$CD = 18$

$$x + 2 = half of 18$$
$$x + 2 = 9$$
$$\underline{-2 \qquad -2}$$
$$x = \boxed{7}$$

(a) Solve for x:

(b) What angle must be congruent to $\angle ADC$?

$\angle AEB$ (midline || CD)

and corresponding ∠'s are ≅

Formulas: $\quad S_i = 180(n-2) \qquad\qquad S_e = 360° \qquad\qquad E = \dfrac{360°}{n} \qquad\qquad d = \dfrac{n(n-3)}{2}$

8.

R /100°

30°

Q /3 100°   50°2 \ 130°   S
   130°

(1800...)
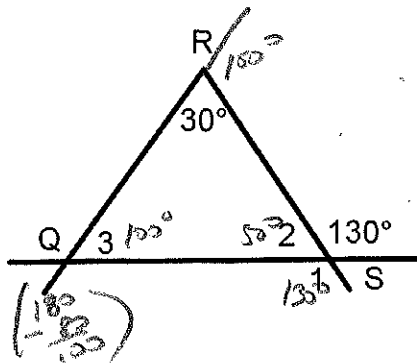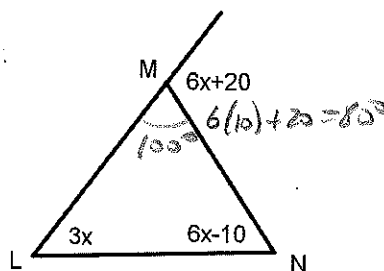
(a) Find $m\angle 1$: 130°

(b) Find $m\angle 2$: 50°

(c) Find $m\angle 3$: 100°

(d) Is $\triangle QRS$ isosceles?   no

(e) Is $\triangle QRS$ equilateral?   no

(f) If an exterior angle of $\triangle QRS$ were drawn at R, how many degrees would it contain?   150°

9. Solve for x:
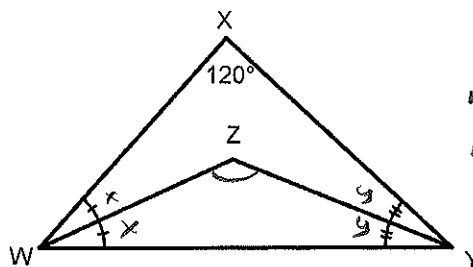
$$6x+20 = 3x+6x-10$$
$$6x+20 = 9x-10$$
$$-6x \qquad -6x$$
$$20 = 3x-10$$
$$+10 \qquad +10$$
$$\frac{30}{3} = \frac{3x}{3}$$
$$\boxed{x=10}$$

10. Find $m\angle LMN$: $\boxed{100°}$

M /6x+20
   $6(10)+20=80°$
   100°
L   3x   6x-10   N

11. Find $m\angle WZY$:

$$120+2x+2y = 180$$
$$-120 \qquad -120$$
$$\frac{2x+2y}{2} = \frac{60}{2}$$
$$x+y = 30 \quad (\text{substitute} \rightarrow)$$

X
120°
Z
W   x /x   y\ y   Y

substitute here
$\downarrow$
$$m\angle WZY + x + y = 180$$
$$m\angle WZY + 30 = 180$$
$$\qquad -30 \quad -30$$
$$m\angle WZY = \boxed{150}$$

12. Find $m\angle L$: $\boxed{70°}$

'no choice theorem'
$\angle N \cong \angle Q$

$$4x = x+30$$
$$-x \quad -x$$
$$\frac{3x}{3} = \frac{30}{3}$$
$$x=10$$

N
   4x
   40°
L
70°
   70°
   M
$180-70 = 140$

R
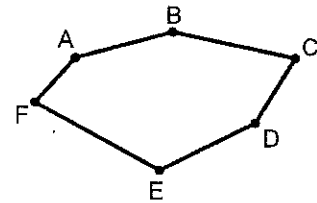   x+30   S
Q

Name_____

Period_____
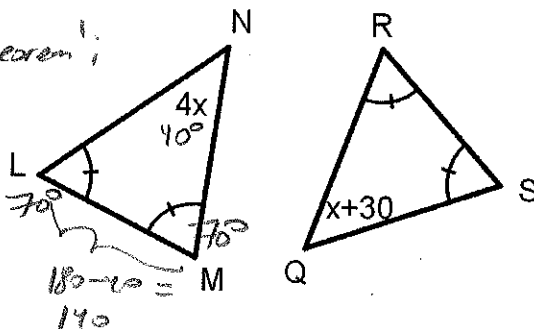
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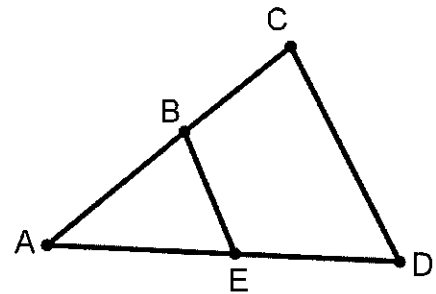
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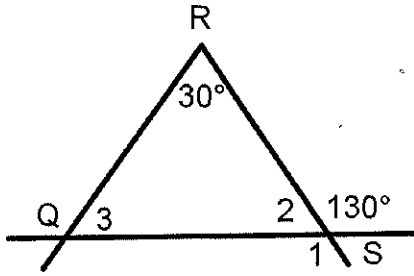(a) Solve for x:

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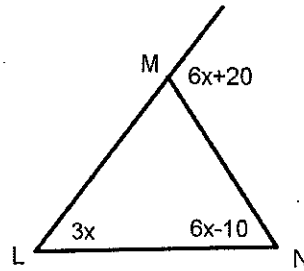
8.

(a) Find $m\angle 1$:

(b) Find $m\angle 2$:

(c) Find $m\angle 3$:

(d) Is $\triangle QRS$ isosceles?

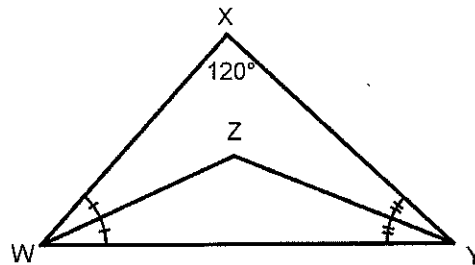(e) Is $\triangle QRS$ equilateral?

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9. Solve for x:

10. Find $m\angle LMN$:

11. Find $m\angle WZY$:

12. Find $m\angle L$: