Honors Geometry
Chapter 6 Review

Name: ______________________

1. Find the measure of each interior angle in an equiangular decagon. $\frac{(10-2)(180)}{10} = \boxed{144^\circ}$

2. Find the sum of the measures of the angles of a pentagon. $(5-2)(180) = \boxed{540^\circ}$

3. Find the sum of the measures of the exterior angles of a 30-gon. $\boxed{360^\circ}$

4. If the sum of the measures of the angles of a polygon is 3060°, how many sides does the polygon have? $3060 = (n-2)180$

$\boxed{19 \text{ sides}}$ $17 = n-2$

5. Find the measure of each exterior angle of a regular heptagon. Round to the nearest tenth. $\frac{360}{7} = 51.429$

$\boxed{51.4^\circ}$

6. Does there exist a regular polygon in which each exterior angle has a measure of 37°30′? $37.5n = (n-2)180$

$\boxed{\text{no}}$ $37.5n = 180n - 360$

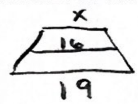
$142.5 = 360$ $n = 2.53$

7. The measure of each exterior angle of an equiangular polygon is $13\frac{1}{3}^\circ$. How many sides does the polygon have?

$\boxed{27 \text{ sides}}$ $13\frac{1}{3}n = 360$

8. The length of one base of a trapezoid is 19 inches and the length of the midsegment is 16 inches. Find the length of the other base.

$\boxed{13 \text{ in}}$



$\frac{x+19}{2} = 16$

$x + 19 = 32$

For numbers 9 & 10, give the most descriptive name for each polygon.

9. Each interior angle is 144°. $144n = (n-2)(180)$

$\boxed{\text{Decagon}}$ $144n = 180n - 360$

$-36 = -360$ $n = 10$

10. The measure of each interior angle is 3 times the measure of each exterior angle.

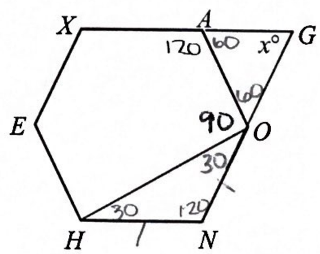
$\frac{(n-2)180}{n} = 3\left(\frac{360}{n}\right)$ $n = 8$ $\boxed{\text{octaagon}}$

$180n - 360 = 1080$

$180n = 1440$

11. *HEXAON* is a regular hexagon. Find the value *x*.

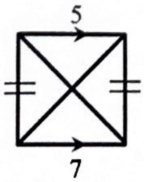
$\boxed{x = 60^\circ}$



$\frac{(6-2)180}{6} = 120$

For numbers 12 – 14, give the most descriptive name for each quadrilateral.

12.



isoceles trapezoid

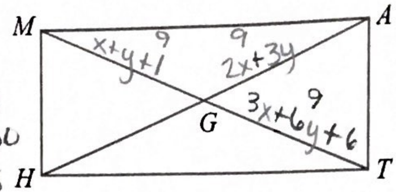
13. A quadrilateral with each pair of consecutive angles supplementary.

parallelogram

14. A quadrilateral whose congruent diagonals are perpendicular bisectors of each other.

Square

15. Given rectangle $MATH$, $MG = x + y + 1$, $AG = 2x + 3y$, $TG = 3x + 6y + 6$. Find TM.



$x+y+1=3x+6y+6$

$x+y+1=2x+3y$

$-2x-5y=5$

$(-x-2y=-1)-2$

$2x+4y=2$

$-y=7$

$y=-7$

$-2x+35=5$

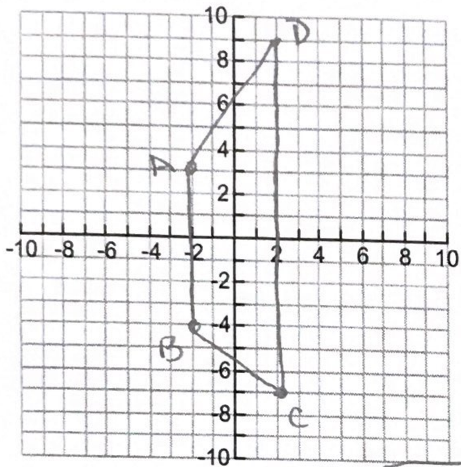
$-2x=-30$

$x=15$

$\boxed{TM=18}$

For numbers 16 & 17, decide whether the four points form a parallelogram, rectangle, rhombus, square, trapezoid, isosceles trapezoid, or kite. Use the most specific name possible. Justify your answer mathematically.

16. $A(-2, 3)$, $B(-2, -4)$, $C(2, -7)$, $D(2, 9)$



$BC = \sqrt{(-2-2)^2+(-4+7)^2} = \sqrt{25}$

$AD = \sqrt{(-2-2)^2+(3-9)^2} = \sqrt{52}$

$AB = \frac{-4-3}{-2+2} = \frac{-7}{0}$ und.

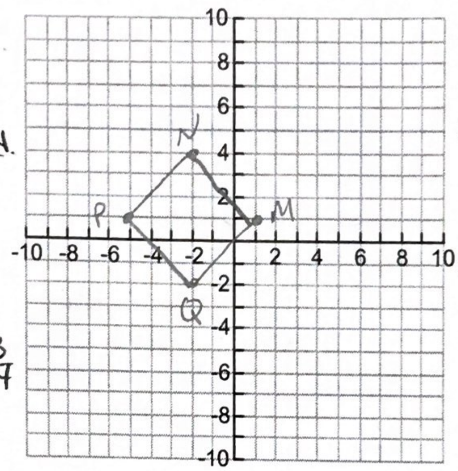
$DC = \frac{-7-9}{2-2} = \frac{-16}{0}$ und.

$AD = \frac{3-9}{-2-2} = \frac{-6}{-4} = \frac{3}{2}$

$BC = \frac{-4+7}{-2-2} = \frac{3}{-4} = \frac{-3}{4}$

$\boxed{\text{trapezoid}}$

17. $M(1, 1)$, $N(-2, 4)$, $P(-5, 1)$, $Q(-2, -2)$



$PM = \sqrt{(1+5)^2+(1-1)^2}$

$\sqrt{36}$

$NQ = \sqrt{(-2+2)^2+(4+2)^2}$

$= \sqrt{36}$

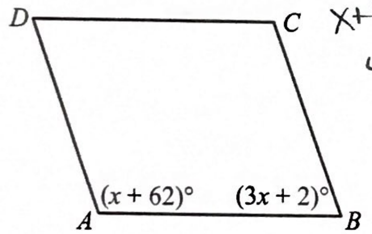
rect.

$PM = \frac{1-1}{1+5} = 0$

$NQ = \frac{4+2}{-2+2} =$ und.

$\boxed{\text{Square}}$

18. Given: $ABCD$ is a parallelogram
Find: $m\angle D$.



$x+62+3x+2=180$

$4x+64=180$

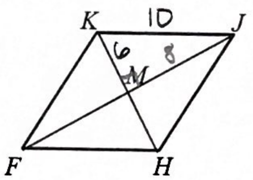
$4x=116$

$x=29$

$m\angle D = m\angle B$

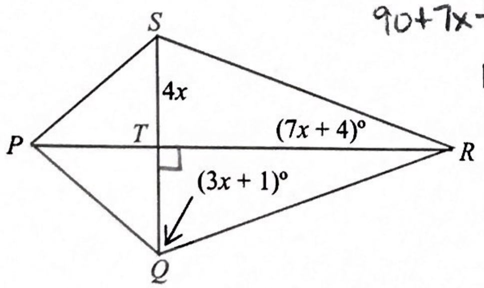
$\boxed{m\angle D = 89°}$

19. $FHJK$ is a rhombus, $KM = 6$ and $MJ = 8$
Find the perimeter of the rhombus.



$\boxed{P=40}$

20. Given that $PQRS$ is a kite, find x.



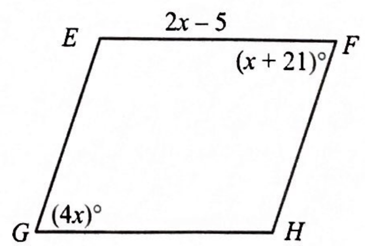
$90+7x+4+3x+1=180$

$10x+95=180$

$10x=85$

$\boxed{x=8.5}$

21. Find the length of EF in parallelogram $EFGH$.



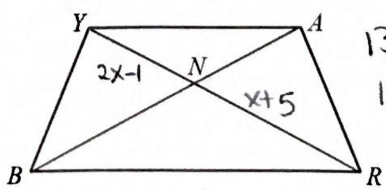
$4x=x+21$

$3x=21$

$x=7$

$\boxed{EF=9}$

22. Given: $BRAY$ is an isosceles trapezoid.
$BA = 13$
$YN = 2x - 1$
$NR = x + 5$
Find NR.



$13=2x-1+x+5$

$13=3x+4$

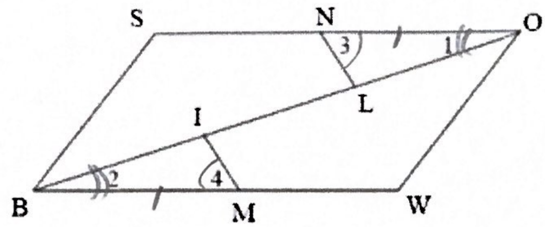
$9=3x$

$x=3$

$\boxed{NR=8}$

23. Given: *WOSB* is a Parallelogram
$\angle 3 \cong \angle 4$
$\overline{MW} \cong \overline{SN}$

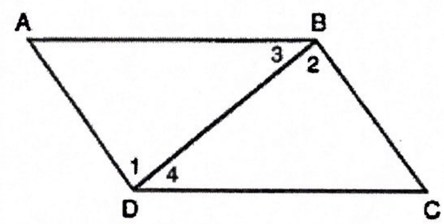
Prove: $\overline{IM} \cong \overline{LN}$



Statements	Reasons
1. WOSB is ▱	1 Given
2. $\angle 3 \cong \angle 4$	2. Given
3. $\overline{MW} \cong \overline{SN}$	3. Given
4. $\overline{BW} = \overline{SO}$	4. opp sides of ▱ are $\cong$
5. $\overline{BM} \cong \overline{NO}$	5 Subtraction prop
6. $\overline{SO} \parallel \overline{BW}$	6. Def of ▱
7. $\angle 1 \cong \angle 2$	7. alt. int $\angle$'s
8. $\triangle BMI \cong \triangle ONL$	8. ASA
9. $\overline{IM} \cong \overline{LN}$	9. CPCTC

24. Given: $\angle 1 \cong \angle 2$
$\angle 3 \cong \angle 4$

Prove: *ABCD* is a parallelogram



Statements	Reasons
1. $\angle 1 \cong \angle 2$	1. Given
2. $\angle 3 \cong \angle 4$	2. Given
3. $\overline{AB} \parallel \overline{DC}$	3 alt. int. $\angle$'s conv.
4. $\overline{AD} \parallel \overline{BC}$	4. alt. int. $\angle$'s conv.
5. ABCD is ▱	5. Def of ▱
6.	
7.	
8.	