Name Answers Date

Chapter 5 & 6 – Final Review

Identify each statement as either true (T) or false (F) by circling the correct choice.

1) T (F) Every point on a ~~median~~ angle bisector in a triangle is equally distant from the sides of an angle.

2) T (F) The ~~circumcenter~~ incenter is equally distant from all three sides of a triangle.

3) (T) F The centroid of a triangle divides each median into two parts, so that the shortest part is half the largest part..

4) (T) F In a right triangle, the circumcenter is located at the midpoint of the side opposite the right angle.

5) T (F) If a point is equally distant from the endpoints of a segment, then it must be the midpoint of the segment.

6) T (F) The incenter of a triangle is also the "center of gravity" of the triangle..

7) T (F) A geometric construction uses a protractor and a ruler.

8) (T) F The shortest distance from a point to a line is the distance measured along the perpendicular from the point to the line.

9) T (F) Every point on a ~~altitude~~ angle bisector in a triangle is equally distant from the sides of an angle.

10) T (F) The ~~circumcenter~~ incenter is equally distant from all three sides of a triangle.

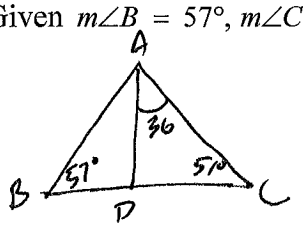
11) (T) F A rhombus is a parallelogram with all of its sides equal in length.

12) (T) F In a right triangle the orthocenter is located at the vertex of the right angle.

13) T (F) If a point is equally distant from the endpoints of a segment, then it must be the midpoint of the segment.

Use the diagram to find the indicated angle measure.

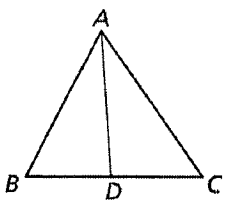
14) Given $m\angle B = 57°$, $m\angle C = 51°$, and $\overline{AD}$ bisects $\angle BAC$, find $m\angle ADC$.



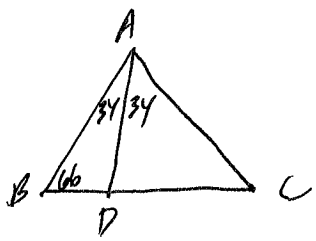
180 − 108 = 72

180 − 87 = 93

93°

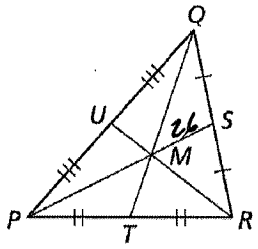


15) Given $m\angle B = 66°$, $m\angle BAD = 34°$, and $\overline{AD}$ bisects $\angle BAC$, find $m\angle DAC$.



34°

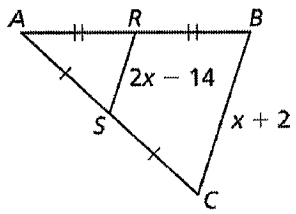
16) In $\triangle PQR$, $SP = 78$, and $UM = 19$. Find SM, MR, and UR. (2 pt each)



$SM =$ 26, $MR =$ 38, and $UR =$ 57.

Find the given measurement.

17) SR



$2(2x-14) = x+2$

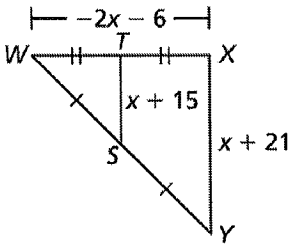
$4x - 28 = x + 2$

$3x = 30$

$x = 10$

$\boxed{SR = 6}$

18) TS



$2(x+15) = x+21$

$2x + 30 = x + 21$

$x = -9$

$\boxed{TS = 6}$

19) List the angles of $\triangle ABC$ from smallest to largest.

$AB = 3$, $BC = 4$, $CA = 5$

$\angle C, \angle A, \angle B$

20) List the sides of $\triangle ABC$ from shortest to longest.

$m\angle A = 100$, $m\angle B = 20$, $m\angle C = 60$

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

For #14- 17, state whether each statement is always true (a), sometimes true (b), or never true (c).

21) The centroid is in a triangle

a

22) The centroid, circumcenter, and orthocenter are the same point.

b (in an eq. $\triangle$)

23) A quadrilateral with diagonals that do not bisect each other is a parallelogram.

c

24) A quadrilateral with diagonals that are perpendicular is a parallelogram.

b (kites aren't, but rhombuses are)

25) A parallelogram is a trapezoid.

c

26) A square is a rhombus.

a

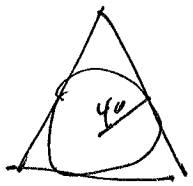
27) Birdy McFly is designing a large triangular hang glider. She needs to locate the center of gravity for her glider. Which point does she need to locate?

Centroid

28) Birdy wishes to decorate her glider with the largest possible circle within her large triangular hang glider. She needs to locate which point of concurrency?

Incenter

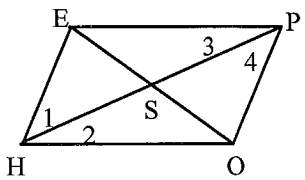
29) Architect Lloyd Frank has designed a round window to be centered on the triangular wall of his latest house design. He wishes the circular frame to be 40 cm from each edge of the isosceles triangle. How should he locate the center of the circle?



Incenter

HOPE is a parallelogram. Find the lengths or angle measures.

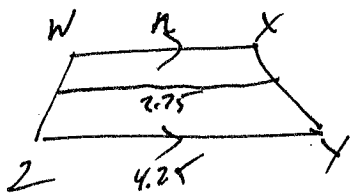
30) If $m\angle HEP = 113°$, then $m\angle EPO =$ 67°



31) If $HS = 5$, then $HP =$ 10

32) If $m\angle 3 = 25°$ and $m\angle 4 = 40°$, then $m\angle 2 =$ 25°

33) In trapezoid WXYZ, $\overline{WX} \parallel \overline{YZ}$, and $\overline{YZ} = 4.25$ cm. The midsegment of the trapezoid is 2.75 cm. Find WX.

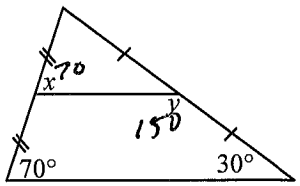


$2.75 = \frac{1}{2}(n + 4.25)$

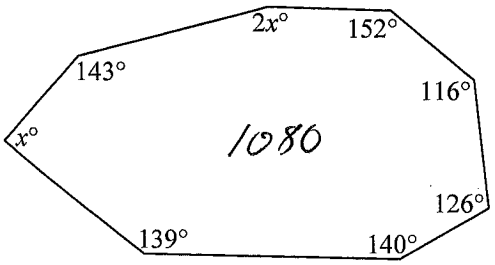
$5.5 = n + 4.25$

1.25 cm = n

34) $x + y =$ 220°



35) Find the value of x. Show all work.



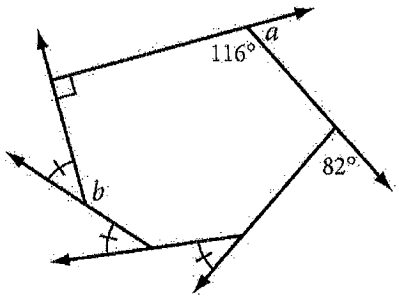
$x+143+2x+152+116+126+140+139=1080$

$3x+816=1080$

$3x=264$

$\boxed{x=88°}$

36) Find each lettered angle measure.

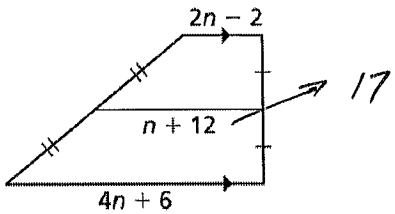


$a=$ 64° $\quad b=$ $138\frac{2}{3}$°

37) Which of the following facts **is not always true** about a **parallelogram.**

a. opposite sides are parallel
b. diagonals bisect each other
c. consecutive angles are supplementary
d. diagonals are congruent
e. opposite sides are congruent

38) Find the length of the midsegment of the trapezoid. Show all work.



$n+12=\frac{1}{2}(2n-2+4n+6)$

$n+12=\frac{1}{2}(6n+4)$

$n+12=3n+2$

$10=2n$

$5=n$

Midsegment length = 17

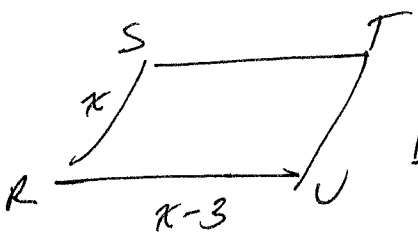
39) How many angles does a convex polygon have if the sum of all of its angles is 3960°?

$\frac{n-2(180)}{180}=\frac{3960}{180}$

$n-2=22$

$\boxed{n=24 \text{ angles}}$

40) In parallelogram RSTU, $\overline{RU}$ is 3 cm shorter than $\overline{RS}$. The perimeter of the parallelogram is 42 cm. Find RS and RU.



$\boxed{RS=12\text{cm}}$
$\boxed{RU=9\text{cm}}$

$2x+2(x-3)=42$

$2x+2x-6=42$

$4x-6=42$

$4x=48$

$x=12$

41) Fill in the blanks to prove the following indirectly.

Given: A regular decagon.

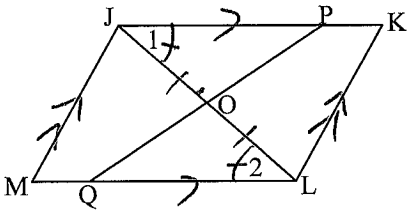
Prove: Each interior angle measures 144°.

Assume temporarily that each angle does not measure 144°. Let's suppose instead that each interior angle measures 150°. This means that the sum of the angles in the regular decagon must be 1500°. However, this is contradictory to the polygon sum formula. Using this formula, it works out that the sum of the angles must be 1440°. This means the temporary statement is false. Therefore, each int. angle is 144°

42) Given: Parallelogram JKLM
$\overline{JO} \cong \overline{OL}$

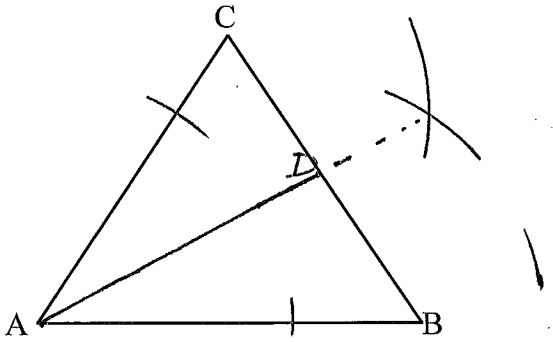
Prove: $\overline{OP} \cong \overline{OQ}$

(6 pts.)

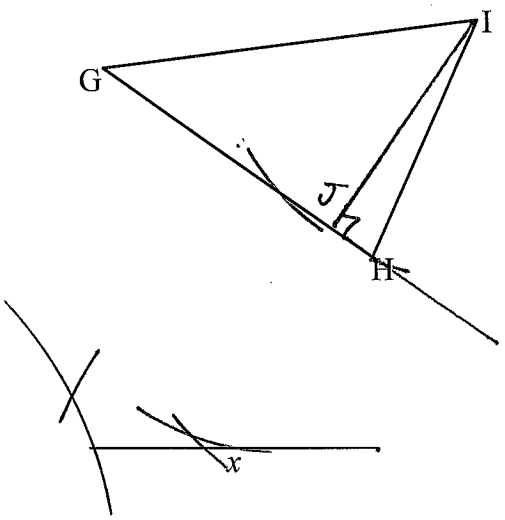


Statement	Reasons
1) Parallelogram JKLM	Given
2) $\overline{JO} \cong \overline{OL}$	Given
3) $\overline{JK} \parallel \overline{ML}$	Def. of a parallelogram
4) $\angle 1 \cong \angle 2$	AIA
5) $\angle JOP \cong \angle LOQ$	VA
6) $\triangle JOP \cong \triangle LOQ$	ASA
7) $\overline{OP} \cong \overline{OQ}$	CPCTC

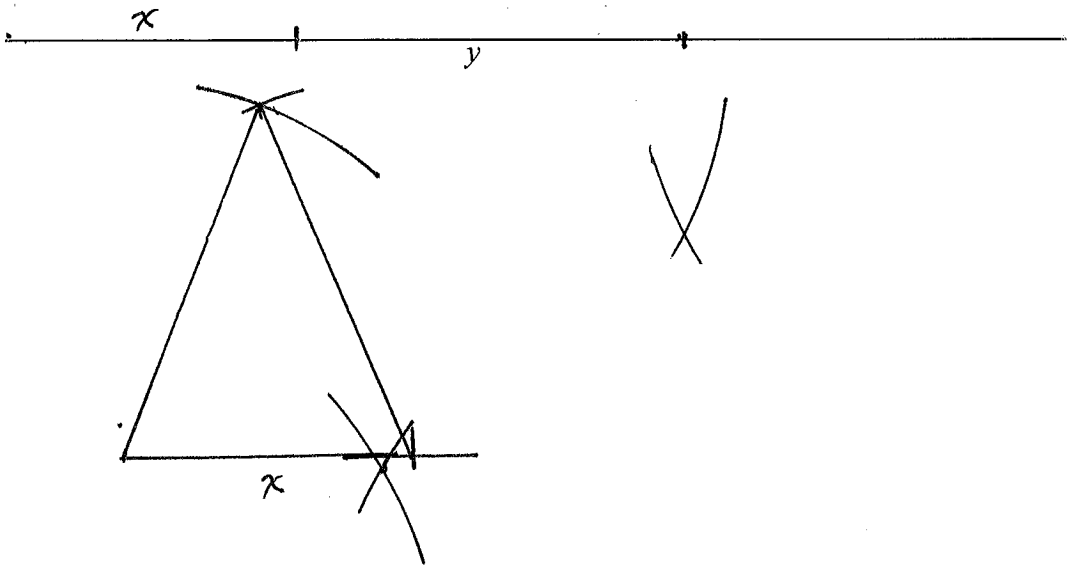
43) Construct the angle bisector $\overline{AD}$ in $\triangle ABC$.



44) Construct the altitude $\overline{IJ}$ in $\triangle GHI$.



45) Given the following, construct a $\triangle CAT$ with length y as the perimeter and x the length of the base.



46) Given $\overline{QR}$ and $\angle Q$, construct a rhombus QRST with sides with length of $\frac{1}{2}QR$.