Key

Review #1

Recall: the exterior angles of a polygon always have a sum of 360°
And the formula to find the sum of the interior angles of a regular polygon is
$180(n-2)$ if n is the number of sides.
-- Regular polygons have all angles congruent and all sides congruent

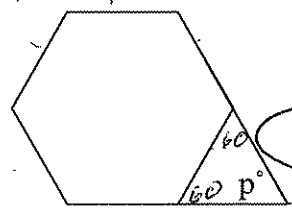
Find the following:

1.) The sum of the measures of the exterior angles of a parallelogram. 360
2.) The measure of each exterior angle of an octagon. 45
3.) The sum of the measures of the interior angles of a pentagon. 540
4.) The measure of each interior angle of a regular pentagon. 108
5.) The measure of each interior angle of a regular 14-gon. 154.3
6.) The measure of each exterior angle of a regular hexagon. 60
7.) The sum of the measures of the interior angles of a decagon. 1440
8.) The measure of an interior angle of a regular polygon is 150°. Which polygon is this?

$150 = \frac{180(n-2)}{n}$ $\quad 150 = \frac{180n-360}{n}$ $\quad 150n = 180n - 360$ $\quad n = 12$

dodecagon (12 sides)

9.) This polygon is regular…find p.



p=60

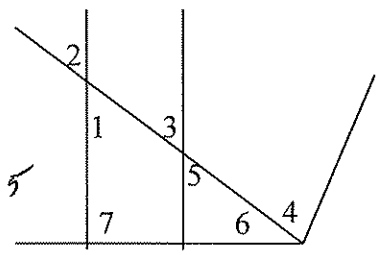
Review #2

Recall: the relationships angles can have with each other, and the relationships formed by the intersection of a transversal with two parallel lines.

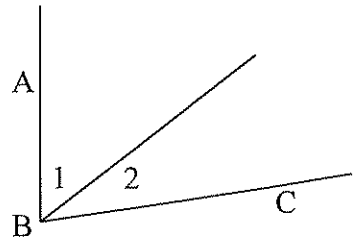
1.) Which of the following are never congruent?

a.) vertical angles b.) same-side interior angles c.) alternate interior angles d.) corresponding angles e.) none of these

2.) From the figure on the right…
   a.) name a pair of adjacent angles. 4, 6
   b.) name a pair of vertical angles. 3, 5 2, 1
   c.) name a pair of alternate interior angles. 1, 3
   d.) name a pair of corresponding angles. 2, 3 or 1, 5



3.) If <1 and <2 are adjacent angles and m<1 = 2x + 12, and m<2 = 4x – 14, and the measure of angle ABC is 88°, then what is the value of x?



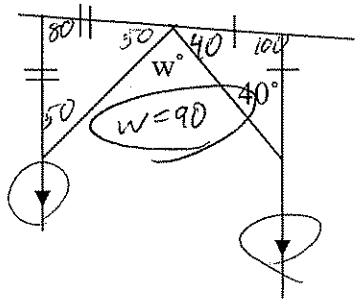
$6x - 2 = 88$

$6x = 90$

$x = 15$

4.) If a transversal intersects a pair of parallel lines so that a pair of same-side interior angles are congruent, what must their angle measures be?

5.) Find w:



Review #3

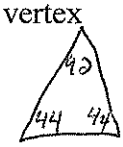
Recall: the different types of triangles and their properties

1.) A triangle with all sides having different lengths is scalene.
2.) The longest side of a right triangle is the hypotenuse.
3.) If two angles of one triangle are congruent to two angles of another triangle, and the included sides are congruent, then the triangles are congruent by ASA.
4.) A base angle of an isosceles triangle is 38°, what is the measure of the vertex angle? 104

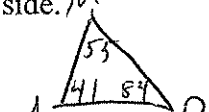
5.) If two right triangles each have a hypotenuse that is 25cm a leg that is 15cm, then the triangles are congruent by HL.

6.) The vertex angle of an isosceles triangle is 50°, what is the measure of one of the base angles? 65

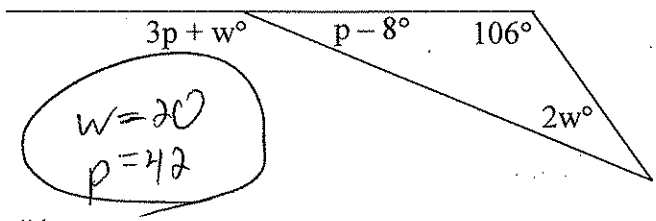
7.) If one of the base angles of an isosceles triangle is 44°, what is the measure of the vertex angle? 92°



8.) In triangle MAD; m<M = 55° and m<D = 84°. Find the longest side. MA



9.)



w=20
p=42

3p+w+p−8=180
4p+w=188

126−w=106
w=20
3p+w=106+2w
3p−w=106
4p+w=188
7p=294
p=42

Review #4

Recall: the properties and characteristics associated with different types of parallelograms.

True/False

1.) The diagonals of a parallelogram are congruent. False
2.) The sides of a rectangle are perpendicular. True
3.) The opposite angles of a rhombus are supplementary. False
4.) A rectangle has all sides congruent. False
5.) The diagonals of both a rhombus and a square are perpendicular. True
6.) A square is the only parallelogram with diagonals that bisect each other. False

Fill in the blank

7.) A trapezoid with congruent legs is called a(n) isosceles trapezoid.

8.) A parallelogram with all sides congruent must be a rhombus.

9.) If a quadrilateral has exactly one pair of parallel sides, then it is a Trapezoid.

10.) If a quadrilateral has both pairs of opposite sides congruent, then you can prove that this quadrilateral is a parallelogram.

11.) If the diagonals of a parallelogram are congruent, then the parallelogram must be a rectangle.

12.) Find the value of x and y on this rectangle

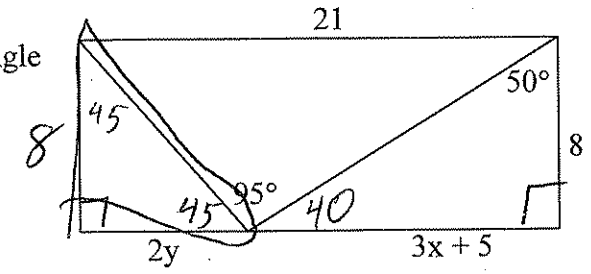
$8 = 2y$

$y = 4$

$3x + 5 + 8 = 21$

$3x = 8$

$x = 2.7$

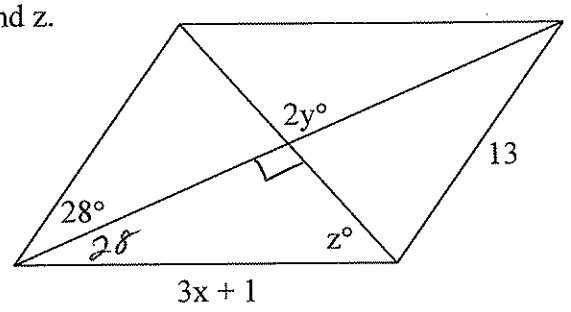


13.) For this rhombus, find x, y, and z.

$y = 45$

$z = 62$

$x = 4$



$3x + 1 = 13$

$3x = 12$

$x = 4$

Review #5

Recall: the definition and aspects of Conditional Statements

"If the quadrilateral is a parallelogram, then the quadrilateral has opposite sides parallel."

1.) What is the hypothesis of the above statement? The quad is a parallelogram

2.) What is the conclusion? the quad has opp sides parallel

3.) What is the converse of the statement? If the quad has opp sides parallel, then it is a parallelogram.

4.) What is the inverse of the statement? If it is not a parallelogram, then it does not have opp sides parallel.

5.) What is the contrapositive of this statement? If it does not have opp sides ||, then it is not a parallelogram.

Answer the following:

6.) Is the converse of a conditional statement always true? NO

7.) If a statement and its converse are true, they can be combined into a single statement using the words "if and only if". What is the new combined statement called? biconditional

8.) Write the following two statements as a biconditional:
"if two lines are parallel, then the lines are coplanar lines that never intersect."
"if two coplanar lines never intersect, then the lines are parallel."

2 coplanar lines never intersect if and only if they are parallel.

Review #6

Recall: that algebra is sometimes needed to find the solution of a problem in geometry

1.) The three angles of triangle are $2x + 20°$, $4x - 5°$, $x + 25°$…find x.

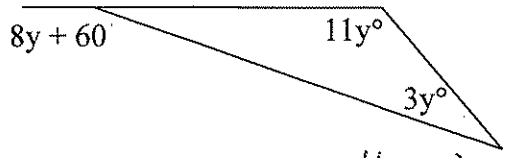
2.) Find the value of y

$2x+20+4x-5+x+25=180$

$7x+40=180$

$7x=140$

$x=20$

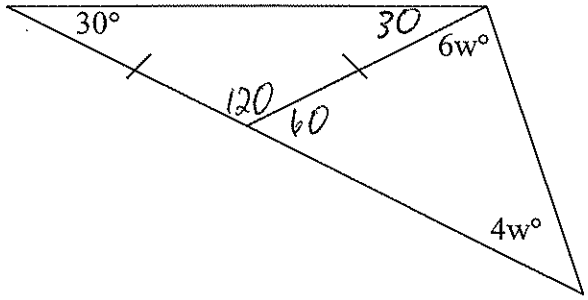


$11y+3y=8y+60$

$6y=60$

$y=10$

3.) Find w

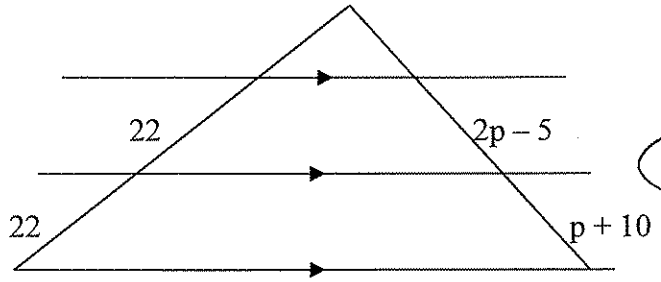


$60+6w+4w=180$

$10w=120$

$w=12$

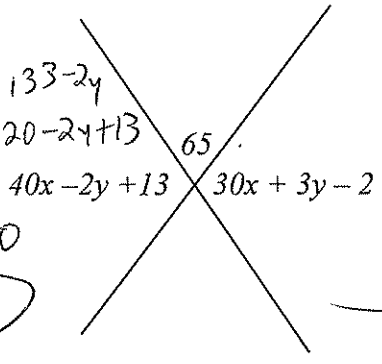
4.) Find p



$2p-5=p+10$

$p=15$

5.) Find x and y



$133-2y+65=180$

$y=9$

$40x-2y+13+65=180$

$3(40x-2y=102)$

$120x-6y=306$

$30x+3y-2+65=180$

$2(30x+3y=117)$

$60x+6y=234$

$60x+6y=234$

$180x=540$

$x=3$

6.) The supplement of an angle is 10 less than 3 times its complement. What is the measure of the angle?

$\angle$	Supp	Comp
x	$180-x$	$90-x$

$180-x=3(90-x)-10$

$180-x=270-3x-10$

$180-x=260-3x$

$2x=80$

$x=40$

Key

Midterm Review II

Always, Sometimes, Never

1.) Noncoplanar lines are skew Always
2.) Skew lines intersect Never
3.) 2 obtuse angles are complementary Never
4.) 2 right angles are congruent Always
5.) CPCTC proves two triangles congruent Never
6.) The exterior angles of a convex polygon add up to 360 degrees Always
7.) 4 points are coplanar Sometimes
8.) The acute angles of a right triangle are complementary Always
9.) 2 triangles are congruent by SSA Never
10.) Same side interior angles on parallel lines are congruent. sometimes

Multiple Choice:

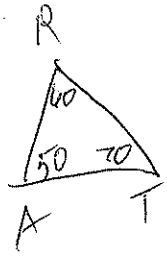
11.) Which of these is also a rhombus?
a.) rectangle (b.) square c.) parallelogram d.) pentagon

12.) On a trapezoid, which of these can never be congruent?
(a.) bases b.) legs c.) base angles d.) diagonals

13.) Which of these will not prove two triangles congruent?
a.) ASA b.) HL c.) SSS (d.) AA

14.) If the vertex of an isosceles triangle is 70 degrees, what is the measure of a base angle?
a.) 70 degrees b.) 140 degrees (c.) 55 degrees d.) 110 degrees

15.) What is the measure of each interior angle of a regular hexagon?
a.) 36 degrees (b.) 120 degrees ~~c.) 60 degrees~~ d.) 720 degrees



16.) In triangle RAT, m<A = 50 degrees and m<T is 70 degrees. What is the longest side of this triangle?
(a.) RA b.) AT c.) RT d.) Not enough information

17.) The supplement of an angle is 10 more than three times the complement. What is the measure of the angle?
$180-x = 3(90-x)+10$
$180-x = 270-3x+10$
$2x = 100$
$x = 50$
(a.) 50 degrees b.) 130 degrees c.) 40 degrees d.) 30 degrees

18.) If one obtuse angle of a parallelogram is 98 degrees, what is the measure of an acute angle of the parallelogram?
a.) 98 degrees b.) 112 degrees c.) 72 degrees (d.) 82 degrees

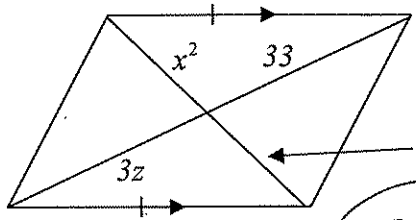
19.) If the bases of a trapezoid are 18 and 36, what is the length of the median?
a.) 54 b.) 18 (c.) 27 d.) 12

20.) Which of these traits are found in a rhombus but not a rectangle?
a.) congruent diagonals (b.) perpendicular diagonals
c.) congruent opposite sides d.) congruent diagonals

21.) If the sides of a triangle are 14, 23, and x then:
a.) $8 < x < 36$ b.) $37 < x < 9$ c.) $10 < x < 36$ d.) $9 < x < 37$

Numerical Problems:

22.) Find x and z.



$x^2 = 4x + 5$

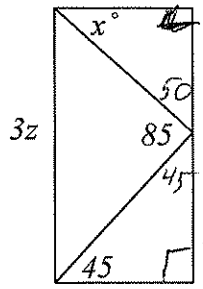
$x^2 - 4x - 5 = 0$

$x - 5\ x + 1$

$x = 5, -1$

$z = 11$

23.) For this rectangle find x, y, and z



$x = 40°$

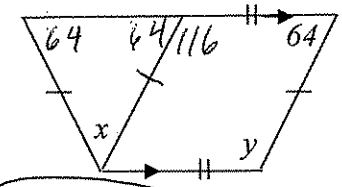
$y + 5 = 8$

$y = 3$

$3z = 15$

$z = 5$

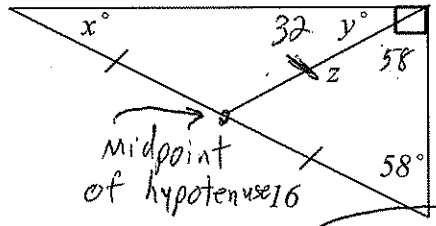
24.) Find x and y:



$x = 52$

$y = 116$

25.) Find x, y and z

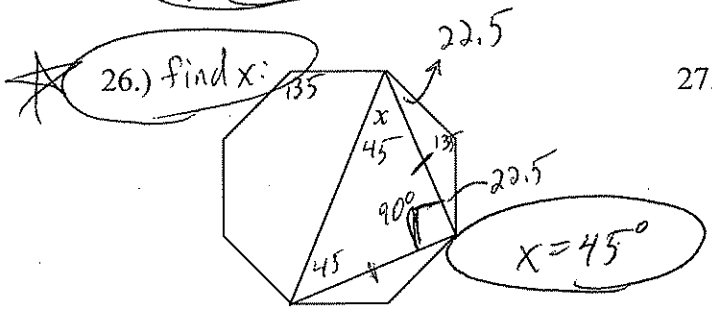


$y = 32$

$z = 16$

$x = 32$

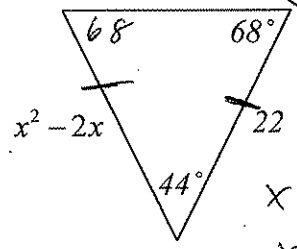
26.) find x:



$x = 45°$

this octagon is regular

27.)



$x^2 - 2x = 22$

$x^2 - 2x - 22 = 0$

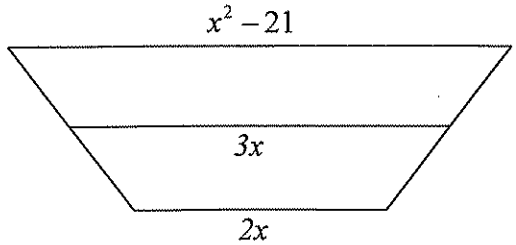
$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$x = \frac{2 \pm \sqrt{4 - -88}}{2}$

$x = \frac{2 \pm 9.6}{2}$

$x = 5.8$ or -3.8

28.) find x:



$\frac{x^2 - 21 + 2x}{2} = 3x$

$x^2 - 21 + 2x = 6x$

$x^2 - 21 - 4x = 0$

$x^2 - 4x - 21 = 0$

$(x - 7)(x + 4) = 0$

$x = 7$