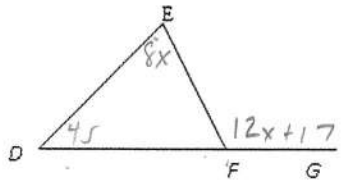
Name 12/11/15 Assignment Date Section

Math 422 Mrs. Quinn

Geometry Test

1. In the diagram shown $m\angle EFG = 12x+17$, $m\angle FED = 8x$ and $m\angle EDF = 45$. Solve for x: (3 pts)



$8x + 45 = 12x + 17$

$28 = 4x$

$7 = x$

2. Given a regular 14 sided polygon:

   a. Find the sum of the interior angles of the polygon. (2 pts)

   $(12)(180) = 2160$

   b. Find the measure of one exterior angle of the polygon (2 pts)

   $25.71°$

3. Write the expression in simplest form: (4 pts)

$$\frac{x^2-9x+18}{9-x^2} \qquad \frac{(x-6)(x-3)}{(3-x)(3+x)}$$

$$\frac{6-x}{3+x} \text{ or } -\frac{(x-6)}{x+3}$$

4. If the three angles of a triangle measure $7x - 15$, $2x + 30$ and $4x + 35$, solve for the measure of the largest angle.

$70 - 15 = 55$

$20 + 30 = 50$

$40 + 35 = 75$

$13x + 65 - 15 = 180$

$13x + 50 = 180$

$13x = 130$

$x = 10$

(4 pts)

5. Solve: $x-\frac{9}{x}=-\frac{9}{2}$

$x^2-9=\frac{-9x}{2}$

$2x^2-18=-9x$

$2x^2+9x-18=0$

$(2x-3)(x+6)=0$

$x=-6$

$x=3/2$

$-6+\frac{3}{2}=-\frac{9}{2}$

(5 pts)

6. Each interior angle of a regular polygon measures 140°. How many sides does the polygon have?

$\frac{360}{40}=9$

(3 pts)

7. C is the midpoint of $\overline{AB}$. If $AB=4x-12$ and $CB=x+2$, solve for x. (draw a diagram to help you)

$x+2=2x-6$

$8=x$

(2 pts)

8. The supplement of an angle is 24 less than twice the angle. What is the measure of the angle and its supplement?

$180-x=2x-24$

$204=3x$

$68=x$

$180-68=112$

(3 pts)

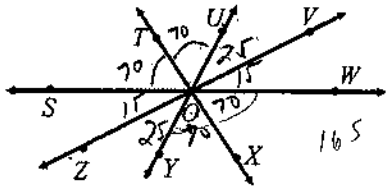
9. In the diagram, $\overline{OT}$ bisects $\angle SOU$, $m\angle UOV = 25$, and $m\angle YOW = 140$. Find the measure of each of the following angles.

a. $m\angle ZOY$ 25

b. $m\angle SOU$ 140

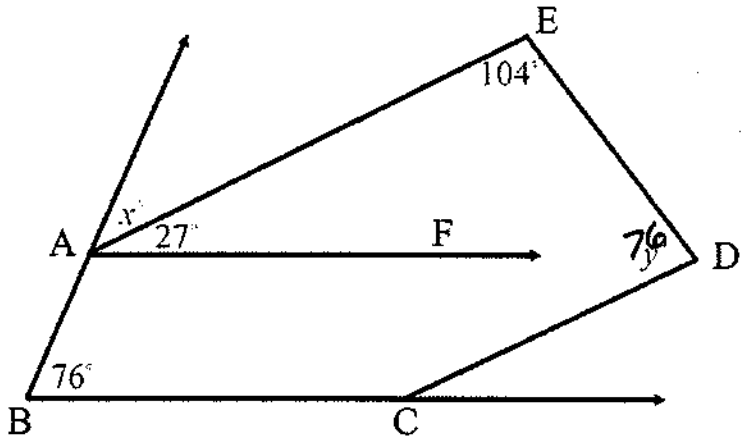
c. $m\angle UOT$ 70

d. $m\angle VOW$ 15



(1 pt each)

10. In the diagram shown below, $\overline{AF} \parallel \overline{BC}$ and $\overline{AE} \parallel \overline{CD}$. Solve for x and y. (4 pts)



$x + 27 = 76$
$-27 \quad -27$
$x = 49$
$y = 76$

$104 + y = 180$

11. a) Write the converse of "If x is odd, then $2x$ is even." If 2x is even then x is odd

b) Is the sentence you wrote in part a true or false? If it is false, give a counter example?

False
$x = 3$

(4 pts)

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Complete each of the following sentences with Always, Sometimes or Never: (1 pt each)

12. Two lines which never intersect are ___S___ parallel.

13. The measure of an exterior angle of a triangle is ___A___ larger than the measure of each remote interior angle.

14. If two lines are cut by a transversal and same-side interior angles are complementary the lines are ___A___ parallel.

15. A triangle ___N___ has two obtuse interior angles.

16. If two lines are parallel to the same line, then the two lines are ___A___ parallel to each other.

17. If $p \wedge q$ is false and p is true than $(p \wedge q) \rightarrow q$ is ___N___ false.

Multiple Choice: Circle the best answer for each question: (1 pts each)

18. If two angles of a triangle measure 56 and 68 degrees, the triangle is:
    a. Obtuse b. isosceles c. scalene d. right

56
68
124

180 − 124 = 56

19. The measure of an exterior angle of a triangle cannot be:
    a. Exactly 90 b. Between 90 and 180 c. less than 90 d. greater than 180

20. <1 and <2 are complementary, m<1 = 5x + 15 and m<2 = 10x, what is the measure of <1?
    a. 5 b. 11 c. 40 d. 70

15x + 15 = 90
15x = 75
x = 5

21. Which is not a way to prove two lines cut by a transversal are parallel:
    a. Vertical angles being congruent b. Corresponding angles being congruent
    c. Alternate int. angles being congruent d. Same-side int. angles being supplementary

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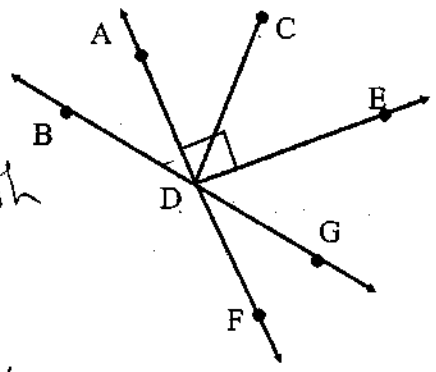
In the diagram shown, $\overline{BG}$ bisects $\overline{AF}$ and $\overline{CD}$ bisects $\angle ADE$. State the definition, postulate or theorem that justifies each statement. (1 pt each)



22. $AD + DF = AF$ Segment addition

23. $m\angle ADC = \frac{1}{2} m\angle ADE$ Angle bisector Th

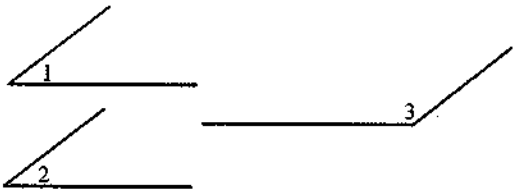
24. D is the midpoint of $\overline{AF}$. def segment bisector.

25. $m\angle ADB = m\angle FDG$ Vertical ∠s ≅

26. Fill in the missing reasons for the following proof. (4 pts)

Given: $\angle 1$ is supplementary to $\angle 3$
$\angle 2$ is supplementary to $\angle 3$

Prove: $\angle 1 \cong \angle 2$



Statements	Reasons
1. $\angle 1$ is supplementary to $\angle 3$ $\angle 2$ is supplementary to $\angle 3$	1.Given
2. $m\angle 1 + m\angle 3 = 180$ $m\angle 2 + m\angle 3 = 180$	2. def supplementary ∠'s
3. $m\angle 1 + m\angle 3 = m\angle 2 + m\angle 3$	3. transitive prop or substitution
4. $m\angle 3 = m\angle 3$	4.Reflexive Property
5. $m\angle 1 = m\angle 2$	5. Sub traction

Name the theorem that you just proved (2 pts): If 2 ∠ are supp to the same ∠ then the 2 ∠ ≅

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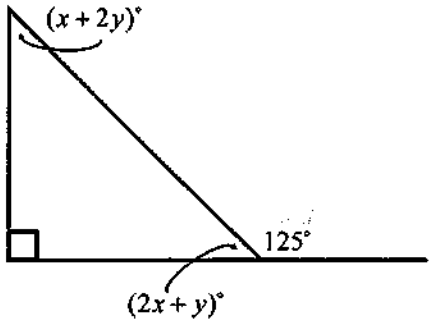
Bonus: Solve for x and y.



$2x+y=55$

$2x+y+x+2y=90$

$3x+3y=90$

$x+y=30$

$x+55-2x=30$

$-x=-25$

$x=25$

$y=5$

Math 423 HW #37 Key

1. $\frac{6}{x^2-1} - \frac{3}{x-1} = 2$

$\frac{(x+1)(x-1)}{(x+1)(x-1)}\frac{6}{} - \frac{(x+1)(x-1)}{x-1}\frac{3}{} = 2(x+1)(x-1)$

$6 - 3(x+1) = 2(x+1)(x-1)$

$6 - 3x - 3 = 2(x^2-1)$

$3 - 3x = 2x^2 - 2$

$2x^2 + 3x - 5 = 0$

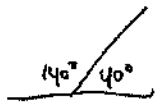
$(2x+5)(x-1) = 0$

$2x+5=0 \quad \vee \quad x-1=0$

$2x = -5 \quad \vee \quad x \neq 1$

$x = \frac{-5}{2}$ REJECT — extraneous root

2.



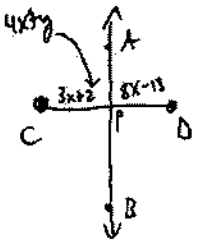
Interior $\measuredangle = 140°$

$\Rightarrow$ exterior $\measuredangle = 40°$

$\frac{360}{40} = n$

$n = 9$

3.



$3x+2 = 8x-13$

$5x = 15$

$x = 3$

$4x+y = 90°$

$4(3)+y = 90°$

$12+y = 90°$

$y = 78$

1.174 W12

4. $81 - x^4$

$(9+x^2)(9-x^2)$

$(9+x^2)(3+x)(3-x)$

5. Let x = measure of the $\measuredangle$

Then $(90-x)$ = complement

$(180-x)$ = supplement

$\frac{1}{2}(180-x) + (90-x) = 120°$

$90 - \frac{1}{2}x + 90 - x = 120$

$180 - \frac{3}{2}x = 120$

$-\frac{2}{3}\left(-\frac{3}{2}x\right) = \left(-\frac{60}{1}\right)\frac{-2}{3}$

$x = 40$

$\Rightarrow$ complement $= 90 - 40 = 50°$

6. The inverse is:

IF I do remember logic or ~~not~~ are not motivated, then I will not look back at my old notes.

7. $\triangle MOD \cong \triangle ACB$

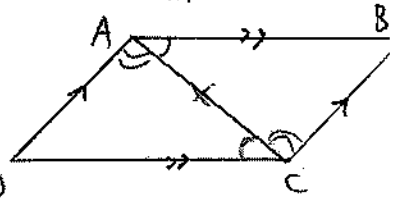
$\Rightarrow \measuredangle M \cong \measuredangle A \quad \overline{MO} \cong \overline{AC}$

$\measuredangle O \cong \measuredangle C \quad \overline{OD} \cong \overline{CB}$

$\measuredangle D \cong \measuredangle B \quad \overline{DM} \cong \overline{BA}$

Given: $\overline{BC} \parallel \overline{AD}$, $\overline{AB} \parallel \overline{DC}$

Prove: $\triangle ABC \cong \triangle CDA$



S	R
1) $\overline{BC} \parallel \overline{AD}$, $\overline{AB} \parallel \overline{DC}$	1) Given
2) $\measuredangle BAC \cong \measuredangle ACD$, $\measuredangle DAC \cong \measuredangle ACB$	2) IF 2 $\parallel$ lines CBAT, then alternate interior $\measuredangle$s are $\cong$
3) $\overline{AC} \cong \overline{AC}$	3) Reflexive
4) $\triangle ABC \cong \triangle CDA$	4) ASA Axiom //

over →