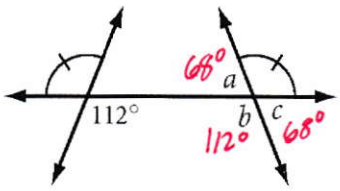
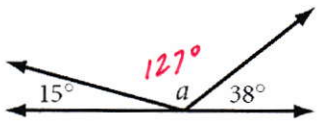
Name Answers Date

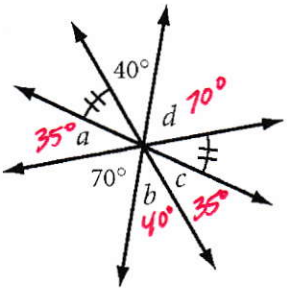
Mr.D

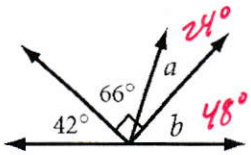
2.5 - Proofs About Angle Pairs and Segments (Part 2)

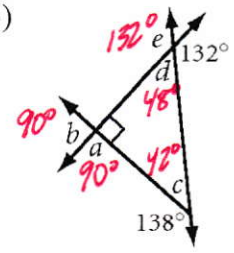
For Exercises 1–8, find each lettered angle measure without using a protractor.

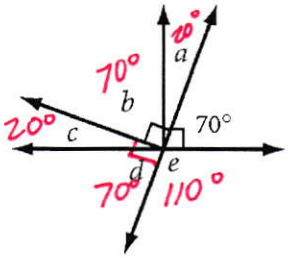
1) 

2) 

3) 

4) 

5) 

6) 

For #7–12, tell whether each statement is always (A), sometimes (S), or never (N) true.

7) The sum of the measures of two acute angles equals the measure of an obtuse angle. S $20°+20°=40°$

8) If $\angle XAY$ and $\angle PAQ$ are vertical angles, then either X, A, and P or X, A, and Q are collinear. A

9) The sum of the measures of two obtuse angles equals the measure of an obtuse angle. N $91°+91°=182°$

10) The difference between the measures of the supplement and the complement of an angle is 90°. A

11) If two angles form a linear pair, then they are complementary. N

12) If a statement is true, then its converse is true. S

For # 13–16, fill in each blank to make a true statement.

13) If one angle of a linear pair is obtuse, then the other is acute.

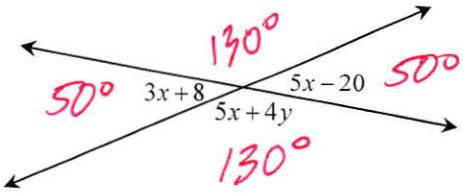
14) If $\angle A \cong \angle B$ and the supplement of $\angle B$ has measure 22°, then $m\angle A =$ 158°.

15) If $\angle P$ is a right angle and $\angle P$ and $\angle Q$ form a linear pair, then $m\angle Q$ is 90°.

16) If $\angle S$ and $\angle T$ are complementary and $\angle T$ and $\angle U$ are supplementary, then $\angle U$ is a(n) obtuse angle.

Find the value of each variable and each angle. SHOW ALL ALGEBRAIC WORK!

17)



$3x+8 = 5x-20$

$28 = 2x$

$\boxed{14 = x}$ → then plug in.

$5x + 4y = 130$

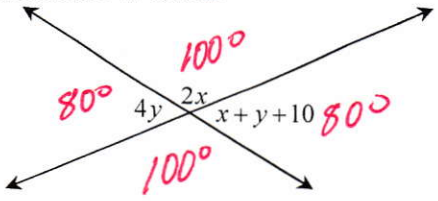
$5(14) + 4y = 130$

$70 + 4y = 130$

$4y = 60$

$\boxed{y = 15}$

18)



$2x + 4y = 180$

$2x + (x + y + 10) = 180$

$\rightarrow 2x + 4y = 180$

$3x + y = 170$

$\rightarrow 2x + 4y = 180$

$-12x - 4y = -680$

$-10x = -500$

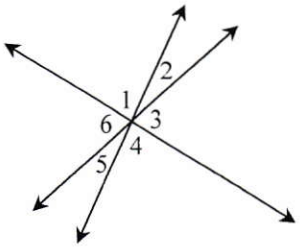
$\boxed{x = 50}$

$4y = 80$

$\boxed{y = 20°}$

19) Given: $\angle 1 \cong \angle 3$

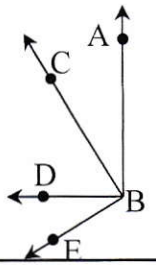
Prove: $\angle 6 \cong \angle 4$



Statement	Reasons
1. $\angle 1 \cong \angle 3$	Given
2. $\angle 3 \cong \angle 6$	Vertical Angles Th.
3. $\angle 1 \cong \angle 6$	Transitive Property
4. $\angle 1 \cong \angle 4$	Vertical Angles Th.
5. $\therefore \angle 6 \cong \angle 4$	Substitution / Transitive Property

20) Given: $\angle ABD$ is a right angle
$\angle CBE$ is a right angle

Prove: $\angle ABC \cong \angle DBE$



Statement	Reasons
1. $\angle ABD$ is a right angle $\angle CBE$ is a right angle	Given
2. $\angle ABC$ and $\angle CBD$ are complementary	Def of. Comp. Ang.
3. $\angle DBE$ and $\angle CBD$ are complementary	Def of Comp. Ang
4. $\therefore \angle ABC \cong \angle DBE$	Congruent Complements theorem