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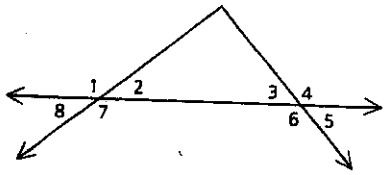
Part Three: Problem Sets

Problem Set A

Before starting the assignment, memorize Theorems 4–7. The key to the use of these theorems is to look for the double use of the word *complementary* or *supplementary* in a problem.

1 Given: $\angle 2$ is comp. to $\angle 3$.
$\angle 4 = 131°$

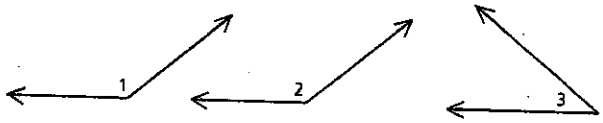


Find the measure of each of the following angles.

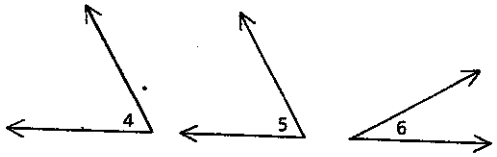
a $\angle 3$ **c** $\angle 5$ **e** $\angle 1$ **g** $\angle 7$

b $\angle 6$ **d** $\angle 2$ **f** $\angle 8$

2 Given: $\angle 1$ is supp. to $\angle 3$.
$\angle 2$ is supp. to $\angle 3$.
Prove: $\angle 1 \cong \angle 2$



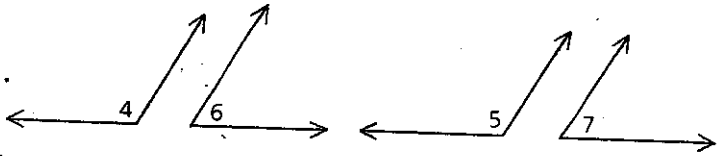
3 Given: $\angle 4$ is comp. to $\angle 6$.
$\angle 5$ is comp. to $\angle 6$.
Prove: $\angle 4 \cong \angle 5$



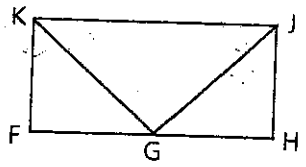
4 One of two supplementary angles is four times the other. Find the larger angle.

5 One of two complementary angles is 20° larger than the other. Find the measure of each.

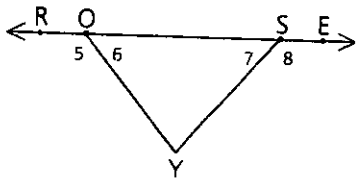
6 Given: $\angle 4$ is supp. to $\angle 6$.
$\angle 5$ is supp. to $\angle 7$.
$\angle 4 \cong \angle 5$
Conclusion: ?



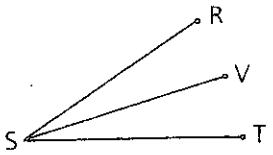
7 Given: $\angle FKJ$ is a right $\angle$.
$\angle HJK$ is a right $\angle$.
$\angle GKJ \cong \angle GJK$
Conclusion: $\angle FKG \cong \angle HJG$



8 Given: Diagram as shown,
$\angle 6 \cong \angle 7$
Prove: $\angle 5 \cong \angle 8$

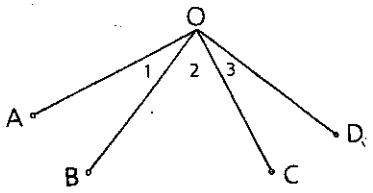


9 Given: $\overrightarrow{SV}$ bisects $\angle RST$.
Conclusion: $\angle RSV \cong \angle TSV$

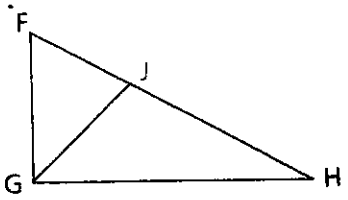


Problem Set B

10 Given: $\overleftrightarrow{OA} \perp \overleftrightarrow{OC}$, $\overleftrightarrow{OB} \perp \overleftrightarrow{OD}$
Prove: $\angle 1 \cong \angle 3$

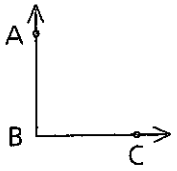


11 Given: $\angle F$ is comp. to $\angle FGJ$.
$\angle H$ is comp. to $\angle HGJ$.
$\overrightarrow{GJ}$ bisects $\angle FGH$.
Conclusion: $\angle F \cong \angle H$



12 The measure of the supp. of an $\angle$ exceeds 3 times the measure of the comp. of the $\angle$ by 10. Find the measure of the comp.

13 Draw the reflection of right angle ABC over line $\overleftrightarrow{AB}$.

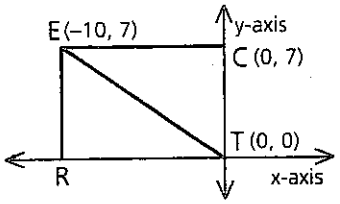


14 RECT is a rectangle.

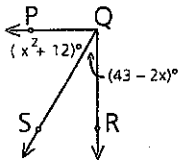
a Find the coordinates of R.

b What do we know about $\angle RTE$ and $\angle CTE$?

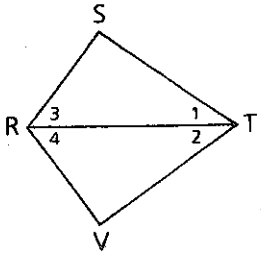
c Find the area of $\triangle ERT$.



15 Given: $\overline{PQ} \perp \overline{QR}$
Find: $m\angle PQS$



16 Given: $\angle 1$ is comp. to $\angle 4$.
$\angle 2$ is comp. to $\angle 3$.
$\overrightarrow{RT}$ bisects $\angle SRV$.
Prove: $\overrightarrow{TR}$ bisects $\angle STV$.



17 If three times the supp. of an $\angle$ is subtracted from seven times the comp. of the $\angle$, the answer is the same as that obtained by trisecting a right $\angle$. Find the supplement.