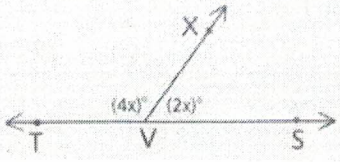
Geometry (E)
Complementary/Supplementary Homework

Name: KEY

10 Find the measure of $\angle XVS$.



$4x+2x=180$
$6x=180$
$x=30$

$2(30)=60°$

$m\angle XVS = 60°$

11 One of two supplementary angles is 70° greater than the second. Find the measure of the larger angle.

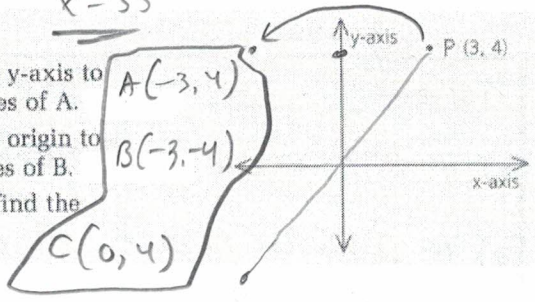
x = ANGLE
$180-x$ = SUPP

$180-x = x+70$
$-2x = -110$
$x=55$

SUPP $= 180-55$
SUPP $= 125$

LARGER $= 125°$

12 **a** Point P is reflected over the y-axis to point A. Find the coordinates of A.
b Point P is reflected over the origin to point B. Find the coordinates of B.
c If C is the midpoint of $\overline{PA}$, find the coordinates of C.



A(−3, 4)
B(−3, −4)
C(0, 4)

13 Complete each of the following conditional statements and justify your completion with an explanation.
a If two angles are supplementary and congruent, then ? THEY ARE BOTH RT. ANGLES / 90°.
b If two angles are complementary and congruent, then ? THEY ARE BOTH 45°.

16 Two supplementary angles are in the ratio 11:7. Find the measure of each.

$11x+7x=180$
$18x=180$
$x=10$

$11(10)=110°$
$7(10)=70°$

11:7
↓
110:70

19 One of two complementary angles added to one-half the other yields 72°. Find half the measure of the larger.

ANGLE $= x$
COMP $= 90-x$

$90-x+\frac{1}{2}x=72$
$-\frac{1}{2}x=-18$
$x=36$

COMP $= 90-36$
COMP $= 54$
LARGER

$\frac{1}{2}(54) = 27°$

21 The supplement of an angle is four times the complement of the angle. Find the measure of the complement.

ANGLE = x

COMP = $90 - x$

SUPP = $180 - x$

$180 - x = 4(90 - x)$

$180 - x = 360 - 4x$

$3x = 180$

$x = 60$

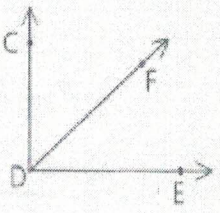
ANGLE = 60

COMP = $90 - 60 = 30°$

SUPP = $180 - 60 = 120$

7 Given: $\overleftrightarrow{CD} \perp \overleftrightarrow{DE}$

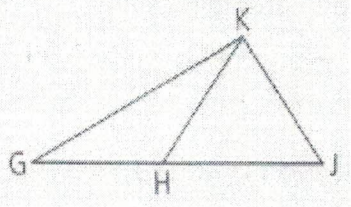
Prove: $\angle CDF$ is comp. to $\angle FDE$. (Hint: This proof takes more than two steps.)



Statements	Reasons
1) $\overleftrightarrow{CD} \perp \overleftrightarrow{DE}$	1) GIVEN
2) $\angle CDE$ RT. ANGLE	2) IF 2 LINES ARE PERP, THEN THEY FORM RT. ANGLES
3) $\angle CDF$ COMP $\angle FDE$	3) IF 2 ANGLES FORM A RT ANGLE, THEN THEY ARE COMP.

8 Given: Diagram as shown

Prove: $\angle GHK$ is supp. to $\angle KHJ$.



Statements	Reasons
1) $\angle GHK$ SUPP. $\angle KHJ$	1) IF 2 ANGLES FORM A STRAIGHT ANGLE, THEN THEY ARE SUPP.

NOTE: NO NEED TO SAY $\angle GHJ$ STRAIGHT ANGLE