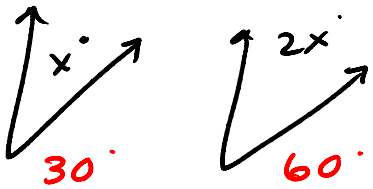
Section 2.2
pg. 69: 3, 5, 7, 9, 11, 16, 18, 22, 23,

#3 $\angle 1$ is complementary to $\angle 3$.
If $\angle 3 = y°$, how large is $\angle 1$?

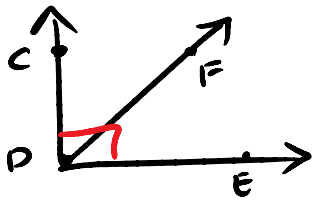
$(90-y)°$

#5 One of two complimentary $\angle$'s is twice the other



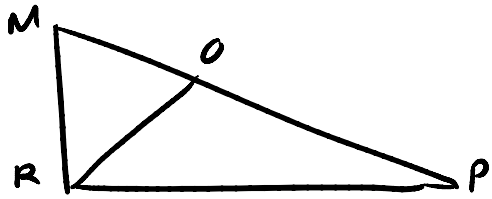
$x + 2x = 90$
$3x = 90$
$x = 30°$

#7 Given: $\overleftrightarrow{CD} \perp \overleftrightarrow{DE}$
Prove: $\angle CDF$ is comp. to $\angle FDE$



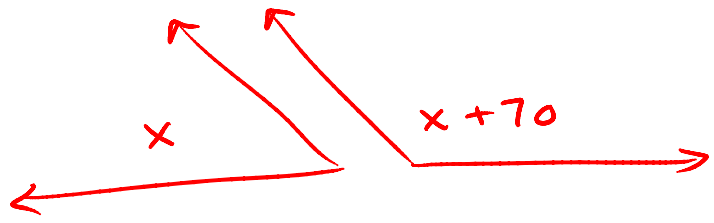
Statements	Reasons
1. $\overleftrightarrow{CD} \perp \overleftrightarrow{DE}$	1. Given
2. $\angle CDE$ is a $\llcorner$	2. If 2 lines are $\perp$ → form a $\llcorner$
3. $\angle CDF$ is comp to $\angle FDE$	3. If the sum of 2 $\angle$s is a $\llcorner$ → the angles are comp.

* #9 Given $\angle MRO$ is comp. to $\angle PRO$
Prove: $\angle MRP$ is a right angle



Statements	Reasons
1. $\angle MRO$ is comp. to $\angle PRO$	1. Given
2. $\angle MRP$ is a right $\angle$	2. If 2 $\angle$s are comp then the their sum is a right $\angle$

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



$x + x + 70 = 180$

$2x + 70 = 180$

$2x = 110$

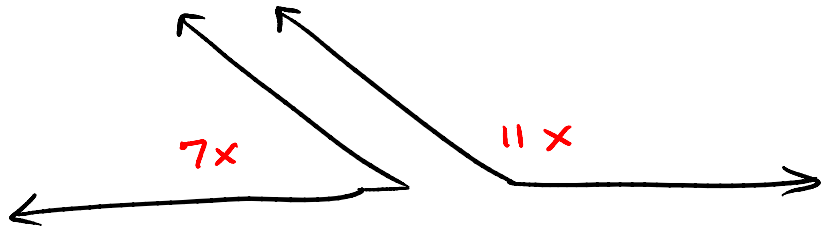
$x = 55$

Larger: $x + 70$

$= 55 + 70$

$= \boxed{125°}$

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



$7x + 11x = 180$

$18x = 180$

$x = 10$

$7(10) = \boxed{70°}$

$11(10) = \boxed{110°}$

#18 The larger of two supplementary angles exceeds seven times the smaller by 4°. Find the measure of the larger angle.

smaller: x

larger: $7x+4$

$= 7(22)+4$

$= 154+4$

$= \boxed{158^\circ}$

$x + 7x + 4 = 180$

$8x + 4 = 180$

$8x = 176$

$x = 22$

#19 One of two complementary angles added to one half the other yields 72°.

Find half the measure of the larger.

$(54)^\circ$ angle 1: x

$(36)^\circ$ angle 2: $(90-x)$

$x + \frac{1}{2}(90-x) = 72$

$x + 45 - \frac{1}{2}x = 72$

$\frac{1}{2}x + 45 = 72$

$\boxed{\frac{1}{2}x = 27}$

$x = 54^\circ$

larger $= 54^\circ$

$\frac{1}{2}$ larger $= \boxed{27^\circ}$

#22 Five times the complement of an angle less twice the angle's supplement is 40°. Find the measure of the supplement.

angle: x

comp: $90-x$

supp: $180-x$

$$5(90-x)-2(180-x)=40$$
$$450-5x-360+2x=40$$
$$90-3x=40$$
$$-3x=-50$$
$$x=\frac{50}{3}$$

supp: $180-\frac{50}{3}=\frac{490}{3}$ or $\boxed{163\frac{1}{3}^\circ}$

#23 The measure of the supplement of an angle is 30° less than five times the measure of the complement. Find two-fifths the measure of the complement.

angle: x

comp: $90-x$

supp: $180-x$

$$180-x=5(90-x)-30$$
$$180-x=450-5x-30$$
$$180-x=420-5x$$
$$4x=240$$
$$x=60$$

comp: $90-60=30^\circ$

$\frac{2}{5}(30)=\frac{60}{5}=\boxed{12^\circ}$