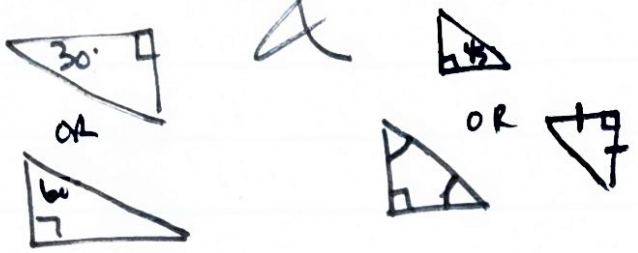
IV. Special Triangles

A. 30-60-90 & 45-45-90



30-60-90	45-45-90
opp 30: x	opp 45: x
opp 60: $x\sqrt{3}$	opp 45: x
hyp: $2x$	hyp: $x\sqrt{2}$

- ★ both have a "2" in hyp
- ★ "x" is somewhere in all 3 parts
- ★ both have a $\sqrt{}$ (in diff. places)

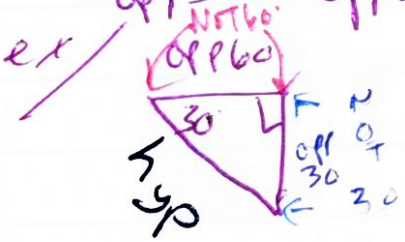
30-60-90: it has "$\sqrt{3}$" 45-45-90: "$\sqrt{2}$"

B. To Solve them:

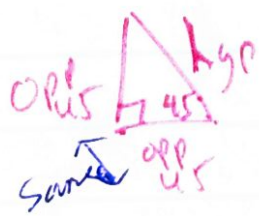
Step 1: Label sides

"opp 30" "opp 60" "hyp"

ex/



OR "opp 45" "opp 45" "hyp"

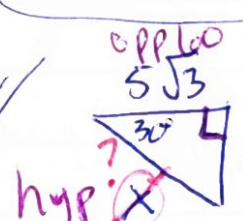


Step 2: Write the relationship & fill in the blanks

opp 30:	$x =$ ___	opp 45:	$x =$ ___
opp 60:	$x\sqrt{3} =$ ___	opp 45:	$x =$ ___
hyp	$2x =$ ___	hyp:	$x\sqrt{2} =$ ___

Tip: If the triangle already has "x" CROSS it off & put "?"

ex/



opp 30: $x =$ ___

opp 60: $x\sqrt{3} = 5\sqrt{3}$

hyp: $2x =$?

Step: Use the complete equation to solve for x & then plug x into the others

ex/

opp 30: $x = (5)$ opp 30 is 5

opp 60: $x\sqrt{3} = 5\sqrt{3}$ ← complete

Solve for x → $\div\sqrt{3}$ $\div\sqrt{3}$

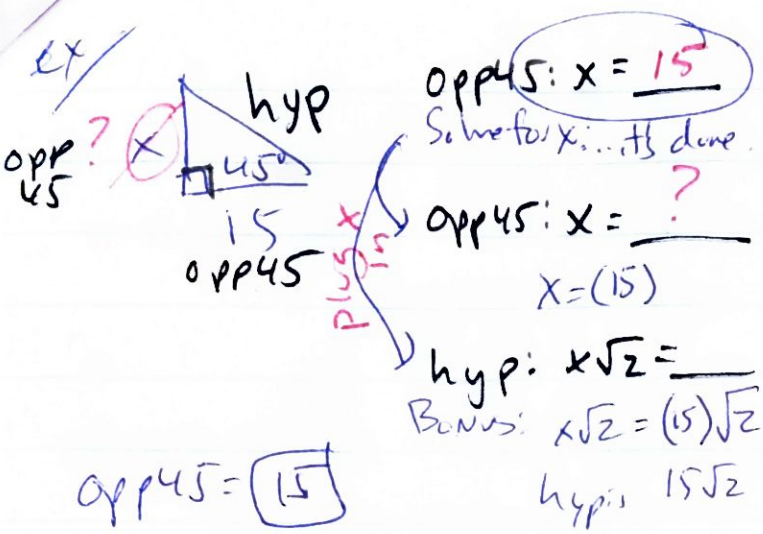
$x = 5$

~~drop~~ hyp: $2x = 2$

hyp is

$2x = 2(5) = \boxed{10}$

Ex


opp 45 ?
x
hyp
45°
15
opp45
Plug in 15
opp45: x = 15
Solve for x... it's done.
opp45: x = ?
x = (15)
hyp: x√2 = ___
Bonus: x√2 = (15)√2
hyp is 15√2

opp45 = 15