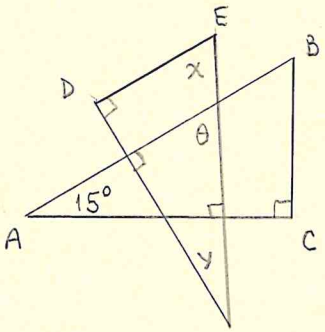
Pg. 4, #2 Find the measures of x and y.



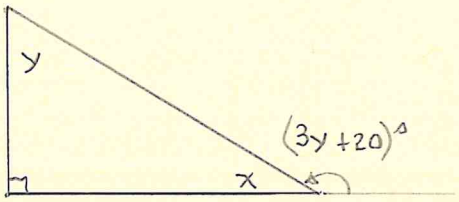
Note that $\theta + 15^\circ = 90^\circ \Rightarrow \theta = 75^\circ$

Since $\overline{AB} \parallel \overline{DE}$, $x = \theta = \boxed{75^\circ}$

Also, $x + y = 90^\circ$

Then $75^\circ + y = 90^\circ \Rightarrow y = \boxed{15^\circ}$

Pg. 4, #5 Find the measures of x and y.



Note that

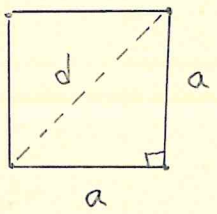
I) $x + y = 90^\circ$

II) $x + 3y + 20^\circ = 180^\circ \Rightarrow x + 3y = 160^\circ$

Now, II - I $\Rightarrow 2y = 70 \Rightarrow \boxed{y = 35^\circ}$

And $x + 35^\circ = 90^\circ \Rightarrow \boxed{x = 55^\circ}$

Pg. 4, #6

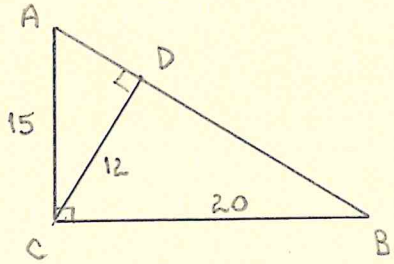


By the Pythagorean theorem, we have:

$d^2 = a^2 + a^2 = 2a^2$

$\Rightarrow \sqrt{d^2} = \sqrt{2a^2} \Rightarrow \boxed{d = a\sqrt{2}}$

Pg. 4, #8



By the Pythagorean theorem:

$12^2 + AD^2 = 15^2 \Rightarrow AD = \sqrt{15^2 - 12^2} = 9$

and

$12^2 + BD^2 = 20^2 \Rightarrow BD = \sqrt{20^2 - 12^2} = 16$

Thus $\boxed{AD = 9 \text{ and } AB = AD + BD = 25}$