(1)

	rate (mph)	· time	= distance
Zoe	$x+16$	$\frac{1}{2}$	$\frac{1}{2}(x+16)$
Jess	x	$\frac{1}{2}$	$\frac{1}{2}x$
			17

$$\frac{1}{2}(x+16)+\frac{1}{2}x=17$$

$$\frac{1}{2}x+8+\frac{1}{2}x=17$$

$$x+8=17$$

$$x=9$$

Jessica's speed 9 mph
Zoe's 25 mph

(2)

	rate	. time	=	distance
w/wind	$(p+w)$	3	=	1800
against wind	$(p-w)$	$3+\frac{36}{60}=\left(\frac{18}{5}\right)$	=	1800

p = plane speed
w = wind speed

$\frac{3}{3}(p+w) = \frac{1800}{3} \rightarrow p+w = 600$

$\frac{5\cdot 18}{18\,5}(p-w) = 1800\cdot\frac{5}{18} \rightarrow p-w = 500$

$2p = 1100$

$p = 550$

plane's speed 550 mph

$550+w=600$

wind 50 mph

(3)

Per = 390 yds

$L = 2w - 30 = 2(75) - 30 = 150 - 30 = 120$ yds

$2L + 2w = 390$

$2(2w - 30) + 2w = 390$

$4w - 60 + 2w = 390$

$6w = 450$

$w = 75$

(4)

15%	+	30%	=	25%
x		y		4.5

$$x + y = 4.5 \rightarrow y = 4.5 - x$$

$$.15x + .30y = .25(4.5)$$

$$.15x + .30(4.5 - x) = 1.125$$

$$.15x + 1.35 - .3x = 1.125$$

$$\frac{-.15x}{-.15} = \frac{-0.225}{-.15}$$

$$x = 1.503$$

$$y = 4.5 - 1.5$$

$$y = 303$$