5)

	$Y=0$	$Y=1$	
$X=0$	8/24	4/24	12/24
$X=1$	6/24	6/24	12/24
	14/24	10/24	

13. $P(X=1 \mid Y=1) = 6/24$

14. $P(Y=0) = 58\%$
    $P(Y=1) = 42\%$

15. $E(Y) = 0 \cdot .58 + 1 \cdot .92 = .42$

16. $Var(Y) = E(Y^2) - E(Y)^2$
    $= (0^2 \cdot .58 + 1^2 \cdot .42) - (.42^2)$
    $= .42 - .1764$
    $Var(Y) = .2436$

17. $sd(Y) = \sqrt{Var(Y)}$
    $sd(X) = \sqrt{.2436}$

18. $Corr(Y,X) = \dfrac{Cov(Y,X)}{sd(Y) \cdot sd(X)}$

    $E(X) = 0 \cdot .5 + 1 \cdot .5 = .5$

    $E(YX) = 0 \cdot 18/24 + 1 \cdot 6/24 = 6/24 = .25$

    $Cov(YX) = .25 - (.42 \cdot .5)$
    $= .25 - .21 = .04$

    $sd(X) = \sqrt{Var(X)}$
    $Var(X) = E(X^2) - E(X)^2$
    $E(X^2) = 0^2 \cdot .5 + 1^2 \cdot .5 = .5$
    $E(X)^2 = (0 \cdot .5 + 1 \cdot .5)^2 = .25$

$$Var(x) = .5 - .25 = .25$$
$$Sd(x) = \sqrt{.25}$$
$$Corr(Y,X) = \frac{.04}{\sqrt{.2436} \cdot \sqrt{.25}}$$

19. No, since $Corr(Y,X) \neq 0$ X and Y are on some level dependent.

20. $E(Y|X=1) = 0 \cdot \frac{4}{29} + 1 \cdot \frac{6}{29} = .29$