a) $W_i = a + b G_i + \varepsilon_i$

$$b = \frac{\sum_{i=1}^{15} (W_i - \bar{W})(G_i - \bar{G})}{\sum_{i=1}^{15} (G_i - \bar{G})^2}$$

$$a = \bar{W} - b\bar{G}$$

$$R^2 = 1 - \frac{\sum_{i=1}^{15} e_i^2}{\sum_{i=1}^{15} (W_i - \bar{W})^2}$$

$$e_i = W_i - a - b G_i$$

$$s = \sqrt{\frac{1}{13} \sum_{i=1}^{15} e_i^2}$$

Observation	W	G
1	10.3	1
2	10.4	2
3	10.5	3
4	10.2	4
5	10.0	5
6	9.95	6
7	10.14	7
8	10.06	8
9	10.25	9
10	9.99	10
11	9.92	11
12	9.96	12
13	9.84	13
14	9.87	14
15	9.85	15

$\bar{W} = 10.08$

$\bar{G} = 8$

Observation	W	G	W_DEMEANED	G_DEMEANED
1	10.3	1	0.22	-7
2	10.4	2	0.32	-6
3	10.5	3	0.42	-5
4	10.2	4	0.12	-4
5	10.0	5	-0.08	-3
6	9.95	6	-0.13	-2
7	10.14	7	0.06	-1
8	10.06	8	-0.02	0
9	10.25	9	0.17	1
10	9.99	10	-0.09	2
11	9.92	11	-0.16	3
12	9.96	12	-0.12	4
13	9.84	13	-0.24	5
14	9.87	14	-0.21	6
15	9.85	15	-0.23	7

$$b = \frac{-10.64}{280} = -0.038$$

$$a = 10.08 - (-0.038) \times 8 = 10.38$$

Observation	W	G	W_DEMEANED	G_DEMEANED	E
1	10.3	1	0.22	-7	-0.042
2	10.4	2	0.32	-6	0.096
3	10.5	3	0.42	-5	0.234
4	10.2	4	0.12	-4	-0.028
5	10.0	5	-0.08	-3	-0.190
6	9.95	6	-0.13	-2	-0.202
7	10.14	7	0.06	-1	0.026
8	10.06	8	-0.02	0	-0.016
9	10.25	9	0.17	1	0.212
10	9.99	10	-0.09	2	-0.010
11	9.92	11	-0.16	3	-0.042
12	9.96	12	-0.12	4	0.036
13	9.84	13	-0.24	5	-0.046
14	9.87	14	-0.21	6	0.022
15	9.85	15	-0.23	7	0.040

$$R^2 = 1 - \frac{0.197}{0.600} = 0.672$$

$$S = \sqrt{\frac{1}{13} \times 0.197} = 0.123$$

b) $R^2 = 0.672$

67% variance winning times explained by trend.

ei ≈ 0.1 games except 3, 5, 6 and 9

ei ≈ 0.2 games 3, 5, 6 and 9

c) 2008 $w_{16} = a + b\,6_{16} = a + 16b$

2012 $w_{17} = a + b\,6_{17} = a + 17b = w_{16} + b$

2016 $w_{18} = a + b\,6_{18} = a + 18b = w_{16} + 2b$

	predicted	actual
$w_{16} = 10.38 - 16 \times 0.038$	9.77	9.69
$w_{17} = 9.77 - 0.038$	9.73	9.63
$w_{18} = 9.77 - 0.076$	9.69	