

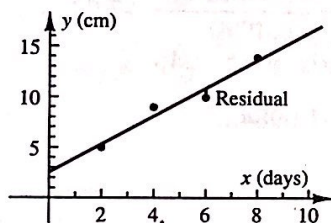
Chapter Test

- T1. $15 - 21 = -6$
 T2. $15 - \hat{y}(7) = 15 - [-2(7) + 31] = -2$
 T3. Linear
 T4. y decreases as x increases (the slope of the line is -2).
 T5. Exponential, because there is no clear pattern in the residuals for the exponential function.
 T6. Both
 T7. Exponential
 T8. Coefficient of determination,

$$R^2 = \frac{SS_{\text{dev}} - SS_{\text{res}}}{SS_{\text{dev}}}$$

Correlation coefficient, $R = \pm\sqrt{R^2}$
 ($-\sqrt{R^2}$ in this case)

T9.



T10.

\hat{y}	$y - \hat{y}$	$(y - \hat{y})^2$
5.3	-0.3	0.09
8.1	0.9	0.81
10.9	-0.9	0.81
13.7	0.3	0.09

T11. $SS_{\text{res}} = 1.8$

T12. $(\bar{x}, \bar{y}) = (5, 9.5)$; $\hat{y}(5) = 1.4(5) + 2.5 = 9.5$

T13. $\hat{y}_2(2) = 1.5(2) + 2 = 5$; $\hat{y}_2(8) = 1.5(8) + 2 = 14$

T14.

\hat{y}_2	$y - \hat{y}_2$	$(y - \hat{y}_2)^2$
5	0	0
8	1	1
11	-1	1
14	0	0

$SS_{\text{res}} = 2$. A larger SS_{res} means a worse fit.

T15. $\hat{y}(91) = 129.9 \text{ cm}$

Extrapolation: 91 days $>$ 8 days

T16. $\hat{y}_2(91) = 138.5 \text{ cm}$, 8.6 cm longer.

T17. Answers will vary.