

## Exponential Functions Answers

1. Answers will vary. *Sample answers:*

a.  $E = 70^\circ$ ; table values:  $200^\circ$ ;  $160^\circ$ ;  $131^\circ$ ;  $112^\circ$ ;  $99^\circ$ ;  $90^\circ$ ;  $83^\circ$

b. For  $t = 20$ ,  $k \approx 0.075$ ; for  $t = 5$ ,  $k \approx 0.074$ ; for  $t = 10$ ,  $k \approx 0.076$ ; for  $t = 15$ ,  $k \approx 0.075$

c.  $T(t) = 70 + 130e^{-0.075t}$ ;  $k = 0.075$  was chosen because it is the average and it occurred most often.

d.  $T(30) \approx 83.7^\circ$ ; This is very close to  $T_{30} = 83^\circ$ .

e.  $T(35) \approx 79.4^\circ$ ;  $T(45) \approx 74.4^\circ$

2. a. yes; The caffeine in the patient's bloodstream will be  $49.2 < 50$  milligrams.

b. up to 231.3 mg

3. a.  $P(t) = \frac{1030}{1 + 1029e^{-1.64t}}$

b. 4 days