The following equation describes the height of a penny when dropped off the balcony of an 80- foot-high building. The equation is , where *t* represents the seconds since the penny was dropped, and *y* is the height of the penny from the ground. For this equation, answer the following:

1) Where is the penny at 80 feet? 0 feet?

*At 80 feet the penny is in the person’s hand, ready to be dropped. At 0 feet the penny is on the sidewalk.*

2) Evaluate the above equation for *t* = 4. What does this value mean? Does this make any sense?

*At t = 4 we get that the penny is -176 below the ground. This makes no sense since for that to happen the penny would have had to burrow into the ground somehow.*

3) Evaluate the above equation for *t* = 2. What does this value mean? Does this make any sense?

*At t = 2, the penny is 16 feet above the ground. This makes sense because at that time the penny is still falling to the ground.*

4) What is the domain and range for this equation? What is the practical domain and range for this equation? Why are they different?

*The domain is all* t *values, and the range is all y values from negative infinity to 80. The practical domain, though, is all* t *values from 0 to 2.23 seconds, and the practical range is all* y *values from 0 to 80. The reason they are different is it makes no sense to allow for answers that state that the penny is inside the ground, or to allow for time before the penny was dropped or after the penny hits the ground.*