(4.) (11 points) The table below gives the approximate number of cell phone subscribers, S, in millions, worldwide.

Year	1995	1996	1997	1998	1999	2000
Subscribers	91	138	210	320	485	738

(a) Demonstrate using the data in the table why it makes sense to model this data with an exponential function. Explain your reasoning.

Exponential functions are characterized by a constant growth factor. Note that the time intervals in the table are all the same (1 year), so we can check that the growth rate is constant by computing the ratios of consecutive output values. We see that

$$\frac{138}{91} \approx \frac{210}{138} \approx \frac{320}{210} \approx \frac{485}{320} \approx \frac{738}{485} \approx 1.52.$$

Thus, since the ratio is always approximately equal to 1.52 for equally-spaced time intervals, an exponential model is reasonable.

(b) Write a formula for S as an exponential function of t, the number of years since 1995.

$$S(t) = 91(1.52)^t$$

(c) In a single sentence describe how the number of cell phone subscribers has been changing since 1995. Use everyday words and do not use the symbols S or t.

Since 1995, the number of cell phone subscribers has been increasing by approximately 52% per year.