

1. (10 points) Convert 10101 from base 2 to decimal. Convert 35 from decimal to base 2.

Solution:

$$10101 = 2^4 + 2^2 + 2^0 = 16 + 4 + 1 = 21. \quad 35 = 32 + 2 + 1 = 2^5 + 2 + 1 = 100011.$$

2. (10 points) True or False ? Explain why.

1. If two quantities change similarly and their graphs look similar then they must be related.

2. If someone is able to produce a graph that indicates climate is not affected by Carbon emissions, then it must be true

Solution:

Both statements are false. As we saw in class, really random things can have similar graphs, like the number of babies named Jasmine and milk consumption. Also, graphs can be produced in misleading ways to give the wrong impression on something.

3. (10 points) Convert 821 from decimal to base 20.

$$\text{Solution: } 821 = 2 \times 400 + 20 + 1 = 2 \times 20^2 + 1 \times 20 + 1 = 211 \text{ in base 20.}$$