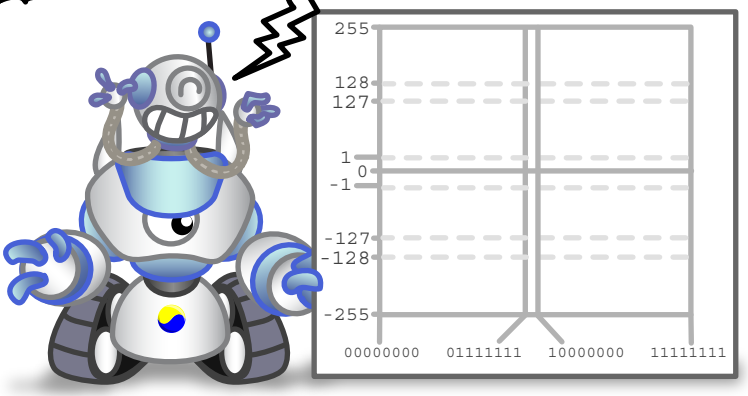
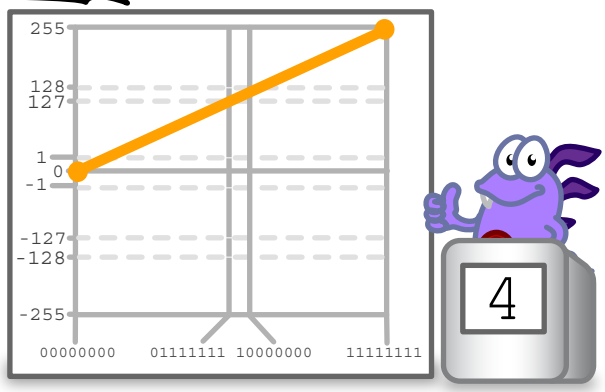
Comparing Integer Representations

Increments and Monotonicity

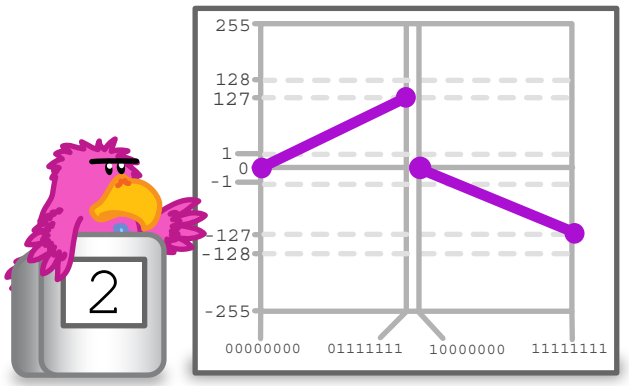
Round 3 - Incrementing

On to Round 3! Using this board, graph how your value changes when you increment your bit pattern from 00000000 to 11111111! We'll give each player a point for having a continuous graph and a point for a consistent unit slope.

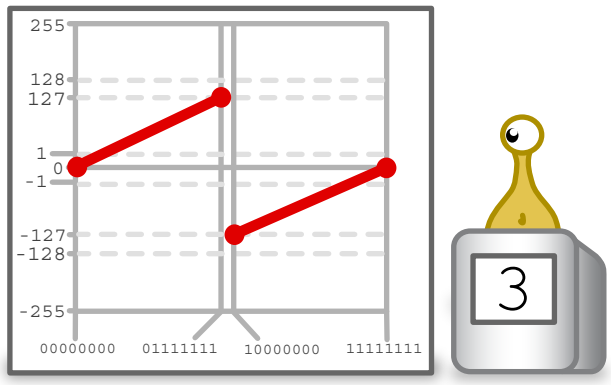




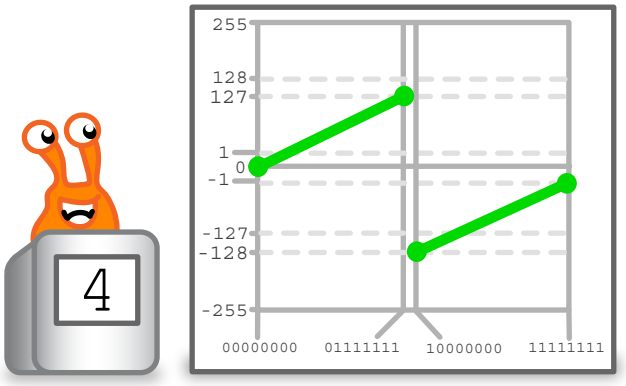
Very nice! Unsigned has a graph that is continuous and has a unit slope. This means we can use an unsigned comparator to compare integers! We'll give Unsigned two points for that.



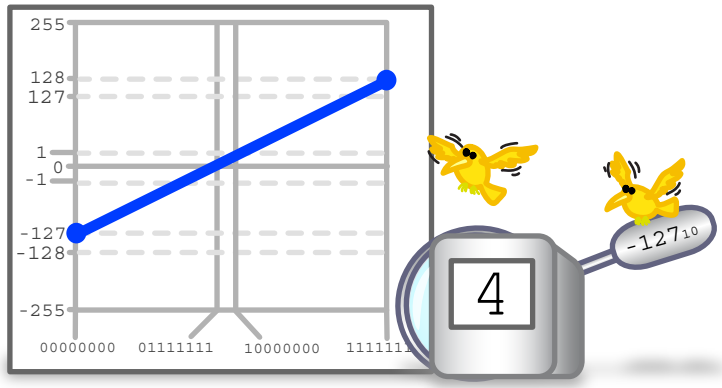
What's this? Sign Magnitude has a very unusual increment indeed. It has a unit slope for positive integers, but the slope becomes -1 for negatives. Sorry, but no points for Sign Magnitude this round.



There's a discontinuity in the graph for One's Complement, but we do like how it has a consistent unit slope. That's one point for One's Complement.



Just like One's Complement, Two's Complement has a discontinuous graph and unit slope. So we'll give Two's Complement a point.



Another monotonically increasing graph with unit slope! You can use an unsigned comparator to compare integers here, too. Bias gets two points!

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