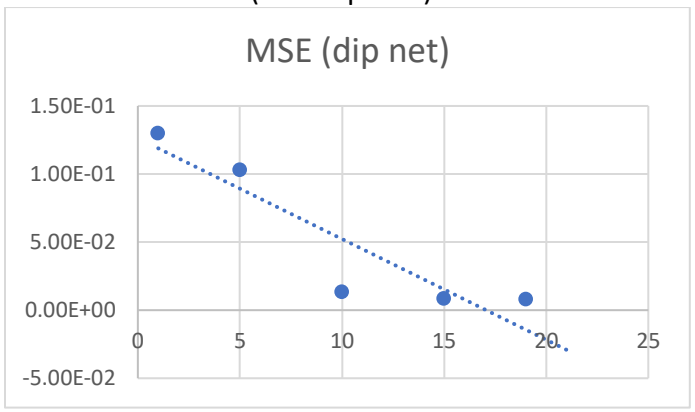
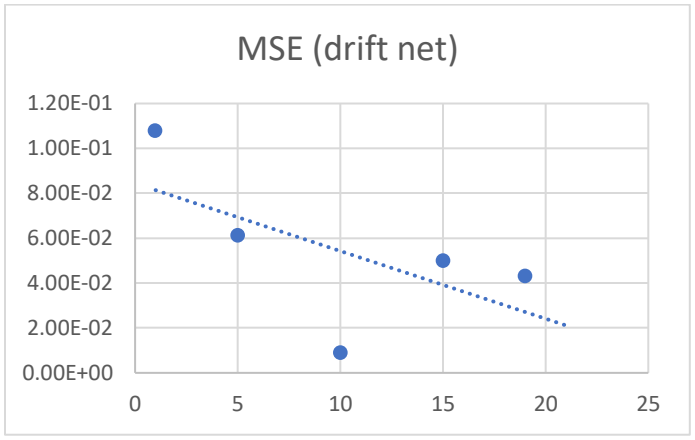
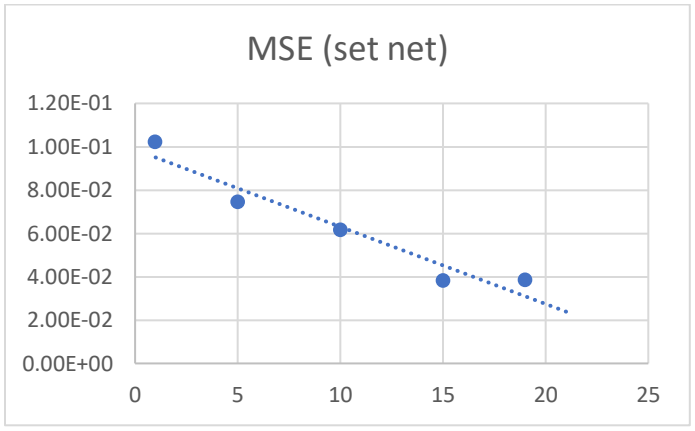
1. Cost over batch size (1000 epochs)



R^2= 0.82994379



R^2= 0.37628755



R^2= 0.92994335

The set net has the greatest R^2 value and strongest relationship and performs with the least error with a batch size of 15. When running this model, the parameter values return b1=0.1374016 and b0= 0.15841079. The predicted harvest amount in 2023 for 28,375 fishing days is approximately 67516227.

2.
```
X = data[['cadmium', 'mercury']]
y = data['lead']
output: [-0.00492362 -0.01440148]
```
If cadmium levels increase by 1 unit, lead decreases by 0.005. If mercury increases by 1, lead also decreases by 0.014.

```
X = data[[cadmium, 'lead']]
y = data['mercury']
output: [ 1.55575302 -0.68316714]
```
If cadmium levels increase by 1 unit, mercury increases by 1.55. If lead increases by 1, mercury decreases by 0.68.

```
X = data[['mercury', 'lead']]
y = data['cadmium']
output: [ 0.0613746 -0.0092141]
```
If mercury levels increase by 1 unit, cadmium increases by 0.06. If lead increases by 1, mercury decreases by 0.01.

Not all three variables are good candidates for multivariate linear regression. As shown in the second round of dependence testing, cadmium levels have a strong positive influence (+1.55) on mercury levels, though not vice-versa. Lead levels also have a somewhat strong negative influence on mercury.