1. In K-fold cross-validation, how will increasing *k* affect the variance (across subsamples) of estimated model parameters? 1 / 1 point

- ○ Increasing *k* will not affect the variance of estimated parameters.
- ○ Increasing *k* will usually reduce the variance of estimated parameters.
- ◉ Increasing *k* will usually increase the variance of estimated parameters.
- ○ Increasing *k* will increase the variance of estimated parameters if models are underfit, but reduce it if models are overfit.

✓ Correct
Correct! You can find more information in the cross-validation lessons.

2. Which statement about K-fold cross-validation below is TRUE? 1 / 1 point

- ○ Each subsample in K-fold cross-validation has at least *k* observations.
- ○ Each of the *k* subsamples in K-fold cross-validation is used as a training set.
- ◉ Each of the *k* subsamples in K-fold cross-validation is used as a test set.
- ○ None of the above

✓ Correct
Correct! You can find more information in the cross-validation lessons.

3. If a low-complexity model is underfitting during estimation, which of the following is MOST LIKELY true (holding the model constant) about K-fold cross-validation? 1 / 1 point

- ◉ K-fold cross-validation will still lead to underfitting, for any *k*.
- ○ K-cross-validation with a small *k* will reduce or eliminate underfitting.
- ○ K-fold cross-validation with a large *k* will reduce or eliminate underfitting.
- ○ None of the above.

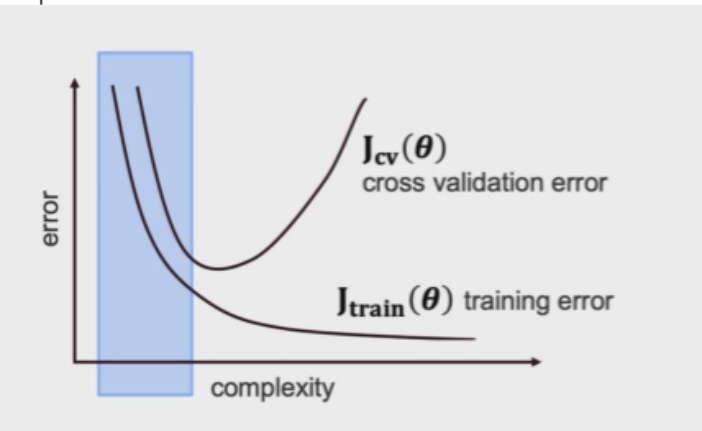
✓ Correct
Correct! You can find more information in the cross-validation lessons.

4. Which of the following statements about a high-complexity model in a linear regression setting is TRUE? 1 / 1 point

- ○ Cross-validation with a small *k* will reduce or eliminate overfitting.
- ◉ A high variance of parameter estimates across cross-validation subsamples indicates likely overfitting.
- ○ A low variance of parameter estimates across cross-validation subsamples indicates likely overfitting.
- ○ Cross-validation with a large *k* will reduce or eliminate overfitting.

✓ Correct
Correct! You can find more information in the cross-validation lessons.

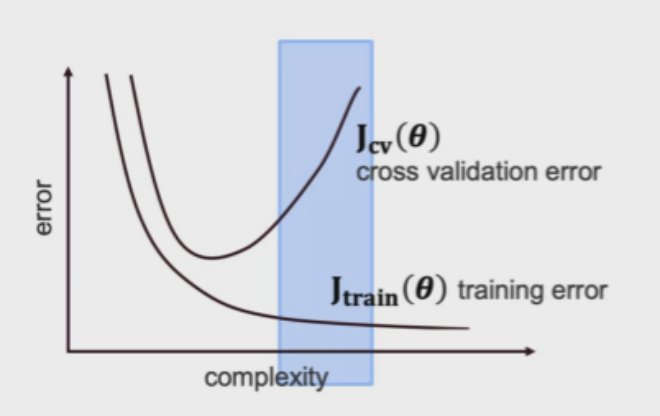
5. Reviewing the below graph, what is the model considered when associated with the left side of this curve before hitting the plateau? 1 / 1 point



- ○ Overfitting
- ○ Linear regression
- ○ Cross validation error
- ◉ Underfitting

✓ Correct
Correct! Models associated with the left side of this curve before hitting the plateau are considered underfitting. Which means the training and cross validation errors are both very high.

6. Reviewing the below graph, what is the model considered when associated with the right side of the cross validation error? 1 / 1 point



- ◉ Overfitting
- ○ Polynomial regression
- ○ Training error
- ○ Underfitting

✓ Correct
Correct! Models associated with the right side of the cross validation error are considered overfitting. Which means the training error is low and the cross validation is high.

7. Which of the following functions perform K-fold cross-validation for us, appropriately fitting and transforming at every step of the way? 1 / 1 point

- 'cross_val'
- 'cross_validation'
- 'cross_validation_predict'
- (selected) 'cross_val_predict'

Correct
Correct! You can find more information in the Cross Validation Demo videos.

8. Which of the following statements about cross-validation is/are True? 1 / 1 point

- Cross-validation is essential step in hyperparameter tuning.
- We can manually generate folds by using KFold function.
- GridSearchCV is commonly used in cross-validation.
- (selected) All of the above are True.

Correct
Correct! You can find more information in the Cross Validation Demo videos.

9. Which of the following statements about GridSearchCV is/are True? 1 / 1 point

- GridSearchCV scans over a dictionary of parameters.
- GridSearchCV finds the hyperparameter set that has the best out-of-sample score.
- GridSearchCV retrains on all data with the "best" hyper-parameters.
- (selected) All of the above are True.

Correct
Correct! You can find more information in the Cross Validation Demo videos.

10. Which of the below functions, randomly selects data to be in the train/test folds? 1 / 1 point

- `StratifiedKFold`
- `GroupKFold`
- (selected) 'KFold' and `StratifiedKFold`
- 'KFold'

Correct
Correct! You can find more information in the Cross Validation Demo videos.