1. Pig programming is an abstraction over Map Reduce. Pig uses Pig Latin language which is used to analyse large datasets in hadoop cluster and it is internally converted to Map Reduce tasks. It has a componenet called Pig Engine which accepts Pig Latin language and convert those scripts into Map Reduce jobs.

It is like sql language so large code of java is not required to process the data in Hadoop. A person have easy to code in sql to write Pig Latin rather than being expert in Java to execute Map Reduce jobs.

2. Its high level language so its easy to learn while Map reduce is low level.

Pig has multi query approach which reduces the size of code but writing Map reduce program is very large to perform the same opertaions.

Pig can be written with knowledge of SQL but map reduce requires the knowledge of java programming.

In Pig join operations can be performed easily which is very tedious to write program for join of data sets in Map reduce.

Pig does not require compilation, it is parse and converted into Map reduce jobs by Pig Engine while wriing Map reduce has good compilation time for programmer

3. Pig Engine acts as an interpreter between Pig Latin language and Map reduce jobs. It creates environment to execute Pig scripts into series of map reduce jobs in parallel. It is at top of Hadoop so it insulates users from changes in Hadoop interfaces.

4. Modes of Pig execution:

Local mode: In this mode intput files are available from local file system or local unix path for execution.

Command to execute Pig in local mode: pig -x local

Map reduce mode: In this mode input file are available as HDFS using Pig When executing Pig latin scripts in this mode, map educe program gets called in the backend to perform operationson the data available in HDFS.

Command to run in Map reduce mode: pig -x mapreduce

5. Grunt shell is the environment where Pig Latin scripts run in interactive mode. To control Pig from Grunt shell there are several utilities commands like help, kill, quit, set, exec, run.

6. Pig Latin is high level language. It is more like SQL which is easy to learn compare to Java to perform same operations of Map reduce. It provides rich set of operaions like join, sort, filter which can be performed on data sets. Programmers need to focus on semantic of the language as execution happens automatically due to conversion into Map reduce jobs internally. Also Pig latin provide set of operations which a user can use to define its own functions to read, write and process the data.

7. No, pig latin is not case sensitive.

Ex: LOAD keyword is same as load.

8. In a dataflow language, a stream of data which is passed from instruction to instruction to be processed. Conditional execution, jumps and procedure calls route the data to different instructions.

Dataflow programming languages are ones that focus on the state of the program and cause operations to occur according to any change in the state. Dataflow programming languages are inherently parallel, because the operations rely on inputs that when met will cause the operation to execute. This means unlike a normal program where one operation is followed by the next operation, in a dataflow program operations will execute as long as the inputs are met and thus there is no set order.