Examining SAS Data Set Descriptor Portion

```
PROC CONTENTS DATA=SAS-data-set;
RUN;
```

Examining SAS Data Set Data Portion

```
PROC PRINT DATA=SAS-data-set;
RUN;
```

SAS LIBNAME Statement

```
LIBNAME libref 'SAS-data-library' <options>;
LIBNAME libref CLEAR;
```

Browsing a SAS Library

```
PROC CONTENTS DATA=libref._ALL_ <NODS>;
RUN;
```

Sorting Data

```
PROC SORT DATA=input-SAS-data-set
          <OUT=output-SAS-data-set>;
    BY <DESCENDING> BY-variables;
RUN;
```

Producing Detail Reports

```
PROC PRINT DATA=SAS-data-set
           <NOOBS LABEL SPLIT='split-character'>;
    VAR variable(s);
    SUM variable(s);
    BY variable(s);
    ID variable(s);
RUN;
```

Subsetting Observations

```
WHERE expression;
```

```
IF expression;
```

Special WHERE Operators

```
BETWEEN-AND
? or CONTAINS
IS NULL or IS MISSING
LIKE
```

Augmenting a WHERE Statement

```
WHERE expression1;
WHERE SAME AND expression2;
WHERE ALSO expression3;
```

Labels

```
LABEL variable1='label1'
      variable2='label2' …;
```

Titles and Footnotes

```
TITLEn 'text';
TITLE;

FOOTNOTEn 'text';
FOOTNOTE;
```

Applying Formats

```
FORMAT variable(s) format …;
```

Creating User-Defined Formats

```
PROC FORMAT;
    VALUE <$>format-name range1='label1'
                         range2='label2'
                         …;
RUN;
```

Reading a SAS Data Set

```
DATA output-SAS-data-set(s);
    SET input-SAS-data-set;
    <additional SAS statements>
RUN;
```

Creating New Variables

```
new-variable=expression;
```

```
LENGTH variable(s) <$> length …;
```

Subsetting Variables

```
DROP variable-list;
```

```
KEEP variable-list;
```

Reading Spreadsheet Data

```
LIBNAME libref <engine-name>
        <PATH=>'physical-filename' <options>;
LIBNAME libref CLEAR;
```

Reading Database Data

```
LIBNAME libref engine-name <SAS/ACCESS options>;
LIBNAME libref CLEAR;
```

Creating and Using Macro Variables

```
%LET macro-variable=value;
&macro-variable
```

Reading Delimited Raw Data Files

```
DATA SAS-data-set(s);
    INFILE 'filename' <DLM='delimiter'>
           <DSD> <MISSOVER>;
    INPUT variable <$> variable <:informat>… ;
    <additional SAS statements>
RUN;
```

Concatenating SAS Data Sets

```
DATA SAS-data-set(s);
    SET SAS-data-sets;
    <additional SAS statements>
RUN;
```

Merging SAS Data Sets

```
DATA SAS-data-sets;
    MERGE SAS-data-sets;
    BY <DESCENDING> BY-variable(s);
    <additional SAS statements>
RUN;
```

Functions

YEAR(*SAS-date*)
QTR(*SAS-date*)
MONTH(*SAS-date*)
DAY(*SAS-date*)
WEEKDAY(*SAS-date*)
TODAY() or **DATE**()
MDY(*month, day, year*)
UPCASE(*argument*)
SUM(*argument1,argument2, . . .*)

Conditional Processing

```
IF expression THEN statement;
ELSE IF expression THEN statement;
ELSE statement;
```

```
IF expression THEN DO;
    statements
END;
ELSE IF expression THEN DO;
    statements
END;
ELSE DO;
    statements
END;
```

SAS Data Set Options

SAS-data-set(**IN**=*variable*)

SAS-data-set(**RENAME**=(*old-name1=new-name1*
old-name2=new-name2…))

Data Summarization and Validation Procedures

```
PROC MEANS DATA=SAS-data-set <options statistics>;
    CLASS variable(s);
    VAR variable(s);
RUN;
```

```
PROC FREQ DATA=SAS-data-set <options>;
    TABLES variable(s) </ option(s)>;
    TABLES variable1* variable2 </ option(s)>;
RUN;
```

```
PROC UNIVARIATE DATA=SAS-data-set;
    VAR variable(s);
    ID variable(s);
RUN;
```

Directing Output to External Files

```
ODS destination FILE='filename.ext'
                <STYLE=style-template>;
SAS code generating output
ODS destination CLOSE;
```