

# SAS® Programming 1: Essentials

Lesson Quizzes

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#### SAS® Programming 1: Essentials – Lesson Quizzes

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# Lesson Quizzes

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# 1.1 Quizzes

#### Lesson 1 - Essentials

1. How many steps does this program contain?

```
a. one
```

- b. two
- c. four
- d. eight

```
data national;
    set sashelp.baseball;
    BatAvg=nHits/nAtBat;
run;

proc contents data=national;
run;

proc print data=national;
run;

proc means data=national;
    var BatAvg;
run;
```

**S**sas

- 2. Running a SAS program can create which of the following?
- a. log
- b. output data
- c. results
- d. all of the above

- 3. Which of the following is a SAS syntax requirement?
- a. Begin each statement in column one.
- b. Put only one statement on each line.
- c. Separate each step with a line space.
- d. End each statement with a semicolon.

**S**sas

/

4. How many statements does this program contain?

```
a. five
```

- b. six
- c. seven
- d. eight

```
*Create a cars report;

title "European Cars Priced Over 30K";
footnote "Internal Use Only";

proc print data=sashelp.cars;
  where Origin='Europe'
      and MSRP>30000;
  var Make Model Type
      Mpg_City Mpg_Highway;
run;
```

**S**sas

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- 5. Which of the following steps is typically used to generate reports and graphs?
- a. DATA
- b. PROC
- c. REPORT
- d. RUN

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**S**sas

6. Does this comment contain syntax errors?

```
/*
Report created for budget
presentation; revised October 15.
   */
proc print data=work.newloan;
run;
```

- a. No. The comment is correctly specified.
- b. Yes. Every comment line must end with a semicolon.
- c. Yes. The comment is on more than one line.
- d. Yes. There is a semicolon in the middle of the comment.

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7. What result would you expect from submitting this step?

proc print data=work.newsalesemps
run;

- a. a report of the work.newsalesemps data set
- b. an error message in the log
- c. the creation of a table named work.newsalesemps

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**S**sas

8. What happens if you submit the following program?

porc print data=work.newsalesemps;
run;

- a. SAS does not execute the step.
- b. SAS assumes that PROC is misspelled and executes the step.

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9. This program contains a syntax error because **National** is in different cases.

```
data national;
    set sashelp.baseball;
    BatAvg=nHits/nAtBat;
run;

proc means data=NATIONAL;
    var BatAvg;
run;
```

- a. True
- b. False

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**S**sas

- 10. Which of the following is not a SAS programming interface?
- a. SAS Enterprise Guide
- b. SAS Manager
- c. SAS Studio
- d. SAS windowing environment

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# Lesson 2 – Accessing Data

- 1. In this PROC CONTENTS output, what is the default length of the **Birth\_Date** column?
- a. 4 bytes
- b. 8 bytes
- c. 32,767 bytes
- d. It does not have a default length.

#	Variable	Туре
4	Birth_Date	Num
3	Customer_Address	Char
1	Customer_ID	Num
2	Customer_Name	Char

24

**S**sas

- 2. Which LIBNAME statement has the correct syntax?
- a. libname reports "filepath/workshop";
- b. libname orion filepath/workshop;
- c. libname 3456a "filepath/workshop";

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- 3. Which of the following tables is available at the beginning of a new SAS session?
- a. sales
- b. work.newsalesemps
- c. sashelp.class

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**S**sas

- 4. In this table, what type of column is **Employee\_ID**?
- a. character
- b. numeric
- c. temporary
- d. missing

Obs	Employee_ID	Last	Salary
1		Ralston	29250
2	120101	Lu	163040
3	120104	Billington	46230
4	120105	Povey	27110
5	120106	Hornsey	

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- 5. Which statement about SAS dates is false?
- a. A SAS date is one of three of SAS column types: numeric, character, and date
- b. SAS dates represent the number of days from January 1, 1960.
- c. SAS date values can be positive or negative.
- d. SAS date values can be used in calculations.

**S**sas

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- 6. Which LIBNAME statement has the correct syntax for reading a Microsoft Excel file?
- a. libname excel "filepath/myexcelfile";
- b. libname mydata xlsx "filepath/myexcelfile";
- C. libname mydata xlsx "filepath/field data.xlsx";

**S**sas

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7.	Which library name (libref) is valid?	
a. b. c. d.	2010Car car/2010 car2010 cars_2010	
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8.	To disassociate a libref that you previously assigned, you can use the UNASSIGN option in the LIBNAME statement.	
a.	True	
b.	False	
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9. What does this code do?

- a. It creates a SAS table named **Bird817** in the **Work** library from the CSV file **bird\_count** and replaces **Bird817** whenever the CSV file is updated.
- b. It creates a SAS table named **Bird817** in the **Work** library from the CSV file **bird\_count**.
- c. It uses the CSV engine to directly read the data file bird\_count.csv.

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**S**sas

- 10. In which portion of a SAS table are the following found?
  - name of the table
  - type of the column Salary
  - creation date of the table
- a. descriptor portion
- b. data portion

**S**sas

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## Lesson 3 – Exploring and Validating Data

- 1. Which of the following is a valid name for a character format?
- a. country
- b. \$ctry
- c. \$country.
- d. \_country

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**S**sas

2. Which of the following FORMAT statements was used to create this output?

Obs	Order_ID	Order_Date	Delivery_Date
1	1230058123	11JAN07	01/11/07
2	1230080101	15JAN07	01/19/07
3	1230106883	20JAN07	01/22/07
4	1230147441	28JAN07	01/28/07
5	1230315085	27FEB07	02/27/07

- a. format Order Date date9. Delivery Date mmddyy8.;
- b. format Order Date date7. Delivery Date mmddyy8.;
- c. format Order Date ddmmmyy. Delivery Date mmddyy8.;
- d. format Order\_Date monyy7. Delivery\_Date mmddyy8.;

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- 3. The format name must include a period delimiter in the FORMAT statement.
- a. True
- b. False

**S**sas

4. Which row or rows are selected by the following WHERE statement?

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- a. row 1
- b. row 2
- c. row 3
- d. rows 1 and 2
- e. all rows

 Obs
 Last\_Name
 First\_Name
 Country
 Job\_Title

 1
 Wu
 Christine
 AU
 Sales Rep I

 2
 Stone
 Kimiko
 AU
 Sales Manager

 3
 Hoffman
 Fred
 AU
 Insurance Sales

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5. Which statement about this PROC SORT step is true?

```
proc sort data=orion.staff;
          out=work.staff;
         by descending Salary Manager_ID;
run;
```

- a. The sorted table overwrites the input table.
- b. The rows are sorted by **Salary** in descending order, and then by **Manager ID** in descending order.
- c. A semicolon should not appear after the input table name.
- d. The sorted table contains only the columns specified in the BY statement.

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**S**sas

- 6. Which of the following statements selects from a table only those rows where the value of the **Style** column is *RANCH*, *SPLIT*, or *TWOSTORY*?
- a. where Style='RANCH' or 'SPLIT' or 'TWOSTORY';
- b. where Style in 'RANCH' or 'SPLIT' or 'TWOSTORY';
- C. where Style in (RANCH, SPLIT, TWOSTORY);
- d. where Style in ('RANCH', 'SPLIT', 'TWOSTORY');

**S**sas

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- 7. Which of the following statements selects rows in which **Amount** is less than or equal to \$5,000 or **Rate** equals 0.095?
- a. where amount <= 5000 or rate=0.095;
- b. where amount le 5000 or rate=0.095;
- c. where amount <= 5000 or rate eq 0.095;</p>
- d. all of the above

**S**sas

8. Which statement creates the macro variable **flower** and assigns the value *Plumeria*?

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- a. %let flower=Plumeria;
- b. %let flower="Plumeria";
- C. %let &flower=Plumeria;
- d. %let &flower="Plumeria";

9. Which statement in a PROC MEANS step enables you to specify the numeric columns to analyze? **TABLES** a. VARS b. VAR C. d. KEEP= **S**sas 61 10. If you have a table that includes flower sales to all your retail outlets. You want to see the distinct values of Flower\_Type with a count and percentage for each. Which procedure would you use? PRINT a. **MEANS** b. UNIVARIATE C. d. FREQ **S**sas 63

# Lesson 4 - Preparing Data

c. SET statement

d. assignment statement

1. In which phase does the DATA step check for syntax errors?	
a. compilation	
b. execution	
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2. What statement is used to read a SAS data set in a DATA step?	
2. What statement is used to read a sho data set in a bank step:	
a. DATA statement	
b. WHERE statement	
b. Which statement	

§sas

- 3. To process an Excel file with the DATA step, you must first create a copy of the data as a SAS table.
- a. True
- b. False

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**S**sas

4. What is the name of the output data set in the program below?

```
data work.us;
    set orion.sales;
    where Country='US';
run;
```

- a. work.us
- b. orion.sales
- c. Country
- d. sales

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5. The data set **orion.sales** contains nine columns. Given this DATA step, how many columns does **work.comp** contain?

```
data work.comp;
    set orion.sales;
    keep employee_id gender job_title salary;
run;
```

- a. four
- b. nine
- c. five

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**S**sas

6. Given the assignment statement below, what is the value of **AvgExp** for the observation that is shown?

- a. 6
- b. 8
- c. . (missing value)
- d. The statement generates a syntax error.

 Exp1
 Exp2
 Exp3
 Exp4

 10
 .
 5
 9

- 7. Which of the following SAS functions returns a number from 1 to 12?
- a. YEAR(SAS-date-value)
- b. MONTH(SAS-date-value)
- c. WEEKDAY(SAS-date-value)
- d. none of the above

**S**sas

8. In the program below, what is the value of Credit if Country is 'au'?

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```
data work.bonus;
    set orion.sales;
    if Country='US' then Credit=300;
    else if Country='AU' then Credit=500;
    else Credit=0;
run;
```

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- a. 300
- b. 500
- c. 0
- d. missing

9. What is the length of the Car\_Type column created in this program?

```
data car_type;
    set sashelp.cars;
    if msrp>80000 then car_type="luxury";
    else car_type="regular";
    length car_type $ 8;
run;
```

- a. 6
- b. 7
- c. 8

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**S**sas

- 10. Use a DO group in a DATA step when you want to execute multiple statements for a true IF-THEN expression.
- a. True
- b. False

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#### Lesson 5 - Analyzing and Reporting on Data

- 1. If you run this program, which title or titles appear in the final PROC PRINT results?
- a. The Top Line
- b. The Top Line
  The Next Line
- c. The Top Line
  The Second Line
- d. The Top Line
  The First Line
  The Next Line

```
title1 'The First Line';
title2 'The Second Line';
proc print data=sales;
run;
title2 'The Next Line';
proc print data=sales;
run;
title 'The Top Line';
proc print data=sales;
run;
```

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**S**sas

2. Which statement substitutes the value of the macro variable **Year** in the footnote?

%let Year=2018;

- a. footnote 'year Sales';
- b. footnote '&year Sales';
- C. footnote "%year Sales";
- d. footnote "&year Sales";

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- 3. Which statement is true based on the given program?
- a. The column **BatAvg** will have a permanent label in the **sashelp.baseball** table.
- b. The label for **BatAvg** will appear in the PRINT report.
- c. The label for **BatAvg** will appear in the MEANS report.
- d. The label for **BatAvg** will appear in both reports.

```
data baseball2;
    set sashelp.baseball;
    BatAvg=CrHits/CrAtBat;
    label BatAvg="Batting Average";
run;

proc print data=baseball2;
    var Name Team BatAvg;
run;

proc means data=baseball2;
    var BatAvg;
    class Team;
run;
```

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**S**sas

- 4. Which statement is true regarding a BY statement in a reporting procedure such as PROC PRINT?
- a. The BY statement is responsible for sorting the table.
- b. Only one column can be specified in the BY statement.
- c. The BY statement groups the report by the specified columns.
- d. The BY statement must be the first statement after the PROC statement.

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- 5. Which statement is false concerning the FREQ procedure?
- a. The NOPROCTITLE option can be placed in the PROC FREQ statement to remove the procedure title of **The FREQ Procedure**.
- b. The ORDER=FREQ option can be placed in the PROC FREQ statement to display the column values in descending frequency count order.
- c. The PLOTS= option can be placed in the TABLES statement after the forward slash to create bar charts based on counts or percentages.
- d. The OUT= option can be placed in the TABLES statement after the forward slash to create a table containing counts and percentages.

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**S**sas

6. Which PROC FREQ step creates the results shown here?

a. proc freq data=sashelp.shoes; tables Region nocum; run;

b. proc freq data=sashelp.shoes levels;
 tables Region / nocum;
run;

c. proc freq data=sashelp.shoes nlevels;
 tables Region / nocum;
run;

d. proc freq data=sashelp.shoes / levels; tables Region nocum; run;

		Number of Vari Levels			
	Variable	Variable			
	Region		10		
Region			Frequ	ency	Percent
Africa				56	14.18
Asia			14	3.54	
Canada				37	9.37
Central An	nerica/Caribbe	an		32	8.10
Eastern E	urope			31	7.85
Middle Eas	st			24	6.08
Pacific				45	11.39
South Am	erica			54	13.67
United Sta	ites			40	10.13
Western E	urope			62	15.70

7. Which report is created from the following PROC FREQ step?

proc freq data=sashelp.cars;
 where Cylinders in (4,6) and Type in ('Sedan','SUV');
 tables Type\*Cylinders / nocol norow crosslist;
run;

	Frequency	Table o	of Type	by Cyli	inders
a.	Percent		(	Cylinder	s
ч.		Type	4	6	Total
		SUV	7	30	37
			2.77	11.86	14.62
	L	Sadan	.06		, worker

b. Type Cylinders Frequency Percent SuV 4 7 2.77 7 2.77 8UV 6 30 11.86 37 14.62

	Table of Type by Cylinders				
Type	Cylinders	Frequency	Percent		
suv	4	7	2.77		
	6	30	11.86		
	Total	37	14.62		
~~~~					

	Frequency	Percent		Column
				1 CI CCIII
SUV 4	7	2.77	18.92	6.80
6	30	11.86	81.08	20.00
Total	37	14.62	100.00	
			~~~~	~~~

**S**sas

- 8. Which statement is true concerning the MEANS procedure?
- a. The VAR statement is required and identifies the analysis columns.
- b. The WAYS statement specifies the number of ways to make unique combinations of class columns.
- c. The MAXDEC= option is used in the VAR statement to specify the number of decimal places for the statistics.
- d. The \_COUNT\_ and \_FREQ\_ columns are automatically included in the output summary table that is produced by the OUT= option of the OUTPUT statement.

**S**sas

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- 9. The input table must be pre-sorted by the columns listed in the CLASS statement of a PROC MEANS step.
- a. True

b. False

proc means data=sashelp.heart;
 var Cholesterol;
 class Weight\_Status Sex;
run;

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**S**sas

- 10. Which statement from PROC MEANS contains valid syntax for creating a summary output table?
- a. out=work.summary mean;
- b. out work.summary mean (Weight) = TotW;
- c. output out work.summary Weight=TotW;
- d. output out=work.summary mean (Weight) =TotW;

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#### Lesson 6 - Exporting Results

- 1. Which statement is false concerning the options for the PROC EXPORT statement?
- a. The DATA= option identifies the input SAS table.
- b. The REPLACE option specifies to overwrite an existing file.
- c. The DBMS= option specifies the database identifier for the type of file being created.
- d. The OUT= option specifies the path and file name of the external data file being created.

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**S**sas

- 2. Which PROC EXPORT step contains valid syntax?
- a. proc export outfile="c:\temp\cars.txt" tab data=sashelp.cars replace; run;
- proc export data=sashelp.class; dbms=csv;
  outfile="c:\temp\cars.csv"; run;
- d. proc export dbms=tab data=sashelp.cars replace=yes outfile="c:\temp\cars.txt"; run;

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3. What does the following program create?

```
libname sales xlsx 'c:\mydata\midyear.xlsx';
data sales.q1_2018;
    set sasdata.qtr1_2018;
run;
data sales.q2_2018;
    set sasdata.qtr2_2018;
run;
```

- a. two SAS tables: sales.q1 2018 and sales.q2 2018
- b. two Excel workbooks: sales.q1\_2018 and sales.q2\_2018
- c. two worksheets in the Excel workbook: midyear: q1\_2018 and q2\_2018
- d. two worksheets in the Excel workbook: sales: q1\_2018 and q2\_2018

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**S**sas

4. Which statement disassociates the sales libref?

```
libname sales xlsx 'c:\mydata\midyear.xlsx';
```

- a. libname sales end;
- b. libname sales clear;
- c. libname sales close;
- d. libname sales disassociate;

**S**sas

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5. What type of output file does this program create?

```
libname mylib xlsx "s:/workshop/output/test.xlsx";
data class_list;
    set sashelp.class;
run;
```

- a. SAS table
- b. delimited file
- c. Microsoft Excel XLS file
- d. Microsoft Excel XLSX file

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**S**sas

6. Which of these programs creates a Microsoft Excel file?

```
ods excel file="s:/workshop/output/class.xlsx";
proc print data=sashelp.class;
run;
ods excel close;
```

- b. libname mylib xlsx "s:/workshop/output/class.xlsx"; data mylib.class\_list; set sashelp.class; run;
- c. both
- d. neither

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8. What statement needs to be added to the end of this program?

```
ods pdf file='c:\temp\myfile.pdf';
proc print data=sashelp.class;
run;
```

- a. ods clear;
- b. ods close;
- c. ods pdf clear;
- d. ods pdf close;

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- 9. Which statement is false concerning the options for the ODS statement?
- a. The STYLE= option names the desired font.
- b. The FILE= option specifies the output file to create.
- c. The STRARTPAGE= controls the behavior of page breaks.
- d. The PDFTOC= option controls the level of the expansion of the table of contents in PDF documents.

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**S**sas

- 10. Which statement contains valid syntax for specifying a worksheet name?
- a. ods excel sheet\_name='Males';
- b. ods excel (sheet name='Males');
- C. ods excel option(sheet name='Males');
- d. ods excel options(sheet name='Males');

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### Lesson 7 - Using SQL in SAS

- 1. What is the correct order of the following four clauses?
- from ...
  select ...
  where ...
  order by ...
- order by ...
  from ...
  select ...
  where ...
- c. select ... where ... order by ... from ...
- select ...
  from ...
  where ...
  order by ...

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**S**sas

- 2. Which of the following is false regarding the SQL procedure?
- a. Column names are separated with commas.
- b. The procedure ends with a QUIT statement.
- c. Formats can be specified in the FROM clause.
- d. The SELECT and FROM clauses are required in the SELECT statement.

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- 3. Which syntax is valid for creating a computed column in the SELECT clause?
- a. Ratio = Height/Weight
- b. Ratio as Height/Weight
- C. Height/Weight = Ratio
- d. Height/Weight as Ratio

**S**sas

4. The SELECT statement creates a report. Which clause can be added before the SELECT clause to create a table?

133

135

- a. create work.new =
- b. create work.new table
- c. create table work.new as
- d. create table=work.new as

5. Which SELECT statement produces the given output?

Name	Height
Thomas	57.5
Joyce	51.3

- a. select Name Height
  from sashelp.class
  where age=12
  order by Height;
- b. select Name, Height from sashelp.class where age=12 order by Height desc;
- c. select Name Height
  from sashelp.class
  where age=12
  order by desc Height;
- d. select Name, Height from sashelp.class where age=12 order by desc Height;

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**S**sas

- 6. Which SQL statement can delete tables?
- a. DROP
- b. VOID
- c. DELETE
- d. SELECT

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7. If an inner join is performed on the following tables based on the ID and IDNO columns, how many rows will be in the PROC SQL report?



13	IDNO	Salary
	111	75000
	222	83000
	333	82000

- a. one
- b. two
- c. three
- d. four

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**S**sas

- 8. Which statement has the correct syntax for performing an inner join?
- select ID, Name, Salary
  from one join two
  on ID=IDNO;
- b. select ID, Name, Salary from one join two where ID=IDNO;
- c. select ID, Name, Salary
   from one inner join two
   on ID=IDNO;
- d. select ID, Name, Salary from one inner join two where ID=IDNO;

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- 9. Which ON clause has valid qualifying syntax?
- a. from empsau inner join phonec on e.empid=p.empid;
- b. from empsau inner join phonec
   on left.empid=right.empid;
- c. from empsau inner join phonec on first.empid=second.empid;
- d. from empsau inner join phonec on empsau.empid=phonec.empid;

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**S**sas

- 10. Which FROM clause is properly creating aliases?
- a. from empsau=e inner join phonec=p
- b. from empsau(e) inner join phonec(p)
- C. from empsau as e inner join phonec as p
- d. from empsau of e inner join phonec of p

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# 1.2 Solutions

#### Lesson 1

1. How many steps does this program contain? a. one data national; set sashelp.baseball; b. two BatAvg=nHits/nAtBat; c.) four run; d. eight proc contents data=national; run; proc print data=national; run; proc means data=national; var BatAvg; run; **S**sas

RUN, QUIT, DATA, and PROC statements function as step boundaries, which determine when SAS statements take effect and indicate the end of the current step or the beginning of a new step.

2. Running a SAS program can create which of the following?
a. log
b. output data
c. results
d. all of the above

**S**sas

A SAS program will always create a log. A program can create output data and results as well, depending on steps included.

3. Which of the following is a SAS syntax requirement?
a. Begin each statement in column one.
b. Put only one statement on each line.
c. Separate each step with a line space.
d. End each statement with a semicolon.

All SAS statements must end with a semicolon, but they are free-format. You can begin or end them anywhere, separate steps with line spaces, and optionally end steps with a RUN statement.

This program contains seven statements (seven semi-colons): 1. comment, 2. TITLE, 3. FOOTNOTE, 4. PROC, 5. WHERE (two lines), 6. VAR (two lines), and 7. RUN.

- 5. Which of the following steps is typically used to generate reports and graphs?
- a. DATA
- b.) PROC
- c. REPORT
- d. RUN

<sup>12</sup> Sas

PROC steps are typically used to process SAS data sets (that is, generate reports, graphs, and statistics).

6. Does this comment contain syntax errors?

```
/*
Report created for budget
presentation; revised October 15.
   */
proc print data=work.newloan;
run;
```

- (a.) No. The comment is correctly specified.
- b. Yes. Every comment line must end with a semicolon.
- c. Yes. The comment is on more than one line.
- d. Yes. There is a semicolon in the middle of the comment.

14 SSAS

A block comment can contain semicolons and unbalanced quotation marks, can appear anywhere, and doesn't need a semicolon at the end.

7. What result would you expect from submitting this step?

proc print data=work.newsalesemps
run;

- a. a report of the work.newsalesemps data set
- (b.) an error message in the log
- c. the creation of a table named work.newsalesemps

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**S**sas

There is a missing semicolon following the data set name. When this step runs, SAS will interpret the word run as an option in the PROC PRINT statement (because of the missing semicolon). As a result, the PROC PRINT step will not execute and an error message will be displayed in the log.

8. What happens if you submit the following program?

porc print data=work.newsalesemps;
run;

- a. SAS does not execute the step.
- b.) SAS assumes that PROC is misspelled and executes the step.

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**S**sas

The log will indicate that SAS assumed that the keyword PROC was misspelled, corrected it temporarily, and executed the PROC step.

9. This program contains a syntax error because **National** is in different cases.

```
data national;
    set sashelp.baseball;
    BatAvg=nHits/nAtBat;
run;

proc means data=NATIONAL;
    var BatAvg;
run;
```

- a. True
- (b.) False

20

**S**sas

Case does not matter in unquoted values, so in this case, the data set name can be in specified in any case.

- 10. Which of the following is not a SAS programming interface?
- a. SAS Enterprise Guide
- (b.) SAS Manager
- c. SAS Studio
- d. SAS windowing environment

**S**sas

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The programming interfaces include SAS Enterprise Guide (client application), SAS Studio (webbased), and SAS windowing environment. There is not an interface/product called SAS Manager.

## Lesson 2

 In this PROC CONTENTS output, what is the default length of the Birth\_Date column?

a. 4 bytes

(b.) 8 bytes

c. 32,767 bytes

d. It does not have a default length.

#	Variable	Туре
4	Birth_Date	Num
3	Customer_Address	Char
1	Customer_ID	Num
2	Customer_Name	Char

25

**S**sas

**Birth\_Date** is a numeric column, and all numeric columns in SAS are 8 bytes by default.

2. Which LIBNAME statement has the correct syntax?

a.) libname reports "filepath/workshop";

b. libname orion filepath/workshop;

c. libname 3456a "filepath/workshop";

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**S**sas

The libref must start with a letter or an underscore and contain eight characters maximum. The path must also be in quotation marks.

- 3. Which of the following tables is available at the beginning of a new SAS session?
- a. sales
- b. work.newsalesemps
- (c.) sashelp.class

<sup>29</sup> Sas

The **Sashelp** library contains sample and resource tables provided by SAS. The library is automatically available when SAS starts.

- 4. In this table, what type of column is **Employee\_ID**?
- a. character
- (b.) numeric
- c. temporary
- d. missing

Obs	Employee_ID	Last	Salary
1		Ralston	29250
2	120101	Lu	163040
3	120104	Billington	46230
4	120105	Povey	27110
5	120106	Hornsey	

**S**sas

Missing numeric values are represented with a period, so **Employee\_ID** must be a numeric column.

- 5. Which statement about SAS dates is false?
- a. A SAS date is one of three of SAS column types: numeric, character, and date.
- b. SAS dates represent the number of days from January 1, 1960.
- c. SAS date values can be positive or negative.
- d. SAS date values can be used in calculations.

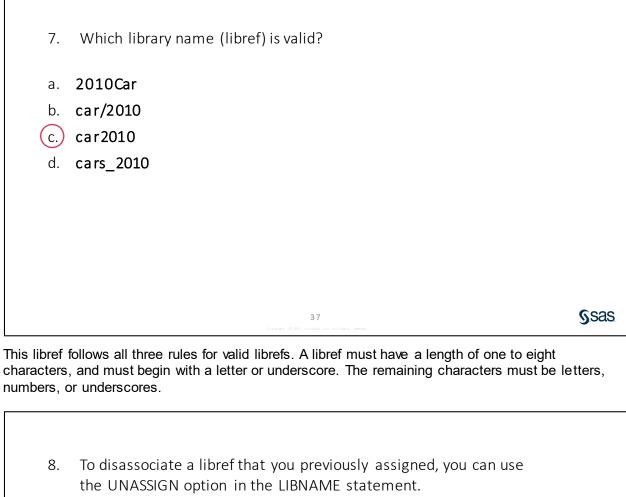
§Sas

SAS columns are either character or numeric. SAS date values are numeric values that represent the number of days before or after January 1, 1960.

- 6. Which LIBNAME statement has the correct syntax for reading a Microsoft Excel file?
- a. libname excel "filepath/myexcelfile";
- b. libname mydata xlsx "filepath/myexcelfile";
- (c.) libname mydata xlsx "filepath/field\_data.xlsx";

**S**sas

After the libref, the XLSX engine is specified. The full path to the Excel file, including the .xlsx file extension, must be provided in quotation marks.



True

b.) False

**S**sas

Use the CLEAR option in the LIBNAME statement to disassociate an assigned libref.

9. What does this code do?

- a. It creates a SAS table named **Bird817** in the **Work** library from the CSV file **bird\_count** and replaces **Bird817** whenever the CSV file is updated.
- (b.) It creates a SAS table named **Bird817** in the **Work** library from the CSV file **bird\_count**.
- c. It uses the CSV engine to directly read the data file bird\_count.csv.

41 SSAS

This PROC IMPORT step creates a SAS table from a CSV file. When the code runs, it replaces the SAS table if it already exists.

- 10. In which portion of a SAS table are the following found?
  - · name of the table
  - · type of the column Salary
  - creation date of the table
- (a.) descriptor portion
- b. data portion

**S**sas

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The descriptor portion of a SAS table includes the table metadata.

### Lesson 3

Which of the following is a valid name for a character format?
 country
 \$ctry
 \$country.
 \_country

Character formats must start with a dollar sign followed by a letter or underscore. A format name does not end with a period. The period is a required delimiter when using a format in a FORMAT statement.

46

2. Which of the following FORMAT statements was used to create this output?



- a. format Order Date date9. Delivery Date mmddyy8.;
- (b.) format Order Date date7. Delivery Date mmddyy8.;
- c. format Order Date ddmmmyy. Delivery Date mmddyy8.;
- d. format Order Date monyy7. Delivery Date mmddyy8.;

**S**sas

**S**sas

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The DATE7. format displays a two-digit day, three-letter month abbreviation, and two-digit year. The MMDDYY8. format displays a two-digit month, day, and year, separated by slashes.

**S**sas

**S**sas

The format name must include a period delimiter in the FORMAT statement. True False

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The period is a required syntax element in a format name within a FORMAT statement.

Which row or rows are selected by the following WHERE statement?

where Job\_Title like "Sales%";

- row 1 a.
- b. row 2
- row 3 C.
- d.) rows 1 and 2
- all rows

Obs Last\_Name First\_Name Country Job\_Title 1 Wu Christine ΑU Sales Rep I 2 Stone ΑU Kimiko Sales Manager 3 Hoffman Fred ΑU Insurance Sales

This WHERE statement returns rows that contain Sales with any number of additional characters after "Sales" because of the position of the percent sign.

5. Which statement about this PROC SORT step is true?

- a. The sorted table overwrites the input table.
- b. The rows are sorted by **Salary** in descending order, and then by **Manager ID** in descending order.
- (c.) A semicolon should not appear after the input table name.
- d. The sorted table contains only the columns specified in the BY statement.

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**S**sas

This PROC SORT step has a syntax error: a semicolon in the middle of the PROC SORT statement. If you correct this syntax error, this step sorts **orion.staff** by **Salary** in descending order and by **Manager\_ID** in ascending order. The step then creates the temporary data set **staff** that contains the sorted rows and all columns.

- 6. Which of the following statements selects from a table only those rows where the value of the **Style** column is *RANCH*, *SPLIT*, or *TWOSTORY*?
- a. where Style='RANCH' or 'SPLIT' or 'TWOSTORY';
- b. where Style in 'RANCH' or 'SPLIT' or 'TWOSTORY';
- c. where Style in (RANCH, SPLIT, TWOSTORY);
- d. where Style in ('RANCH', 'SPLIT', 'TWOSTORY');

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In the WHERE statement, the IN operator enables you to select rows based on several values. You specify values in parentheses and separate them with spaces or commas. Character values must be enclosed in quotation marks and must be in the same case as in the data set.

**S**sas

7. Which of the following statements selects rows in which Amount is less than or equal to \$5,000 or Rate equals 0.095?
a. where amount <= 5000 or rate=0.095;</li>
b. where amount le 5000 or rate=0.095;
c. where amount <= 5000 or rate eq 0.095;</li>
d. all of the above

All of the statements shown here select rows in which **Amount** is less than or equal to \$5000 or **Rate** equals 0.095.

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- 8. Which statement creates the macro variable **flower** and assigns the value *Plumeria*?
- a. %let flower=Plumeria;
  b. %let flower="Plumeria";
  c. %let &flower=Plumeria;
  d. %let &flower="Plumeria";

SSAS S

In the %LET statement, the name of the macro variable is followed by an equal sign and the unquoted value. The ampersand is added when you use the macro variable.

9.	Which statement in a PROC MEANS step enables you to specify the numeric columns to analyze?
a. b. c. d.	TABLES VARS VAR KEEP=
	62

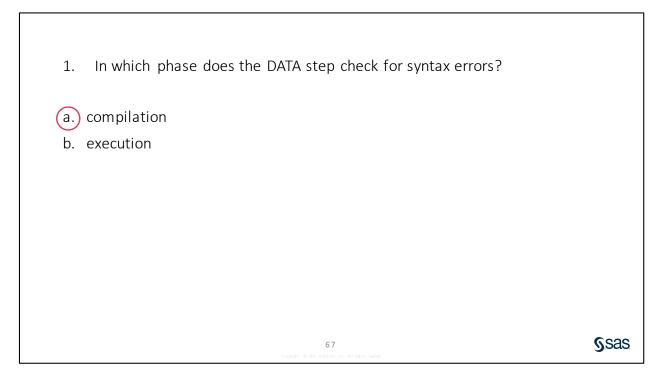
You use the VAR statement to specify the numeric columns to analyze in PROC MEANS. If you don't specify the VAR statement, all numeric columns are analyzed.

- 10. If you have a table that includes flower sales to all your retail outlets. You want to see the distinct values of **Flower\_Type** with a count and percentage for each. Which procedure would you use?
- a. PRINT
- b. MEANS
- c. UNIVARIATE
- d.) FREQ

Sas.

PROC FREQ output includes the distinct values for the column and a frequency count, percent, and cumulative frequency and percent.

## Lesson 4

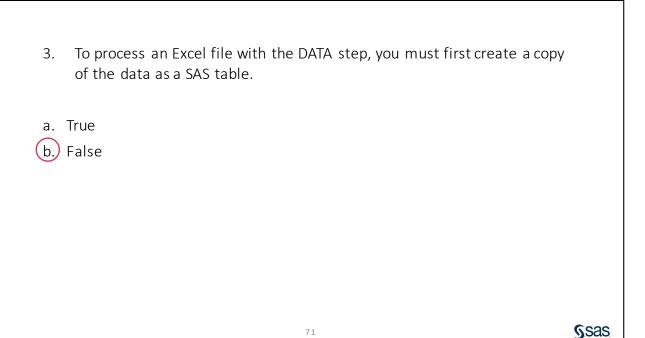


Checking for syntax errors is the first step in the compilation phase.

- 2. What statement is used to read a SAS data set in a DATA step?
- a. DATA statement
- b. WHERE statement
- (c.) SET statement
- d. assignment statement

69 Sas

The SET statement indicates the table that will be read. The DATA statement indicates the table that will be created or updated.



You can use the XLSX LIBNAME engine to read an Excel worksheet directly and process the data with the DATA step.

4. What is the name of the output data set in the program below?

```
data work.us;
    set orion.sales;
    where Country='US';
run;
```

- (a.) work.us
- b. orion.sales
- c. Country
- d. sales

<sup>73</sup> Sas

The output table is listed in the DATA statement.

5. The data set **orion.sales** contains nine columns. Given this DATA step, how many columns does **work.comp** contain?

```
data work.comp;
    set orion.sales;
    keep employee_id gender job_title salary;
run;
```

- (a.) four
- b. nine
- c. five

75 SSAS.

Only the four columns listed in the KEEP statement are written to the work.comp table.

6. Given the assignment statement below, what is the value of **AvgExp** for the observation that is shown?

- a. 6
- (b.) 8



- c. . (missing value)
- d. The statement generates a syntax error.

77 Sas

The MEAN function ignores missing values, so the calculation is (10+5+9)/3=8.

- 7. Which of the following SAS functions returns a number from 1 to 12?
- a. YEAR(SAS-date-value)
- (b.) MONTH(SAS-date-value)
- c. WEEKDAY(SAS-date-value)
- d. none of the above

79 Sas

The MONTH function returns the month number (1-12) extracted from a SAS date value.

8. In the program below, what is the value of Credit if Country is 'au'?

```
data work.bonus;
    set orion.sales;
    if Country='US' then Credit=300;
    else if Country='AU' then Credit=500;
    else Credit=0;
run;
```

- a. 300
- b. 500
- (c.) 0
- d. missing

**S**sas

The character conditions are case sensitive. The first two IF conditions are false. Therefore, the final ELSE statement assigns **Credit** a value of zero.

**S**sas

9. What is the length of the Car\_Type column created in this program?

```
data car_type;
    set sashelp.cars;
    if msrp>80000 then car_type="luxury";
    else car_type="regular";
    length car_type $ 8;
run;
```

- (a.) 6
- b. 7
- c. 8

When the DATA step is compiled, the first mention of **Car\_Type** determines the column name, type, and length. The length is determined by the value in the assignment statement. The value *luxury* has six characters, so the length is 6.

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- 10. Use a DO group in a DATA step when you want to execute multiple statements for a true IF-THEN expression.
- (a.) True
- b. False

§sas

To execute more than one statement if a condition is true, you must use IF-THEN/DO groups.

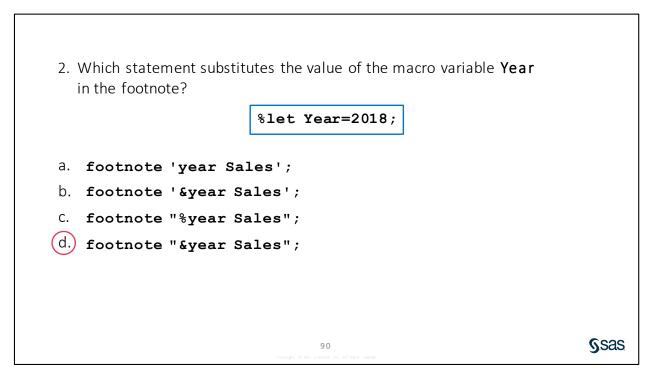
## Lesson 5

1. If you run this program, which title or titles appear in the final PROC PRINT results? title1 'The First Line'; title2 'The Second Line'; a.) The Top Line proc print data=sales; b. The Top Line run; The Next Line title2 'The Next Line'; proc print data=sales; c. The Top Line run; The Second Line title 'The Top Line'; d. The Top Line proc print data=sales; The First Line run; The Next Line

TITLE is the same as TITLE1. The TITLE statement for the last PROC PRINT step cancels out the higher TITLEn statements.

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**S**sas



To reference a macro variable, use the & followed by the name of the macro variable, e.g. &YEAR. The macro variable must be in double quotes on the FOOTNOTE statement in order for the value to be substituted. If single quotes are used, the value will not be substituted.

- 3. Which statement is true based on the given program?
- a. The column BatAvg will have a permanent label in the **sashelp.baseball** table.
- b. The label for BatAvg will appear in the PRINT report.
- c.) The label for BatAvg will appear in the MEANS report.
- d. The label for BatAvg will appear in both reports.

```
data baseball2;
    set sashelp.baseball;
    BatAvg=CrHits/CrAtBat;
    label BatAvg="Batting Average";
proc print data=baseball2;
    var Name Team BatAvg;
run;
proc means data=baseball2;
    var BatAvg;
    class Team;
run;
```

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**S**sas

The label will appear in the PROC MEANS report. The label will not appear in the PROC PRINT report because the LABEL option is missing on the PROC PRINT statement. The output table WORK.BASEBALL2 (not the input table SASHELP.BASEBALL) contains a permanent label for BatAvg.

- 4. Which statement is true regarding a BY statement in a reporting procedure such as PROC PRINT?
- a. The BY statement is responsible for sorting the table.
- b. Only one column can be specified in the BY statement.
- (c.) The BY statement groups the report by the specified columns.
- d. The BY statement must be the first statement after the PROC statement.

The BY statement in a reporting procedure is responsible for grouping the report by the specified columns. One or multiple columns can be on the BY statement. The BY statement can be placed in any order within a PROC step. . The BY statement in PROC SORT is responsible for sorting the table.

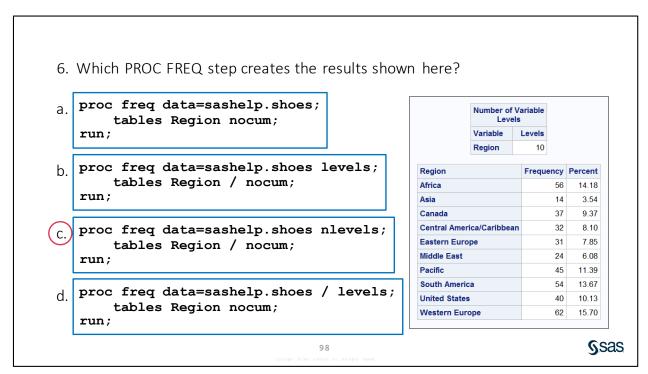
- 5. Which statement is false concerning the FREQ procedure?
- (a.) The NOPROCTITLE option can be placed in the PROC FREQ statement to remove the procedure title of **The FREQ Procedure**.
- b. The ORDER=FREQ option can be placed in the PROC FREQ statement to display the column values in descending frequency count order.
- c. The PLOTS= option can be placed in the TABLES statement after the forward slash to create bar charts based on counts or percentages.
- d. The OUT= option can be placed in the TABLES statement after the forward slash to create a table containing counts and percentages.

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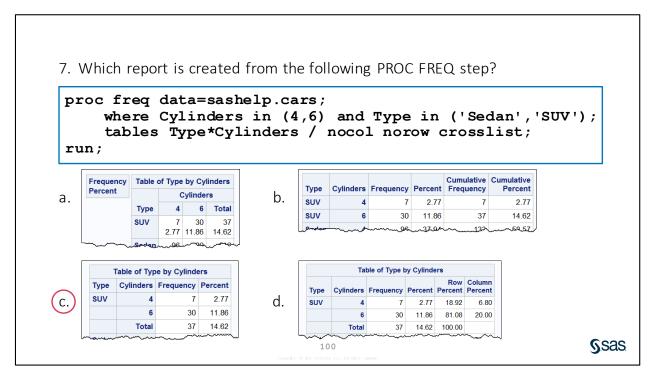
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**S**sas

The NOPROCTITLE option goes in a global ODS statement to remove the procedure title. ods noproctitle;



The NLEVELS option in the PROC MEANS statement creates a table displaying the number of levels for all TABLES columns. The NOCUM option in the TABLES statement (goes after the forward slash) suppresses the display of cumulative frequencies and cumulative percentages.



NOCOL removes the Column Percent, NOROW removes the Row Percent, and CROSSLIST displays statistic values in columns instead of stacked in a cell.

- a. tables Type\*Cylinders / nocol norow;
- b. tables Type\*Cylinders / nocol norow list;
- c. tables Type\*Cylinders / nocol norow crosslist;
- d. tables Type\*Cylinders / crosslsit;

- 8. Which statement is true concerning the MEANS procedure?
- a. The VAR statement is required and identifies the analysis columns.
- (b.) The WAYS statement specifies the number of ways to make unique combinations of class columns.
- c. The MAXDEC= option is used in the VAR statement to specify the number of decimal places for the statistics.
- d. The \_COUNT\_ and \_FREQ\_ columns are automatically included in the output summary table that is produced by the OUT= option of the OUTPUT statement.

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**S**sas

The WAYS statement specifies the number of ways to make unique combinations of class variables. The VAR statement is not required. The MAXDEC= option goes on the PROC MEANS statement. \_FREQ\_ and \_TYPE\_ are automatically included in the output summary table.

- 9. The input table must be pre-sorted by the columns listed in the CLASS statement of a PROC MEANS step.
- a. True
- b.) False

proc means data=sashelp.heart;
 var Cholesterol;
 class Weight\_Status Sex;
run;

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**S**sas

The input table does not have to be pre-sorted by the columns on the CLASS statement of the PROC MEANS step. If a BY statement was used instead, the columns would need to be sorted.

- 10. Which statement from PROC MEANS contains valid syntax for creating a summary output table?
- a. out=work.summary mean;
- b. out work.summary mean (Weight) = TotW;
- C. output out work.summary Weight=TotW;
- d.) output out=work.summary mean (Weight)=TotW;

sas S

The OUTPUT statement writes statistics to an output table. The OUT= option names the output table. statistic(input-variable)=output-variable can be specified on the OUTPUT statement.

### Lesson 6

- 1. Which statement is false concerning the options for the PROC EXPORT statement?
- a. The DATA= option identifies the input SAS table.
- b. The REPLACE option specifies to overwrite an existing file.
- c. The DBMS= option specifies the database identifier for the type of file being created.
- d. The OUT= option specifies the path and file name of the external data file being created.

**S**sas

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The OUTFILE= (not OUT=) option specifies the path and filename of the external data file being created.

```
2. Which PROC EXPORT step contains valid syntax?

a. proc export outfile="c:\temp\cars.txt" tab data=sashelp.cars replace; run;

b. proc export data=sashelp.cars dbms=csv outfile="c:\temp\cars.csv"; run;

c. proc export data=sashelp.class; dbms=csv; outfile="c:\temp\cars.csv"; run;

d. proc export dbms=tab data=sashelp.cars replace=yes outfile="c:\temp\cars.txt"; run;
```

DATA=, DBMS=, and OUTFILE= are valid PROC EXPORT options. For a, DBMS= is missing in front of TAB. For c, there shouldn't be semi-colons after each option. For d, =YES is not valid after REPLACE.

3. What does the following program create?

```
libname sales xlsx 'c:\mydata\midyear.xlsx';
data sales.q1_2018;
    set sasdata.qtr1_2018;
run;
data sales.q2_2018;
    set sasdata.qtr2_2018;
run;
```

- a. two SAS tables: sales.q1\_2018 and sales.q2\_2018
- b. two Excel workbooks: sales.q1\_2018 and sales.q2\_2018
- (c.) two worksheets in the Excel workbook: **midyear**: **q1\_2018** and **q2\_2018**
- d. two worksheets in the Excel workbook: sales: q1\_2018 and q2\_2018

**S**sas

The LIBNAME specifies the Excel workbook MIDYEAR. The DATA statements reference to create the worksheets Q1\_2018 and Q2\_2019 within the workbook MIDYEAR. The library reference of SALES is what links the LIBNAME and DATA statements.

```
4. Which statement disassociates the sales libref?

libname sales xlsx 'c:\mydata\midyear.xlsx';

a. libname sales end;
b. libname sales clear;
c. libname sales close;
d. libname sales disassociate;

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```

The CLEAR option on the LIBNAME statement disassociates one or more currently assigned librefs.

```
5. What type of output file does this program create?

libname mylib xlsx "s:/workshop/output/test.xlsx";
data class_list;
set sashelp.class;
run;

a. SAS table
b. delimited file
c. Microsoft Excel XLS file
d. Microsoft Excel XLSX file
```

The DATA statement references CLASS\_LIST. A libref is not specified so WORK is assumed. WORK.CLASS\_LIST is a temporary SAS table.

```
6. Which of these programs creates a Microsoft Excel file?

ods excel file="s:/workshop/output/class.xlsx";
proc print data=sashelp.class;
run;
ods excel close;

b. libname mylib xlsx "s:/workshop/output/class.xlsx";
data mylib.class_list;
set sashelp.class;
run;

c. both
d. neither
```

Both, ODS EXCEL and the LIBNAME with XLSX engine create Excel workbooks.

```
7. Which of the following is not a valid ODS statement?

a. ods csvall file='c:\temp\myfile.csv';
b. ods pdf file='c:\temp\myfile.pdf';
c. ods powerpoint file='c:\temp\myfile.ppt';
d. ods word file='c:\temp\myfile.doc';

$\square \text{321}$
```

WORD is not a valid destination for the ODS statement. The RTF destination will create a file that can be opened by word processors.

```
ods rtf file='c:\temp\myfile.rtf';
```

8. What statement needs to be added to the end of this program?

```
ods pdf file='c:\temp\myfile.pdf';
proc print data=sashelp.class;
run;
```

- a. ods clear;
- b. ods close;
- c. ods pdf clear;
- d. ods pdf close;

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**S**sas

The CLOSE argument closes the destination and the file that is associated with it.

- 9. Which statement is false concerning the options for the ODS statement?
- (a.) The STYLE= option names the desired font.
- b. The FILE= option specifies the output file to create.
- c. The STRARTPAGE= controls the behavior of page breaks.
- d. The PDFTOC= option controls the level of the expansion of the table of contents in PDF documents.

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**S**sas

The STYLE= option names the style to use in the output file. The style controls visual aspects such as colors and fonts.

```
10. Which statement contains valid syntax for specifying a worksheet name?

a. ods excel sheet_name='Males';
b. ods excel (sheet_name='Males');
c. ods excel option(sheet_name='Males');
d. ods excel options(sheet_name='Males');
```

SHEET\_NAME= is a sub-option that goes in a set of parentheses for the OPTIONS option.

## Lesson 7

```
1. What is the correct order of the following four clauses?
a.
    from ...
                                order by ...
      select ...
                                 from ...
       where ...
                                  select ...
                                   where ...
        order by ...
                                select ...
    select ...
C.
                            (d.
     where ...
                                 from ...
                                  where ...
       order by ...
        from ...
                                    order by ...
                                                                  Ssas
                                130
```

First is SELECT, second is FROM, third is WHERE, and fourth is ORDER BY.

- 2. Which of the following is false regarding the SQL procedure?
- a. Column names are separated with commas.
- b. The procedure ends with a QUIT statement.
- c.) Formats can be specified in the FROM clause.
- d. The SELECT and FROM clauses are required in the SELECT statement.

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**S**sas

Formats are specified in the SELECT clause after the column name.

- 3. Which syntax is valid for creating a computed column in the SELECT clause?
- a. Ratio = Height/Weight
- b. Ratio as Height/Weight
- C. Height/Weight = Ratio
- d.) Height/Weight as Ratio

**s**as

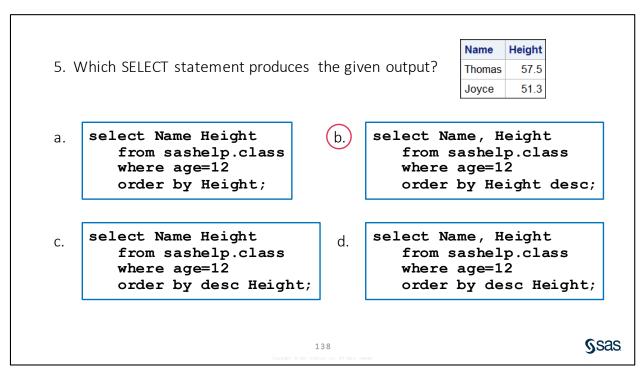
Computed columns are created by specifying the expression, the keyword AS, and the column name, in that order.

4. The SELECT statement creates a report. Which clause can be added before the SELECT clause to create a table?
a. create work.new =
b. create work.new table
c. create table work.new as
d. create table=work.new as

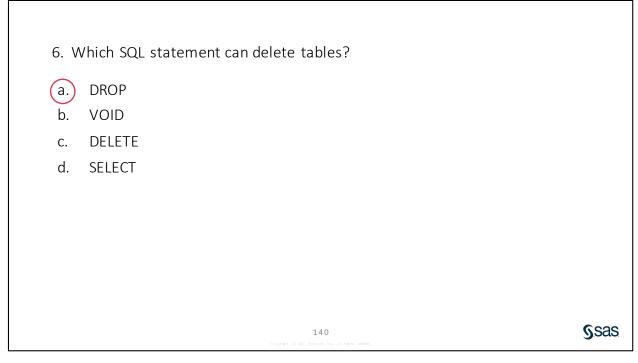
**S**sas

To create a table, add the CREATE TABLE NEW-TABLE-NAME AS clause before the SELECT clause.

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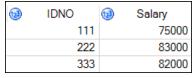
On the SELECT clause, column names are seperated with commas. On the ORDER BY clause, DESC goes after the column name. ASC is the default sort order.



The DROP TABLE statement deletes tables.

7. If an inner join is performed on the following tables based on the ID and IDNO columns, how many rows will be in the PROC SQL report?





- a. one
- (b.) two
- c. three
- d. four

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An inner join gives matches only. Jack (111) and Mary (222) are the matches in this example.

```
8. Which statement has the correct syntax for performing an inner join?
    select ID, Name, Salary
        from one join two
       on ID=IDNO;
b.
    select ID, Name, Salary
        from one join two
       where ID=IDNO;
    select ID, Name, Salary
        from one inner join two
       on ID=IDNO;
d.
    select ID, Name, Salary
        from one inner join two
       where ID=IDNO;
                                                              Ssas
```

To perform an inner join, specify INNER JOIN between two table names and specify the matching condition in an ON clause (not WHERE clause).

```
data one;
    input Name $ ID;
    datalines;
Jack 111
Mary 333
Jane 555
data two;
    input IDNO Salary;
  datalines;
111 75000
222 83000
333 82000
proc sql;
    select ID, Name, Salary
    from one inner join two
    on ID=IDNO;
quit;
```

```
9. Which ON clause has valid qualifying syntax?

a. from empsau inner join phonec on e.empid=p.empid;

b. from empsau inner join phonec on left.empid=right.empid;

c. from empsau inner join phonec on first.empid=second.empid;

d. from empsau inner join phonec on empsau.empid=phonec.empid;

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```

To qualify a column, put the table name and a period before the column name. Qualifying is needed when a column is in multiple tables. EMPSAU.EMPID refers to the EMPID column in the EMPSAU table.

```
data empsau;
    input First $ Gender $ EmpID;
    datalines;
Togar
            121150
      M
Kylie
        F
            121151
Birin
            121152
        М
data phonec;
    input EmpID Phone $15.;
    datalines;
121150 +61(2)5555-1795
121152 +61 (2) 5555-1667
121154 +61(2)5555-1348
proc sql;
    select First, Gender, empsau. EmpID, Phone
    from empsau inner join phonec
    on empsau.empid=phonec.empid;
quit;
```

- 10. Which FROM clause is properly creating aliases?
- a. from empsau=e inner join phonec=p
- b. from empsau(e) inner join phonec(p)
- C.) from empsau as e inner join phonec as p
- d. from empsau of e inner join phonec of p

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To create an alias on the FROM clause, put the word AS and the alias after the table name. The word AS is optional. The alias can be used when qualifying a column.

```
proc sql;
    select First, Gender, empsau. EmpID, Phone
    from empsau as e inner join as p phonec
    on empsau.empid=phonec.empid;
quit;
```