1. What advantages does a repeated-measures design have over an independent-measures design?

2. How does the error term differ for repeated-versus independent-measures ANOVA?

4. A researcher reports an F-ratio with $df = 3, 36$ for a repeated-measures ANOVA.
   a. How many treatment conditions were evaluated in this experiment?
   b. How many subjects participated in this experiment?

6. A psychologist studies the effect of practice on maze learning for rats. Rats are tested in the maze in one daily session for four days. The psychologist records the number of errors made in each daily session. The data are as follows:

	SESSION			
RAT	1	2	3	4
1	3	1	0	0
2	3	2	2	1
3	6	3	1	2

Is there evidence for a practice effect? use the .05 level of significance.

10. It has been demonstrated that when subjects must memorize a list of words serially (in the order of presentation), words at the beginning and end of the list are remembered better than words in the middle. This observation has been called the *serial-position effect*. The following data represent the number of errors made in recall of the first eight, second eight, and last eight words in the list:

	SERIAL POSITION		
PERSON	FIRST	MIDDLE	LAST
A	1	5	0
B	3	7	2
C	5	6	1
D	3	2	1

a. Compute the mean number of errors for each position, and draw a graph of the data.
b. Is there evidence for a significant effect of serial position? Test at the .05 level of significance. Based on the ANOVA, explain the results of the study.

16. A teacher studies the effectiveness of a reading skills course on comprehension. A sample of $n = 15$ students is studied. The instructor assesses their comprehension with a standardized reading test. The test is administered at the beginning of the course, at midterm, and at the end of the course. The instructor uses analysis of variance to determine whether or not a significant change has occurred in the students' reading performance. The following summary table presents a portion of the ANOVA results. Provide the missing values in the table. (Start with the df values.)

SOURCE	SS	df	MS	
Between treatments	___	___	24	$F = 8$
Within treatments	120	___		
Between subjects	___	___		
Error	___	___	___	
Total	___	___		

19. An educational psychologist is studying student motivation in elementary school. A sample of $n = 5$ students is followed over three years from fourth grade to sixth grade. Each year the students complete a questionnaire measuring their motivation and enthusiasm for school. The psychologist would like to know whether there are significant changes in motivation across the three grade levels. The data from this study are as follows:

STUDENT	FOURTH GRADE	FIFTH GRADE	SIXTH GRADE
A	4	3	1
B	8	6	4
C	5	3	3
D	7	4	2
E	6	4	0

a. Compute the mean motivation score for each grade level.
b. Use an ANOVA to determine whether there are any significant differences in motivation among the three grade levels. Use the .05 level of significance.