For 80 candidates for 3 sales manager positions, applicants are given a subjective Rating by a screening panel. Then, a number of other variables are scored by an HR software program. Below is backward elimination output (with some deletions) for a study of the regressions of Rating vs. these other variables. Use this output for Problems 1-3.

Regression Analysis: Rating versus Leadership, Experience, Technical skills, Communication skills, Adaptability

```
Backward Elimination of Terms

Candidate terms: Leadership, Experience, Technical skills, Communication skills,
Adaptability

              ------Step 1------      ------Step 2------      ------Step 3------
                Coef        P           Coef        P           Coef        P
Constant        3.342                   2.005                   2.842
Adapt           0.00320    0.233        0.00400    0.400
Tech            0.23       0.197        0.000018   0.167        0.000013   0.019
Commu           0.45       0.195        0.000089   0.200        0.000079   0.117
Experience      0.632      0.070        0.660      0.037        0.633      0.041
Leadership      0.00279    0.432

S                       0.814788                0.798869                0.711174
R-sq                    42.81%
R-sq(adj)               31.65%

α to remove = 0.20
```

1. To go from Step 3 to Step 4:

    A. We would remove Commu.
    B. We would remove Tech.
    C. We would remove Experience and Tech.
    D. Cannot remove any predictors.
    E. Cannot be determined based on the given output.

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	------Step 1------		------Step 2------		------Step 3------	
	Coef	P	Coef	P	Coef	P
Constant	3.342		2.005		2.842	
Adapt	0.00320	0.233	0.00400	0.400		
Tech	0.23	0.197	0.000018	0.167	0.000013	0.019
Commu	0.45	0.195	0.000089	0.200	0.000079	0.117
Experience	0.632	0.070	0.660	0.037	0.633	0.041
Leadership	0.00279	0.432				
S		0.814788		0.798869		0.711174
R-sq		42.81%		_____		_____
R-sq(adj)		31.65%		_____		_____

```
α to remove = 0.20
```

2. Which step has the lowest multiple R-squared?
   A. Step 1
   B. Step 2
   C. Step 3

For 80 candidates for 3 sales manager positions, applicants are given a subjective Rating by a screening panel. Then, a number of other variables are scored by an HR software program. Below is backward elimination output (with some deletions) for a study of the regressions of Rating vs. these other variables. Use this output for Problems 1-3.

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```
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              ------Step 1------      ------Step 2------      ------Step 3------
              Coef        P           Coef        P           Coef        P
Constant      3.342                   2.005                   2.842
Adapt         0.00320     0.233       0.00400     0.400
Tech          0.23        0.197       0.000018    0.167       0.000013    0.019
Commu         0.45        0.195       0.000089    0.200       0.000079    0.117
Experience    0.632       0.070       0.660       0.037       0.633       0.041
Leadership    0.00279     0.432

S                         0.814788                0.798869                0.711174
R-sq                      42.81%
R-sq(adj)                 31.65%

α to remove = 0.20
```

3. Which step has the highest adjusted R-squared?
   A. Step 1
   B. Step 2
   C. Step 3

Below is Best Subsets Regression output from Minitab for a dataset recording a dependent variable (Y) and seven independent variables (V1:V7) for a random sample of 100 observations. Use this output for Problems 4-5.

Best Subsets Regression: Y versus V1:V7

```
Response is Y

                R-Sq    R-Sq  Mallows              V V V V V V V
Vars   R-Sq    (adj)  (pred)      Cp       S       1 2 3 4 5 6 7
  1    33.3    32.0    28.7     22.5  19.534       X
  1    15.8    14.0    10.0     40.6  21.954             X
  2    39.9    37.3    33.3     17.8  18.749       X           X
  2    38.2    35.6    30.2     19.5  19.005       X   X
  3    47.6    51.6    37.8     11.8  17.686       X   X   X
  3    46.8    43.3    38.1     12.7  17.831       X           X X
  4    55.4    51.4    44.9      5.9  16.507       X       X   X X
  4    49.1    44.6    37.4     12.3  17.628       X X X   X
  5    58.1    53.5    46.6      5.1  16.179       X X X       X X
  5    56.0    51.0    43.9      7.3  16.582       X       X X X X
  6    58.7    53.4    46.0      6.4  16.241       X   X X X X X
  6    58.3    52.5    44.6      6.8  16.318       X X X       X X
```

4. By the criterion of Best Subsets Regression, the best multiple regression model to predict Y from these predictors has how many predictors:

A. 4
B. 5
C. 6
D. 7
E. None of the above.

Below is Best Subsets Regression output from Minitab for a dataset recording a dependent variable (Y) and seven independent variables (V1:V7) for a random sample of 100 observations. Use this output for Problems 4-5.

Best Subsets Regression: Y versus V1:V7

```
Response is Y
```

Vars	R-Sq	R-Sq (adj)	R-Sq (pred)	Mallows Cp	S	V1	V2	V3	V4	V5	V6	V7
1	33.3	32.0	28.7	22.5	19.534	X						
1	15.8	14.0	10.0	40.6	21.954					X		
2	39.9	37.3	33.3	17.8	18.749	X					X	
2	38.2	35.6	30.2	19.5	19.005	X		X				
3	47.6	51.6	37.8	11.8	17.686	X		X		X		
3	46.8	43.3	38.1	12.7	17.831	X					X	X
4	55.4	51.4	44.9	5.9	16.507	X			X		X	X
4	49.1	44.6	37.4	12.3	17.628	X		X	X		X	
5	58.1	53.5	46.6	5.1	16.179	X		X	X		X	X
5	56.0	51.0	43.9	7.3	16.582	X			X	X	X	X
6	58.7	53.4	46.0	6.4	16.241	X		X	X	X	X	X
6	58.3	52.5	44.6	6.8	16.318	X	X	X	X		X	X

5. If we drop V7 from the model Y vs. V1, V4, V6, and V7, do we have a slightly improvement in the adjusted R-squared?

   A.   Yes.

   B.   No.

   C.   Cannot be determined from the given output.