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<b>Time taken</b>	15 mins
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What is the significance of an absolute cell reference in Excel?

- ☐ a. It is the only formula used to refer to a cell on another spreadsheet
- ☒ b. The cell reference will not change if the formula containing the reference is copied to another location
- ☐ c. The cell will always contain the absolute value of any number that is entered into it
- ☐ d. The cell reference changes if the formula containing the reference is copied to another location



The correct answer is: The cell reference will not change if the formula containing the reference is copied to another location

The sensitivity analysis provides information about which of the following:

- I. The impact of a change to an objective function coefficient.
- II. The impact of a change in a resource level.
- III. The impact of adding simple upper or lower bounds on a decision variable.

- ☐ a. I and III only
- ☐ b. II and III only
- ☐ c. I only.
- ☒ d. I, II and III



The correct answer is: I, II and III

The allowable increase for a constraint is

- ☐ a. how many more units of resource to purchase to maximize profits.
- ☒ b. the amount by which the constraint coefficient can increase without changing the final optimal value.
- ☐ c. the amount by which the resource can increase and the shadow price applies.
- ☐ d. how much of the resource to use to get the optimal solution.



The correct answer is: the amount by which the resource can increase and the shadow price applies.

A change in the right hand side of a constraint changes

- ☐ a. objective function coefficients
- ☐ b. the slope of the objective function
- ☒ c. the feasible region
- ☐ d. other right hand sides



The correct answer is: the feasible region

When a solution is degenerate the reduced costs for the changing cells (variable cells)

- ☐ a. may be set to any value the manager needs.
- ☐ b. is always equal to zero.
- ☐ c. is equal to infinity.
- ☒ d. may not be unique.



The correct answer is: may not be unique.

If the allowable increase for a constraint is 100 and we add 110 units of the resource what happens to the objective function value?

- ☐ a. increase by 100
- ☐ b. increase by 110
- ☐ c. decrease by 100
- ☒ d. increases but by unknown amount



The correct answer is: increases but by unknown amount

The coefficients in an LP model ( $c_j$ ,  $a_{ij}$ ,  $b_j$ ) are representing

- ☐ a. random constants.
- ☒ b. numeric constants.
- ☐ c. numeric variables.
- ☐ d. random variables.



The correct answer is: numeric constants



The correct answer is: infinite constants.

When the allowable increase or allowable decrease for the objective function coefficient of one or more variables is zero it indicates (in the absence of degeneracy) that

- ☐ a. the problem is infeasible.
- ☐ b. there is only one optimal solution.
- ☒ c. alternate optimal solutions exist.
- ☐ d. no optimal solutions can be found.



The correct answer is: alternate optimal solutions exist.

Which of the following statements is false concerning either of the Allowable Increase and Allowable Decrease columns in the Sensitivity Report?

- ☐ a. The values provide a means to recognize when alternate optimal solutions exist.
- ☒ b. The values equate the decision variable profit to the cost of resources expended.
- ☐ c. The values give the range over which an objective function coefficient can change without changing the optimal solution.
- ☐ d. The values give the range over which a shadow price is accurate.



The correct answer is: The values equate the decision variable profit to the cost of resources expended.

When a manager considers the effect of changes to an LP model's coefficients he/she is performing

- ☒ a. sensitivity analysis.
- ☐ b. coefficient analysis.
- ☐ c. qualitative analysis.
- ☐ d. random analysis.



The correct answer is: sensitivity analysis.

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