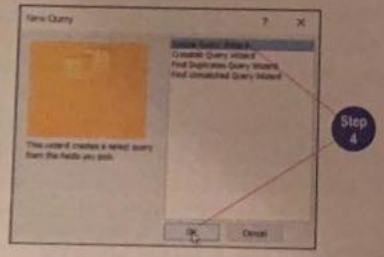
# Activity 3.1 Creating a Query Using the Simple Query Wizard

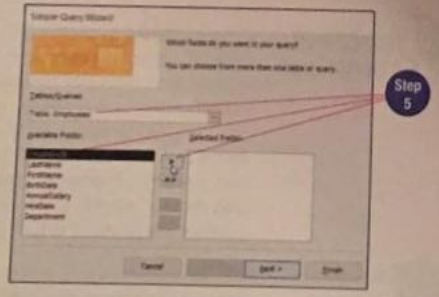
A query is an Access object designed to extract data from one or more tables. Usually a query is created to select records that answer a question. For example, a question such as *Which employees are enrolled in the Pension Plan?* could be answered with a query. The query would be designed to select records for those employees with a *Yes* in the *PensionPlan* field. Query results display in a datasheet that pulls the data from existing tables. A query can be created to serve a variety of purposes, from very simple field selections to complex conditional statements or calculations. In its simplest form, a query may be used to display or print selected fields from two tables. Access includes the Simple Query Wizard to facilitate creating a query.

**wide rises** **What You Will Do** Using the Simple Query Wizard, you will generate a list of each employee's first and last names and benefit selections. This will allow you to print a list by selecting fields from two tables.

1. Open **3-WEEmployees.accdb** and enable the contents, if necessary.
2. Click *Employees* in the Tables group in the Navigation pane and then click the Create tab.
3. Click the Query Wizard button in the Queries group.




4. At the New Query dialog box, with *Simple Query Wizard* already selected in the list box, click OK.
5. At the first Simple Query Wizard dialog box, with *Table: Employees* selected in the *Tables/Queries* option box and *EmployeeID* selected in the *Available Fields* list box, click the One Field button > to move *EmployeeID* to the *Selected Fields* list box.




6. With *LastName* now selected in the *Available Fields* list box, click the One Field button to move *LastName* to the *Selected Fields* list box.
7. Click the One Field button to move *FirstName* to the *Selected Fields* list box.
8. Click the the *Tables/Queries* option box arrow and then click *Table: Benefits* at the drop-down list.

   The list of fields in the *Available Fields* list box changes to display the field names from the Benefits table.

9. Double-click *PensionPlan* in the *Available Fields* list box.

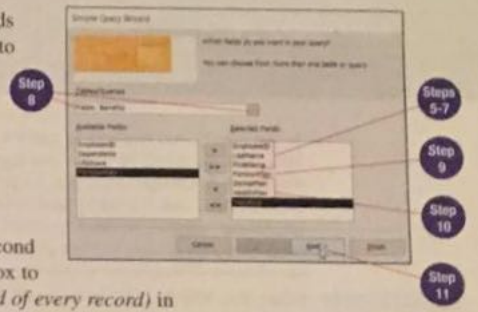
   Double-clicking a field name is another way to move a field to the *Selected Fields* list box.



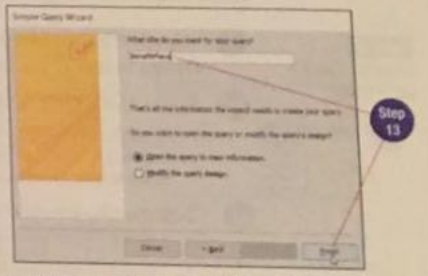
**In Brief**

**Create Query Using Simple Query Wizard**
1. Click Create tab.
2. Click Query Wizard button.
3. Click OK.
4. Choose table(s) and field(s) to include in query.
5. Click Next.
6. Choose *Detail* or *Summary* query.
7. Click Next.
8. Type title for query.
9. Click Finish.

10. Double-click the following fields in the *Available Fields* list box to move them to the *Selected Fields* list box:
    *DentalPlan*
    *HealthPlan*
    *Vacation*

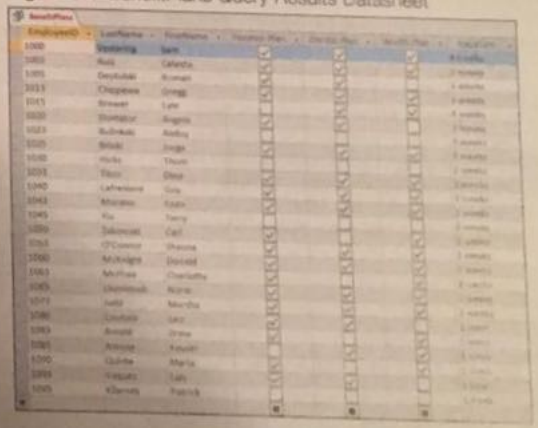



11. Click the Next button.
12. Click the Next button at the second Simple Query Wizard dialog box to accept *Detail (shows every field of every record)* in the *Would you like a detail or summary query?* section.
13. At the third Simple Query Wizard dialog box, select the current text in the *What title do you want for your query?* text box, type BenefitPlans, and then click the Finish button.




    View the query results datasheet shown in Figure 3.1. A query results datasheet can be sorted, edited, or formatted in a manner similar to a table. Data displayed in query results is not stored as a separate entity—the query is simply another interface for viewing and editing data in the associated table(s). Each time a saved query is opened, Access dynamically updates the query results by running the query.
14. Display the query in Print Preview, change to landscape orientation, and then print the query.
15. Close the Print Preview window and then close the BenefitPlans query.

**Figure 3.1** BenefitPlans Query Results Datasheet



**Check Your Work** Compare your work in this activity to the model answer to ensure you have completed this activity correctly.

# Activity 3.2 Creating a Query in Design View Using a Single Table

In Section 2, you learned to work with tables in Design view to define or modify the table structure. Similarly, you can use Design view to create a query for which you define the structure. In Design view, you begin by choosing the table from which you wish to select records. You use the table field list box to select the fields to display in the query results datasheet. When you have finished selecting fields, you instruct Access to display the records by switching to Datasheet view or by clicking the Run button.

**Worldwide Enterprises**

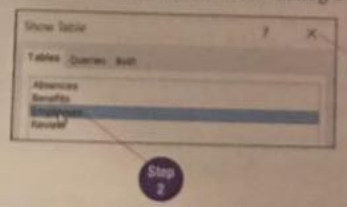
**What You Will Do** Rhonda Trask, human resources manager, has asked for a list of employees with their annual salaries and hire dates. You will produce the list by creating a query to obtain the required fields from the Employees table.

**In Brief**

**Create Query in Design View with Single Table**
1. Click Create tab.
2. Click Query Design button.
3. Double-click table in Show Table dialog box.
4. Close Show Table dialog box.
5. Add field names from table field list box to columns in query design grid.
6. Click Save button.
7. Type query name and click OK.
8. Click Run button.

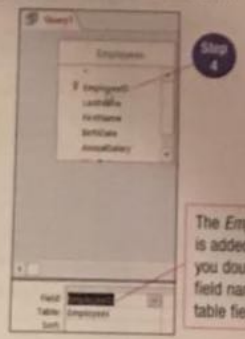
1. With **3-WEEmployees.acedb** open and the Create tab active, click the Query Design button in the Queries group.
2. At the Show Table dialog box with the Tables tab selected, double-click *Employees*.

   A table field list box for the Employees table is added to the query. The first step in building a query in Design view is to add a table field list box for each table from which records will be selected.
3. Click the Close button to close the Show Table dialog box.

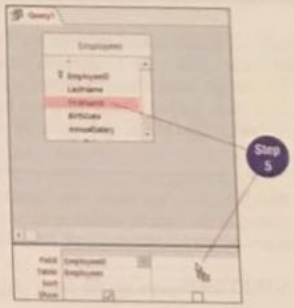



4. Double-click the *EmployeeID* field in the Employees table field list box.

   The blank columns at the bottom represent the columns in the query results datasheet and are referred to as the *query design grid*. You place the field names in the columns in the order in which you want the fields displayed in the query results datasheet. Double-clicking a field name adds the field to the next available column. In Steps 5 and 6, you will practice two other methods of adding fields to the query design grid.



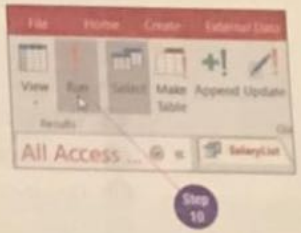

5. Position the mouse pointer on the *FirstName* field in the Employees table field list box, click and hold down the left mouse button, drag to the second field in the *Field* row of the query design grid, and then release the mouse button.




6. Click in the third field in the *Field* row of the query design grid, click the arrow that appears, and then click *LastName* at the drop-down list.


7. Using any of the three methods in Steps 4–6, add the *AnnualSalary* and *HireDate* fields from the Employees table field list box to the query design grid.
8. Click the Save button on the Quick Access Toolbar.
9. At the Save As dialog box, type SalaryList in the *Query Name* text box and then press the Enter key or click OK.
10. Click the Run button in the Results group on the Query Tools Design tab.

    A query stores instructions on how to select data. The Run command instructs Access to carry out the instructions and display the results.




11. Print the query.
12. Close the SalaryList query.

**Check Your Work** Compare your work to the model answer to ensure that you have completed the activity correctly.

## In Addition

### Understanding Action Queries

In the last activity and in this activity, you created select queries that displayed selected fields from tables. Another type of query, called an action query, makes changes to a group of records. Four types of action queries are available in Access: delete, update, append, and make-table. A delete query deletes records. An update query makes global changes to a field. An append query adds a group of records from one table to the end of another table. A make-table query creates a new table from all or part of the data in existing tables.

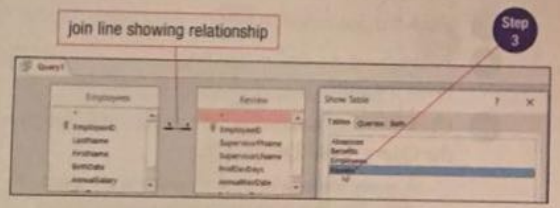
# Activity 3.3 Creating a Query in Design View Using Multiple Tables

Often a query is used to select records from more than one table. In Activity 3.1, you were able to view records from the Employees table and the Benefits table in a query results datasheet. In Design view, multiple tables are added to the query at the Show Table dialog box. Once you have added a table field list box for each table, you can then add the fields to the query design grid in the desired order using any one of the three methods learned in the last activity.

**What You Will Do** Rhonda Trask has asked for a list of employees, along with their hire and review dates. This data is stored in two different tables. You will produce the list by creating a query to obtain the required fields from each table to generate the list.

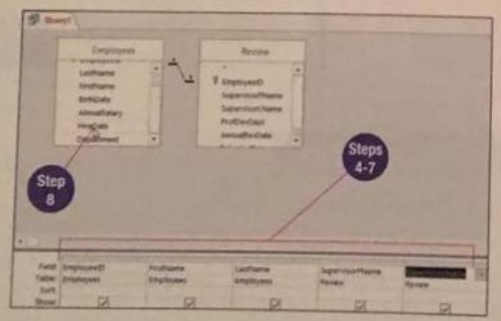
1. With **3-WEEmployees.accdb** open and the Create tab active, click the Query Design button.
2. At the Show Table dialog box with the Tables tab selected, double-click *Employees*.
3. Double-click *Review* and then click the Close button to close the Show Table dialog box.

   A black join line with *1* at each end of the line between the Employees table field list box and the Review table field list box illustrates the one-to-one relationship that has been defined between the two tables.




4. Double-click the *EmployeeID* field in the Employees table field list box.
5. Double-click the *FirstName* field in the Employees table field list box.
6. Double-click the *LastName* field in the Employees table field list box.
7. Double-click the *SupervisorFName* field and then double-click the *SupervisorLName* field in the Review table field list box to add the fields from the second table to the query design grid.
8. Double-click the *HireDate* field in the Employees table field list box.

   You can add fields in any order from either table to the query design grid.



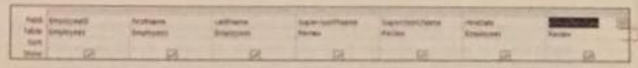



**In Brief**

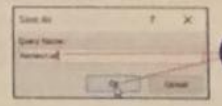
**Create Query in Design View with Multiple Tables**

1. Click Create tab.
2. Click Query Design button.
3. Double-click tables in Show Table dialog box.
4. Close Show Table dialog box.
5. Add field names from table field list boxes to columns in query design grid.
6. Click Save button.
7. Type query name and click OK.
8. Click Run button.

9. Double-click the *AnnualRevDate* field in the Review table field list box.
10. Look at the table names in the *Table* row in the query design grid. The table with which each field is associated is displayed.




11. Click the Save button on the Quick Access Toolbar.
12. At the Save As dialog box, type ReviewList in the *Query Name* text box and then press the Enter key or click OK.




13. Click the Run button in the Results group on the Query Tools Design tab.

    View the query results in Figure 3.2.
14. Display the datasheet in Print Preview, change to landscape orientation, and then print the datasheet.
15. Close the Print Preview window and then close the ReviewList query.

**Figure 3.2** ReviewList Query Results Datasheet

**Check Your Work** Compare your work to the model answer to ensure that you have completed the activity correctly.

## In Addition

### Learning More about Adding Tables to the Query Design Grid

If you have closed the Show Table dialog box and then realize you need to add another table field list box to the query design grid, you do not need to start over again. The Show Table button in the Query Setup group on the Query Tools Design tab will redisplay the Show Table dialog box, from which you can add more tables to the query design grid.

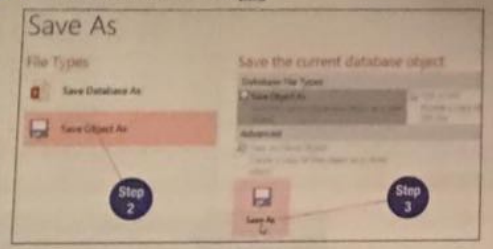
# Activity 3.4 Adding a Criteria Statement to a Query; Sorting and Hiding Columns

In the previous queries, all records from the tables were displayed. Adding a criterion statement to the query design grid will cause Access to display only those records that meet the criterion. For example, you could generate a list of employees who are entitled to four weeks of vacation. Extracting specific records from tables is where the true power in creating queries is found, since you are able to separate out only those records that serve your purpose. Use the *Sort* row in the design grid to specify the field by which records should be sorted. By default, each check box in the *Show* row in the query design grid contains a check mark, meaning the column will be displayed in the query results datasheet. Clear the check mark from a field's *Show* row to hide the column in the query results datasheet.

**What You Will Do** Rhonda Trask has requested a list of employees who receive four weeks of vacation. Since you already have the employee names and vacation fields set up in an existing query, you decide to modify the query by adding the vacation criteria and then save the query using a new name.

1. With **3-WEEmployees.accdb** open, right-click *BenefitPlans* in the Queries group in the Navigation pane and then click *Design View* at the shortcut menu.


2. Click the File tab, click the *Save As* option, and then click the *Save Object As* option in the *File Types* section of the Save As backstage area.
3. Click the Save As button.

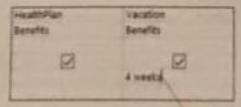



4. Type 4WksVac in the *Save 'BenefitPlans' to* text box at the Save As dialog box and then click OK.
5. With the Query Tools Design tab active, click in the field in the *Criteria* row in the *Vacation* column in the query design grid (the blank field below the check box).

   Before you type a criteria statement, make sure you have placed the insertion point in the *Criteria* row for the field by which you will be selecting records.

6. Type 4 weeks and then press the Enter key.

   The insertion point moves to the field in the *Criteria* row in the next column and Access inserts quotation marks around *4 weeks* in the field in the *Vacation* column. Since quotation marks are required in criteria statements for text fields, Access automatically inserts them if they are not typed into the field in the *Criteria* row.






**In Brief**

**Add Criteria Statement to Query**
1. Open query in Design view.
2. Click in *Criteria* row in column in which you want to write criterion statement.
3. Type criterion statement.
4. Save revised query.
5. Run query.

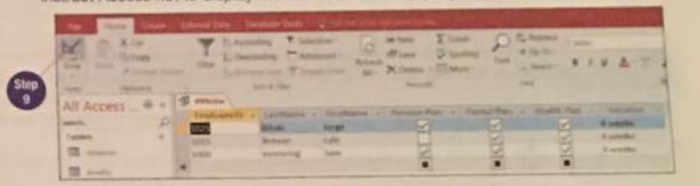
**Sort Query Results**
1. Open query in Design view.
2. Click in *Sort* row in field by which to sort.
3. Click arrow.
4. Click *Ascending* or *Descending*.
5. Save query.
6. Run query.

**Hide Column in Query Results**
1. Open query in Design view.
2. Click check box in Show row in field to be hidden.
3. Save query.
4. Run query.

7. Click in the field in the *Sort* row in the *LastName* column, click the down arrow, and then click *Ascending* at the drop-down list.

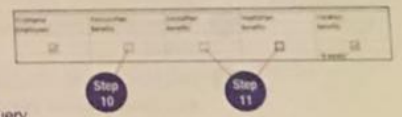

8. Click the Run button in the Results group on the Query Tools Design tab.
9. View the query results in the datasheet (the results are sorted in alphabetic order by last name) and then click the View button in the Views group on the Home tab to switch to Design view. (Do *not* click the View button arrow.)

   Since Rhonda Trask is interested only in the employee names and vacation, you will instruct Access not to display the other fields in the query results datasheet.




10. Click the check box in the *Show* row in the *PensionPlan* column to remove the check mark.

    Removing the check mark instructs Access to hide the column in the query results datasheet.




11. Remove the check marks from the *Show* check box in the *DentalPlan* and *HealthPlan* columns in the query design grid.
12. Click the View button to switch to Datasheet view.

    The columns for which you removed the check mark from the *Show* check box do not display in the query results. Notice that you displayed the query results datasheet by switching views. Clicking the Run button or switching views achieves the same result.

13. Print the query results datasheet.
14. Close the 4WksVac query. Click Yes to save changes to the design of the query.

**Check Your Work** Compare your work to the model answer to ensure that you have completed the activity correctly.

## In Addition

### Learning More about Criteria Statement

The following are examples of criteria statements for text, number, and date fields showing the proper syntax required by Access. Access inserts the quotation marks (") automatically for text fields and the pound symbols (#) automatically for date fields when you type a valid entry in a field in the Criteria row.

| Criterion Statement | Records That Would Be Extracted |
|---|---|
| "Finance Department" | those with Finance Department in the field |
| Not "Finance Department" | all except those with Finance Department in the field |
| "Fin*" | those that begin with Fin and end with any other characters in the field |
| >15000 | those with a value greater than 15,000 in the field |
| #5/1/15# | those that contain the date May 1, 2015 in the field |
| >#5/1/15# | those that contain dates after May 1, 2015 in the field |

# Activity 3.5 Designing a Query with an *And* Criteria Statement

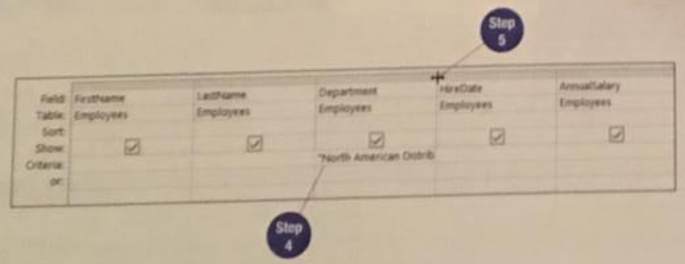
You may need to select records by using more than one criterion. For example, you may wish to view records of those employees who have enrolled in more than one benefit plan. More than one column in the query design grid can have an entry in the *Criteria* row. Multiple criteria all entered in the same *Criteria* row becomes an *And* statement wherein each criterion must be met for the record to be selected. For example, the word *Yes* in the *PensionPlan* column and the *DentalPlan* column in the *Criteria* row would mean a record would need to have a check mark in both check boxes in order for Access to display the record in the query results datasheet.

Worldwide Enterprises

**What You Will Do** Rhonda Trask is reviewing salaries and has requested a list of employees who work in the North American Distribution Department and earn over $45,000. You will create a new query in Design view to produce the list.

Query Criteria

1. With **3-WEEmployees.accdb** open, click the Create tab and then click the Query Design button.
2. At the Show Table dialog box, double-click *Employees* and then click the Close button.
3. Double-click the following fields to add them to the query design grid. ***Note: You may have to scroll down the table field list box to see all of the fields.***
   - *FirstName*
   - *LastName*
   - *Department*
   - *HireDate*
   - *AnnualSalary*
4. Click in the field in the *Criteria* row in the *Department* column in the query design grid, type North American Distribution, and then press the Enter key.
5. Position the mouse pointer on the right column boundary line for the *Department* field in the gray header row at the top of the query design grid until the pointer changes to a left-and-right-pointing arrow with a vertical line in the middle and then double-click the left mouse button to best fit the column width.

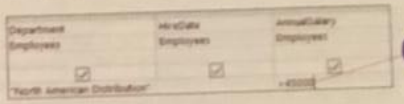



**In Brief**

**Designing a Query with an *And* Statement**
1. Start new query in Design view.
2. Add table(s) and field(s) to query design grid.
3. Click in *Criteria* row in column in which you want to write criterion statement.
4. Type criterion statement.
5. Repeat Steps 3–4 for the remaining criterion fields.
6. Save query.
7. Run query.

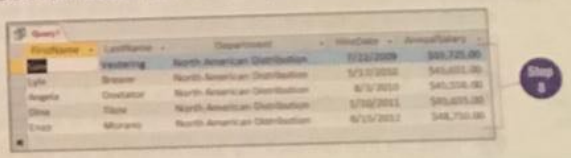
6. Click in the field in the *Criteria* row in the *AnnualSalary* column, type >45000, and then press the Enter key.

   Placing multiple criterion statements on the same row in the query design grid means that each criterion must be satisfied in order for Access to select the record.




7. Click the Run button.
8. Review the records selected in the query results datasheet.

   The field value for each record in the *Department* column is *North American Distribution* and the field values in the *AnnualSalary* column are all greater than $45,000.




9. Click the Save button, type NAHighSalary in the *Query Name* text box, and then press the Enter key or click OK.
10. Print the query results datasheet.
11. Close the NAHighSalary query.

**Check Your Work** Compare your work to the model answer to ensure that you have completed the activity correctly.

## In Addition

### Learning More about *And* Criteria Statements

The following are additional examples of *And* criteria statements.

| Criterion Statement in *PensionPlan* Column | Criterion Statement in *HireDate* Column | Criterion Statement in *AnnualSalary* Column | Records to Be Selected |
|---|---|---|---|
| | >#1/1/2018# | >40000 And <50000 | |
| Yes | >#1/1/2018# | >45000 | |
| No | Between #1/1/2018# And #12/31/2018# | <50000 | |

# Activity 3.6 Designing a Query with an *Or* Criteria Statement

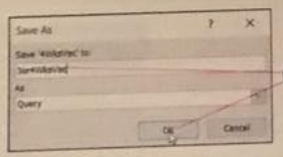
Multiple criterion statements on different rows in the query design grid become an *Or* statement in which any of the criteria can be met in order for Access to select the record. For example, in this activity, you will generate a list of employees who are entitled to either three or four weeks of vacation. Creating select queries with *Or* statements is often done to generate mailing lists. For example, if a business wants to create mailing labels for customers who live in either Texas or Nevada, the query to select the records needs to be an *Or* statement since the *State* field in a customer table would have a value of *Texas* or *Nevada*. (It would not be possible to have both state names in the same record.)

**Worldwide Enterprises**

**What You Will Do** Rhonda Trask has requested a list of employees who receive either three or four weeks of vacation. Since you already have a query created that selected the records of employees with four weeks of vacation, you decide to modify the existing query by adding the second vacation criteria.

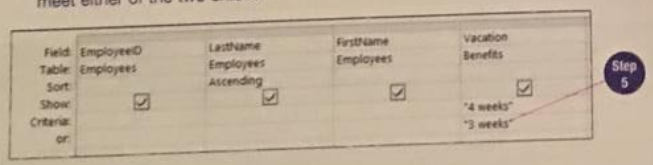
**Tutorial** Designing a Query with an *Or* Criteria Statement

1. With **3-WEEmployees.accdb** open, right-click *4WksVac* in the Queries group in the Navigation pane and then click *Design View* at the shortcut menu.
2. Click the File tab, click the *Save As* option, and then click the *Save Object As* option in the *File Types* section of the Save As backstage area.
3. Click the Save As button.
4. Type 3or4WksVac in the *Save '4WksVac' to* text box at the Save As dialog box and then click OK.




5. With the Query Tools Design tab active, click in the field in the *or* row in the *Vacation* column in the query design grid (the blank row below *"4 weeks"*), type 3 weeks, and then press the Enter key.

   Including a second criterion below the first one instructs Access to display records that meet either of the two criteria.




6. Click the Run button.

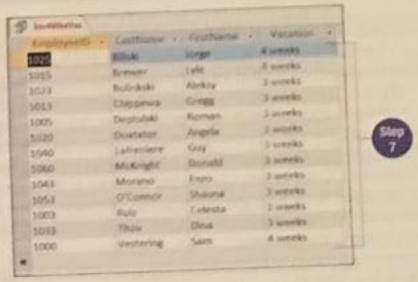
**In Brief**

**Extract Records Using *Or* Criteria**

1. Start new query in Design view.
2. Add table(s) and field(s) to query design grid.
3. Click in *Criteria* row in column in which you want to write criterion statement.
4. Type criterion statement.
5. Click in *or* row in column below the Criteria row in the column containing the first criterion statement.
6. Type criterion statement.
7. Repeat Steps 5–6 as necessary, moving down one field in *Criteria* row for each new criterion.
8. Save query.
9. Run query.

7. View the query results datasheet.

   The records that have been selected contain either *4 weeks* or *3 weeks* in the *Vacation* field column.



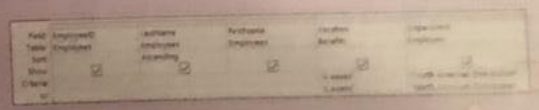

8. Print the query results datasheet.
9. Click the Save button to save the revised query.
10. Close the 3or4WksVac query.

**Check Your Work** Compare your work to the model answer to ensure that you have completed the activity correctly.

## In Addition

### Combining *And* and *Or* Criteria Statements

Assume that Rhonda Trask wants to further explore the vacation entitlements for the North American Distribution employees only. Rhonda wants a list of employees who work in the North American Distribution Department and have four weeks of vacation or who work in the North American Distribution Department and have three weeks of vacation. To perform this query, you would use two rows in the query design grid to enter the criteria as shown below. Note that the Department column has been added to the query design grid.

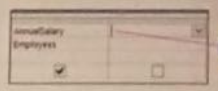



# Activity 3.7 Performing Calculations in a Query

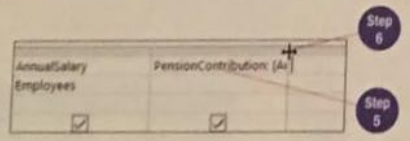
Calculations involving mathematical operations such as adding or multiplying a field value can be included in a query. In a blank field in the *Field* row in Query Design view, type the text you want to appear as the column heading, followed by a colon (:) and then the mathematical expression for the calculated values. Field names in the mathematical expression are encased in square brackets. For example, the entry *TotalSalary:[BaseSalary]+[Commission]* would add the value in the field named *BaseSalary* to the value in the field named *Commission*. The result would be placed in a new column in the query datasheet with the column heading *TotalSalary*. Calculated columns do not exist in the associated table; the values are calculated dynamically each time the query is run. Numeric format and the number of digits after the decimal point for calculated columns are set using the Format property box in the Property Sheet task pane in Design view.

**What You Will Do** Worldwide Enterprises contributes 3% of each employee's annual salary to a registered pension plan. You will create a new query to calculate the employer's annual pension contributions.

1. With **3-WEEmployees.accdb** open, click the Create tab and then click the Query Design button.
2. At the Show Table dialog box, double-click *Employees* and then click the Close button.
3. Double-click the following fields in the order shown to add them to the query design grid:
   *EmployeeID*
   *FirstName*
   *LastName*
   *AnnualSalary*
4. Click in the field in the *Field* row to the right of the *AnnualSalary* column in the query design grid.




5. Type PensionContribution:[AnnualSalary]*.03 and then press the Enter key.
6. Position the mouse pointer on the right column boundary line for the *PensionContribution* field in the gray header row at the top of the query design grid until the pointer changes to a left-and-right-pointing arrow with a vertical line in the middle and then double-click the left mouse button to best fit the column width.




**In Brief**

**Create Calculated Field in Query**
1. Open query in Design view.
2. Click in first available blank field row in query design grid.
3. Type column heading for calculated field.
4. Type colon.
5. Type the mathematical expression.
6. Press Enter or click in another field.
7. Click Save button.
8. Click Run button.

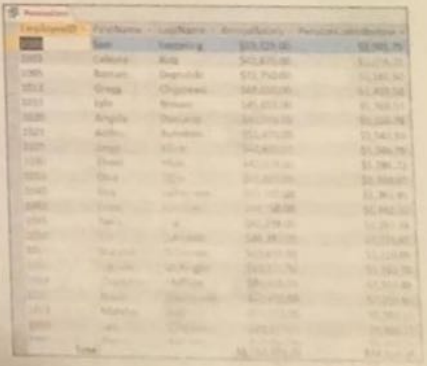
**Format Calculated Field**
1. Open query in Design view.
2. Click in field containing calculated expression.
3. Click Query Tools Design tab.
4. Click Property Sheet button.
5. Click in *Format* property box.
6. Click arrow.
7. Click format at drop-down list.
8. Close Property Sheet task pane.
9. Save query.
10. Run query.

7. Click the Save button. At the Save As dialog box, type PensionCont in the *Query Name* text box and then press the Enter key or click OK.
8. Click the Run button.
9. In the query results datasheet, adjust the column width to best fit the entries in the *PensionContribution* column.

   The values in the calculated column need to be formatted to display a consistent number of decimal places.
10. Switch to Design view.
11. Click anywhere within the first field in the *PensionContribution* column in the query design grid.
12. Click the Property Sheet button in the Show/Hide group on the Query Tools Design tab.

    Available properties for the active field display in the Property Sheet task pane at the right side of the work area.
13. Click in the *Format* property box in the Property Sheet task pane, click the down arrow that appears, and then click *Currency* at the drop-down list.


14. Click the Close button in the top right corner of the Property Sheet task pane.
15. Click the Save button and then click the Run button.
16. Click the Totals button in the Records group to add a total row to the bottom of the datasheet and then add a Sum function to the bottom of the *AnnualSalary* and *PensionContribution* field columns. ***Note: Refer to Activity 2.7 if you need assistance with this step.***



17. Print the query results datasheet.
18. Close the PensionCont query. Click Yes when prompted to save changes to the query.

**Check Your Work** Compare your work to the model to ensure you have completed the activity up to this point.