

**ACCESS 2021 & 365**

# Querying a Database

One of the main goals of a database is to organize data so that information can be located and retrieved quickly. People in all types of businesses retrieve stored data and information daily, often at a moment's notice. In this chapter, you will search information that is stored in tables in a relational database and extract records that meet specific criteria using a query, a database object used to locate records based on the conditions you set.

**LEARNING OBJECTIVES**

- Create, save, and run select queries
- Create select queries using multiple tables
- Use simple query criteria
- Use AND and OR criteria in queries
- Use wildcard characters in query criteria
- Sort query results
- Create and format a calculated field

**CHAPTER TIMING**

- Concepts & Practice: 01:10:00
- Self-Assessment: 00:15:00
- Total: 01:25:00

**PROJECT: USING QUERIES TO GET ANSWERS**

You have been asked to query the Winchester Web Design database and compile two separate customer lists. The lists will be used to notify all past clients of updates to their website contact forms. The first list will include only the first and last names of the clients and their email addresses. The second list will include the first and last names of the clients and their mailing addresses, sorted by ZIP code. Additionally, you have been asked to build queries that instantly calculate the total income from all the Winchester Web Design services and from specific areas such as blogs or shopping carts.


# Select Queries

A query asks a question, such as, *What are the customer addresses?* or *How much money did the company make last month?* The answer to the question is provided in a set of records.

All queries have common attributes:

- They function like a saved question you ask a database.
- They produce a subset of data from one or more tables.
- They are dynamic objects that display up-to-date data from tables.
- They can be used to create forms and reports with fields drawn from multiple tables.
- When you edit data in query results, you are actually editing the data stored in the source tables.

A select query is basically a database inquiry that selects only the records you want to see or edit, from one or more database tables, based on criteria that you set. The easiest way to create a select query is with the Query Wizard.

Create→Queries→Query Wizard 

## DEVELOP YOUR SKILLS: A3-D1

In this exercise, you will use the Query Wizard to create a select query that generates a customer email list.

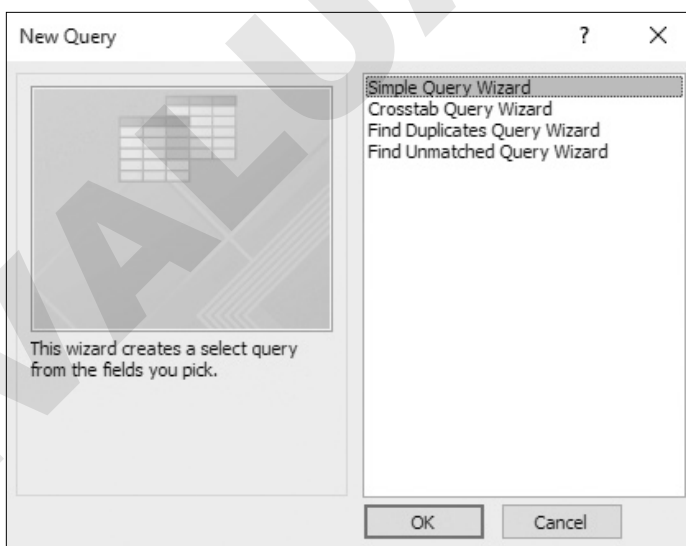
1. Open **A3-D1-WinDesign** from your **Access Chapter 3** folder and save it as:  
**A3-D1-WinDesignRev**

*Notice in the Navigation pane that the database currently has three queries.*

**| NOTE!** When completing exercises, always choose to Enable Content.

2. Choose **Create→Queries→Query Wizard**.


*The New Query dialog box appears, allowing you to select the Query Wizard you would like. The Wizard can help you create four types of queries, shown in the right pane of the dialog box.*





3. Click **OK** to accept the Simple Query Wizard.

4. Follow these steps to build the query:



- A. Make sure the **Customers** table is chosen in the Tables/Queries list. When building a query, you can use multiple tables and even existing queries.
- B. Choose the **CustLastName** field from the Available Fields list.
- C. Click the **Add**  button to add it to the Selected Fields list.
- D. Now add the **CustFirstName** and **CustEmail** fields, scrolling to find them as necessary, to the Selected Fields list.
- E. Click **Next**.

*If you add the wrong field, double-click the name to move it back to the Available Fields list or select it and use the Move Back  or Move All Back  buttons.*

5. Type **CustomersEmailList** in the query title field at the top of the dialog box.
6. Make sure the **Open the Query to View Information** option is chosen and click the **Finish** button.

*Notice the query results datasheet includes only the three fields you chose from the Customers list.*


Last Name	First Name	Email
Abrams	John	JPAbams@email.com
Anders	Mark	AndersM@email.com
Blaser	Helen	BlasingHel@email.com
Davis	Peter	DavisAngie@email.com

7. Click the **Close** button at the right of the *Customers Email List* tab to close the query.

## Creating a Select Query Using Query Design View

Some queries display just a few fields but report on every single record in the table. That may not be a problem for a small table, but, when thousands of records and multiple tables are involved, it is often necessary to choose only specific records by setting precise criteria. Using Query Design View, Access allows you to:

- Select fields from multiple tables
- Locate records using criteria from one or more fields
- Perform calculations
- Sort query results and show or hide fields in query results

Create→Queries→Query Design 

### DEVELOP YOUR SKILLS: A3-D2

You have already created an email list for the Winchester Web Design customers and now need one for the company's employees. In this exercise, you will create a query to select fields from the Employees table in the Winchester Web Design database and then rearrange the columns in the query grid.

1. Choose **Create→Queries→Query Design** to display the query design grid.

*The Add Tables pane appears on the right, showing the existing tables, links, and queries in the database.*

2. Select the **Tables** tab, choose the **Employees** table, and click **Add Selected Tables** at the bottom of the pane.

*The Employees table appears in the design grid.*


3. Close the Add Tables pane and close the Property Sheet if it's open.

*Next you will add fields from the Employees table to the grid.*

4. Double-click the **EmpFirstName** field in the Employees table to add it to the grid.
5. Now add the **EmpLastName**, **EmpPhone**, and **EmpEmail** fields to the grid by either double-clicking or dragging them.

**TIP!** Use the scroll bar located at the right of the table fields to access all available fields in the list.

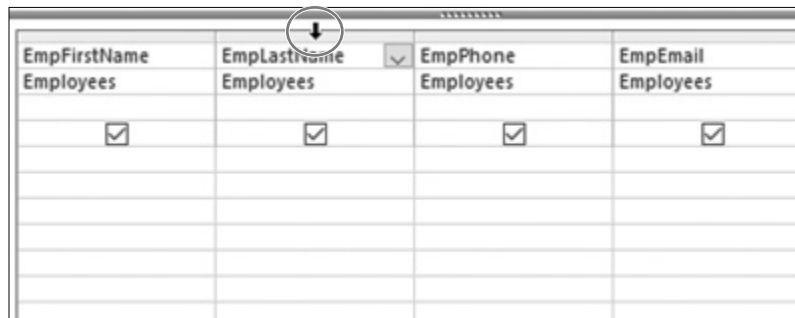
Field:	EmpFirstName	EmpLastName	EmpPhone	EmpEmail
Table:	Employees	Employees	Employees	Employees
Sort:				
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:				
or:				

6. Choose **File→Save**.
7. Type **EmployeeContactInfo** as the query name and click **OK**.
8. Choose **Query Design→Results→Run** .

*Access runs the query and displays four columns of data (First Name, Last Name, Telephone, and Email) for all Employee records.*

## Rearrange Query Fields

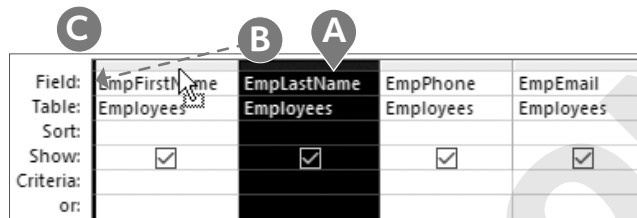
9. Choose **Home**→**Views**→**View**→**Design View**.
10. Select the **EmpLastName** column by placing your mouse pointer over the column heading until it becomes a downward-facing black arrow and then single-click.



EmpFirstName	EmpLastName	EmpPhone	EmpEmail
Employees	Employees	Employees	Employees
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

The entire column is selected, shown by shading it in black.

11. Follow these steps to rearrange the EmpFirstName and EmpLastName fields:



Field:	EmpFirstName	EmpLastName	EmpPhone	EmpEmail
Table:	Employees	Employees	Employees	Employees
Sort:				
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:				
or:				

- A. Click the **EmpLastName** column heading again, this time without releasing the button. The button will change to a white arrow with a silhouetted box, indicating you can move the column.
  - B. Drag the **EmpLastName** column to the left of the *EmpFirstName* column until the thick vertical bar is positioned as shown.
  - C. Release the mouse button to complete the rearrangement.
12. Run the query.  
*Last Name should now appear first in the results.*
  13. Close the query and save the changes.

## Designing a Query Using Multiple Tables

Until now, the query results presented in the datasheets you have worked with have displayed data from only one table. There will be times when you need to view data contained in different tables within the same database. Multi-table queries allow you to do this.

### Choosing Fields to Include in a Query

When you build a multi-table select query, you start in Query Design view. Using the Show Table dialog box, you can select only those tables and fields that you want to display in the query results datasheet and leave out those fields that have no impact on the data you want to view or that are confidential. By specifying only certain tables and fields in a database and displaying only the desired fields in a query, you can create a report or a form that presents only pertinent data.

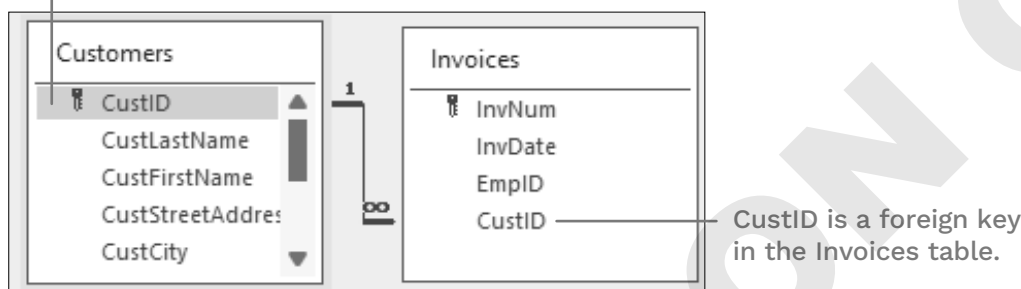
Multiple tables are effective in a query only if the tables are related. Using related tables allows a query to provide results based on all the data contained in the related table fields selected. For example, if you want to find the names and addresses of customers who placed orders from a specific employee, you would need fields from both the Customers table and the Invoices table. This is because the Customers table does not include any Employee fields, and the Invoices table does not include the Customer fields. It would be impossible to answer the question using only the Customers or Invoice tables alone.

 **View the video “Create a Multi-Table Select Query.”**

## Selecting a Field That Appears in Multiple Tables

Sometimes the same field occurs as a primary key in one table and as a foreign (or secondary) key in another table. If this occurs, always use the table with the primary key in your query.

Use the Customers table in the query because CustID is the primary key.



### DEVELOP YOUR SKILLS: A3-D3

In this exercise, you will create a multi-table query using Query Design view to track the Winchester Web Design invoices by invoice number.

1. Choose **Create**→**Queries**→**Query Design** to display the query design grid.
2. Double-click the **Invoices**, **Invoice Details**, and **Products** tables to add them to the query.  
*If the Add Tables pane is not visible, choose Query Design→Query Setup→Add Tables.*
3. Close the Add Tables pane.
4. Double-click the **InvNum**, **InvDate**, and **EmpID** fields in the Invoices table to add those fields to the query grid.
5. Add the **ProdDescription** and **Price** fields from the Products table.
6. Add the **Qty** field from the Invoice Details table.

Your query field list should look like this:

Field:	InvNum	InvDate	EmpID	ProdDescription	Price	Qty
Table:	Invoices	Invoices	Invoices	Products	Products	Invoice Details
Sort:						
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:						
or:						

7. Click the **Sort** cell for the InvNum field, click the **menu** button ▼, and choose **Ascending**.

Field:	InvNum	InvDate
Table:	Invoices	Invoices
Sort:	Ascending	
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:		
or:		

8. Choose **Query Design**→**Results**→**Run** to run the query.

*The query results are now sorted by invoice number in the first column.*

9. Click the **Save** button on the title bar; then name the query **InvoicesList** and click **OK** to save the query.

## Using Criteria in Queries

Queries let you specify criteria, which are conditions that field values must meet. Only records meeting the criteria are returned when the query is run.

Field:	InvNum	InvDate	EmpID	ProdDescription	Price	Qty
Table:	Invoices	Invoices	Invoices	Products	Products	Invoice Details
Sort:	Ascending					
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:			"JFW"			
or:						

In this query, the EmpID criteria is set to *JFW*.

InvNum ▼	Invoice Date ▼	Emp ID ▼	Description ▼	Price ▼	Qty ▼
1	3 /14/2017	JFW	Home Page, Nav, CSS, Design	\$400.00	1
1	3 /14/2017	JFW	Secondary Page	\$200.00	6
1	3 /14/2017	JFW	Image, Custom Designed	\$40.00	11
5	6 /18/2017	JFW	Home Page, Nav, CSS, Design	\$400.00	1

Only records where EmpID is *JFW* are returned.

Criteria are commonly used with text, numeric, currency, and date fields. Review the table for examples of how criteria are used:

TYPES OF CRITERIA		
Field Type	Criteria	Examples of How Records Are Returned
Text	Smith	Last name is Smith
	> =Smith	Last names are from Smith through the end of the alphabet
	Not Smith	Last name is not Smith
Numeric & Currency	> 123	Numeric value is greater than 123
	> =123	Numeric value is greater than or equal to 123
Date	Date( )	Date is today's date
	< Date( ) – 30	The Date field is 30 days or more prior to today's date

**TIP!** Search for *Query Criteria* in Access help for more criteria examples.

## DEVELOP YOUR SKILLS: A3-D4

In this exercise, you will add criteria to the query grid and run the query.

1. With the InvoicesList query open, switch to **Design View**.
2. Click the **Criteria** cell for the EmpID field.
3. Type **JFW** and tap **Enter**.

Access will apply quotation marks indicating this is a literal value.

Field:	InvNum	InvDate	EmpID
Table:	Invoices	Invoices	Invoices
Sort:	Ascending		
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:			"JFW"
or:			

4. Choose **Query Design**→**Results**→**Run** to run the query.

The query results now include only records where the EmpID is equal to JFW.

5. Close the query and choose **No** when prompted to save the changes.

Saving changes to the query at this time would save the JFW criteria as part of the query. However, you will continue to use the query for all employees.

## Wildcard Characters

Wildcard characters are used to locate records that have similar but not identical data. They help you locate records that match a pattern. For example, you might want to find all customers with last names that begin with the letter *B* or all products that begin with the word *Blog*.

COMMON WILDCARD CHARACTERS	
Wildcard Symbol	How It Is Used
Asterisk (*)	Substitutes for a group of characters that appear at the position of the asterisk  <b>Example:</b> <i>R*</i> in the last name field will locate all last names beginning with <i>R</i> regardless of how many characters make up the name. In this case, <i>Rogers</i> , <i>Rich</i> , and <i>Rodriquez</i> would all appear in the results datasheet.
Question mark (?)	Substitutes for a single character that might appear at the position of the question mark  <b>Example:</b> <i>m?s</i> will locate records containing values such as <i>mrs</i> , <i>ms</i> , and <i>mbs</i> .
Open/close brackets [ ]	Matches text or individual characters placed within the brackets individually  <b>Example:</b> <i>ca[rt]</i> will find <i>cat</i> and <i>car</i> but not <i>cab</i> or <i>cad</i> .

**TIP!** Search for *wildcard characters* in Access help for more wildcard symbols and examples.



## AND and OR Criteria

In some cases, you may need to locate records that meet multiple criteria. This can be done using AND and OR conditions. For example, you may want to locate all records where the employee is web certified AND lives in Sarasota. Or you may want to locate all employees who live in Sarasota OR Bradenton.

Field:	CustID	CustFirstName	CustLastName	CustCity
Table:	Customers	Customers	Customers	Customers
Sort:				
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:				"Sarasota"
or:				"Bradenton"

Create an OR condition by adding a second criterion to the Or row of a field.

Field:	InvNum	InvDate	ProdDescription	Price	Qty
Table:	Invoices	Invoices	Products	Products	Invoice Details
Sort:	Ascending				
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:			"Image"		> 10

Create an AND condition by adding another criterion to a different field on the Criteria row.

 **View the video “Create a Query with Criteria.”**

### DEVELOP YOUR SKILLS: A3-D5

In this exercise, you will use wildcards to locate variable data and set multiple criteria in a query to find out which customers have gotten blogs and which customers have added more than ten images at a time to their websites.

1. Open the **InvoicesQuery** query in **Design View**.
2. Follow these steps to use wildcard characters and to use AND and OR criteria:

Field:	InvNum	InvDate	ProdDescription	Price	Qty	LineTotal: [Qty]*[Price]
Table:	Invoices	Invoices	Products	Products	Invoice Details	
Sort:						
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:			Like "Blog*"			
or:			Like "Image*"		> 10	

- A.** In the ProdDescription **Criteria** cell, type **Blog\*** and tap **[Enter]**.  
Access converts Blog\* to: Like "Blog\*"
  - B.** In the ProdDescription **Or** cell, type **Image\*** and tap **[Enter]**.
  - C.** Enter **> 10** in the Qty **Or** cell. Be sure to type in the same row as Like "Image\*" (the Or row).  
These criteria will choose records where ProdDescription begins with Blog OR ProdDescription begins with Image AND the Qty is greater than 10.
3. Run the query.  
Access displays the records that meet the specified criteria: either a blog or a transaction with more than ten images.
  4. Close the query and save the changes.


## Date Criteria

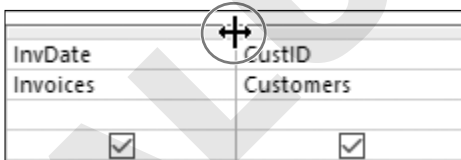
You can set date criteria to determine age, hired date, invoice date, and so forth. Access acknowledges the same comparison criteria for performing date comparisons that it does for locating other types of data, regardless of the format used to enter dates.

DATE CRITERIA	
Criterion	Examples of How Records Are Returned
06/22/2021	Date is 06/22/2021
<22-Oct-2021	Dates that occur before 22/Oct/2021
>01/01/21	Dates that occur after 01/01/21
Between 01/01/21 and 06/30/21	Dates between 01/01/2021 and 06/30/2021

### DEVELOP YOUR SKILLS: A3-D6

Winchester Web Design needs to track all invoices issued in 2031. In this exercise, you will query the database to locate customers with invoices dated from January 1, 2031, through December 31, 2031.

1. Choose **Create**→**Queries**→**Query Design** .
2. If necessary, open the **Add Tables** pane and click the **Tables** tab at top left of the pane.
3. Use double clicks to add the **Customers**, **Invoices**, **InvoiceDetails**, and **Products** tables to the query.
4. In the Invoices table double-click **InvNum** and **InvDate** to add those fields to the query grid.
5. From the Customers table add the **CustID** field.
6. From the Invoice Details table add the **Qty** field.
7. From the Products table add the **ProdDescription** and **Price** fields.
8. Hover your mouse pointer on the right edge of the InvDate column heading so a black, two-direction arrow appears.



9. Click and drag the column heading to the right until the column is about three times the original width.

*You will enter a long entry in the next step and widening the InvDate column will allow you to see the entire entry.*

10. Click in the **Criteria** cell for the InvDate field and type: **Between January 1, 2031 And December 31, 2031**

Access formats the expression. Your query grid should now match this example. Regardless of how you type the dates—whether January 1, 2031; 01/01/31; or 1-1-2031—Access formats the data after you enter it so it appears as #1/1/2031#.

InvNum	InvDate	CustID	Qty	ProdDescription	Price
Invoices	Invoices	Customers	InvoiceDetails	Products	Products
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Between #1/1/2031# And #12/31/2031#				

11. Run the query.

Notice that only records with a date in 2031 appear in the results.

12. Choose **File**→**Save**.

13. Save the query as **Invoices2031** and then close it.

## Sorting, Showing, and Limiting Results

The query grid contains a Sort row that lets you sort the query results. At times you may also want to use fields to specify criteria but may not want those fields to be displayed in the query results. This can be accomplished by unchecking the Show box for the desired field(s).

### Limiting the Number of Results Displayed

Large databases with thousands of records often return so many records that it can be challenging to find what you are looking for. Limiting the number of records displayed can be beneficial, especially when these records are sorted.

For example, if you set up a query to sort in descending order and then limit the number of items displayed to ten, you would, in effect, have a list of the top ten items in the table being queried. The Return feature lets you set the number of records to be displayed, or returned, in the query results.

Query Design→Query Setup→Return 

## DEVELOP YOUR SKILLS: A3-D7

In this exercise, you will create a query that sets a sort order and hide a field from displaying in the query results. You will also limit the number of records returned.

1. Choose **Create**→**Queries**→**Query Design**.
2. If necessary, open the **Add Tables** pane and click the **Tables** tab at top left of the pane.
3. Use double clicks to add the **Customers**, **Invoices**, **Invoice Details**, and **Products** tables to the query.

4. In the Customers table double-click the **CustID**, **CustFirstName**, and **CustLastName** fields to add them to the design grid.
5. From the Invoices table add the **InvDate** field.
6. From the Products table add the **ProdDescription** field.
7. From the Invoice Details table add the **Qty** field.
8. Follow these steps to set a criterion and set the sort order:

Field:	CustID	CustFirstName	CustLastName	InvDate	ProdDescription	Qty
Table:	Customers	Customers	Customers	Invoices	Products	InvoiceDetails
Sort:						Descending
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:					Like "Image*"	
or:						

- A. In the ProdDescription **Criteria** cell, type **Image\*** and tap **[Enter]**. Access converts *Image\** to *Like "Image\*"*. This criterion will choose only records where the product description begins with *Image*.
  - B. In the **Sort** cell for the Qty field, choose **Descending** from the list of sort options.
9. Run the query.  
*The records are now sorted in descending order (largest to smallest) by quantity.*  
*CustID is an important key to have in the query because it is a primary key field. But it isn't needed in the query results because it contains the same information that appears in the CustFirstName and CustLastName fields, so you will hide it from the query results.*
  10. Choose **Home**→**Views**→**Design View** to switch back to Design View.
  11. Uncheck the **Show** box for the CustID field and **Run** the query.  
*The CustID field is still part of the query design, but it no longer shows in the query results.*
  12. Switch back to **Design View** and choose **Query Design**→**Query Setup**→**Return menu button** ∨.
  13. Choose **5** from the list and run the query.  
*The query returns seven records (not five). This is because the query returns all records with the five largest quantities. But three records had a Qty of 14, which is the fifth highest amount, so all those records were returned, increasing the total to seven records.*
  14. Save the query as **Most Images** and then close it.

## Calculated Fields

Calculated fields are fields containing formulas that perform calculations. Formulas used in calculated fields are often based on other fields within the query. Calculated fields are added as an additional field to a query and are not part of the underlying query tables. They are added to the query design grid and their calculated results then appear in the query results. A calculated field:

- Creates a new field in a query that can also be used in a form or report
- Can be used to perform mathematical operations, such as addition and multiplication
- Has a name and can be formatted with properties just like a regular field
- Enables you to combine values in two text fields into one field, such as LastName and FirstInitial
- Updates and recalculates each time you run the query

## Identifying Parts of a Calculated Field

The structure of a calculated field includes a field name and a mathematical expression. An example of a calculated field in an Access query is Wage: 12.00 \* 40, where Wage is the calculated field name and 12.00 \* 40 is the calculation to be performed. Another example is Total: Price \* Quantity, where Total is the calculated field name and Price \* Quantity are the calculations performed using the data in those query fields.

Price	Qty	LineTotal: [Price]*[Qty]
Products	Invoice Details	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

The LineTotal calculated field multiplies Price \* Qty.

Price	Qty	LineTotal
\$200.00	6	\$1,200.00
\$40.00	11	\$440.00
\$400.00	1	\$400.00
\$40.00	15	\$600.00

The query results.

Each calculated field can contain the following elements:

CALCULATED FIELD ELEMENTS	
Element	Description
Calculated field name	This is the unique name you assign to the field and is followed by a colon (:) to separate the field name from the expression.
Field names from existing tables	Field names from the query can be added to the calculated field expression. Access adds brackets [ ] around field names.
Arithmetic or comparison operators	Use +, -, *, /, ( ), ^, <, =, and > to perform mathematical operations or compare values.
Concatenation (i.e., linking together)	<p>An ampersand (&amp;) can be used to join text values from multiple fields. For example, FirstName&amp;LastName.</p> <p>Spaces can be added between fields by using quotation marks around a single space (" "). For example, the quotation marks in FirstName &amp; " " &amp; LastName create a space between the first and last names in the query results.</p>

## Calculated Field Properties

You can set field properties such as size, number format, and default values within tables. Likewise, you can set field properties in calculated fields. This is almost always needed in calculated fields as the query results need to be formatted with the correct number of decimal places, commas, currency format, and other formatting as needed. Field properties are set using the field Property Sheet.

Query Design→Show/Hide→Property Sheet 

## DEVELOP YOUR SKILLS: A3-D8

In this exercise, you will create and format a calculated field.

1. Open the **InvoicesList** query and switch to **Design View**.
2. Click in the first cell of the blank column next to the **Qty** field.

Price	Qty	
Products	Invoice Details	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3. Type the calculated field expression, taking care to include the colon between *LineTotal* and *Price*: **LineTotal:Price \* Qty**
4. Tap **[Enter]** to accept the entry and allow Access to format the expression by adding brackets to the field names.

Access does not always format your expression by adding brackets to field names. Brackets are required for Access to identify the entry as a field within the query. If you want to use field data within a calculated field expression, you need to include the name of your calculated field within brackets. In this example our calculated field is named *LineTotal*, and it will multiply the data in the *Price* field by the data in the *Qty* field in each record when the query is run. Your completed field should match the following:

Field:	InvNum	InvDate	EmpID	ProdDescription	Price	Qty	LineTotal: [Price]*[Qty]
Table:	Invoices	Invoices	Invoices	Products	Products	Invoice Details	
Sort:	Ascending						
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:							
or:							

5. Right-click anywhere in the column of your calculated field and choose **Properties**.  
*The Property Sheet opens.*
6. Click the **Format** field, then click the **menu** button ▼ and choose **Currency** from the list.
7. Click the **Caption** field and type: **Line Total**

*The currency format will display the calculated results with a dollar sign and two decimals. The caption will become the column heading for your calculated field in the query results.*

8. Run the query, and your calculated field results will appear as shown:

InvNum	Invoice Date	Emp ID	Description	Price	Qty	Line Total
1	3 /14/2030	JFW	Secondary Page	\$200.00	6	\$1,200.00
1	3 /14/2030	JFW	Image, Custom Designed	\$40.00	11	\$440.00
1	3 /14/2030	JFW	Home Page, Nav, CSS, Design	\$400.00	1	\$400.00
2	4 /1/2030	MJW	Image, Custom Designed	\$40.00	15	\$600.00
2	4 /1/2030	MJW	Home Page, Nav, CSS, Design	\$400.00	1	\$400.00
2	4 /1/2030	MJW	Secondary Page	\$200.00	7	\$1,400.00

9. Save and close the query and then close the database.

## Self-Assessment

Use the Self-Assessment quiz in the Student Resource Center to check your knowledge of the key concepts and skills introduced in this chapter.