Computer Applications Olympiad

A project of the Institute of IT Professionals South Africa.

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COMPUTER APPLICATIONS OLYMPIAD

ROUND 1

2017

POSSIBLE SOLUTIONS

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Some of the solutions presented in this booklet use techniques that are not included in the current CAT curriculum. They are presented here as alternative methods for solving the problems. It is hoped that teachers and participants (learners) will look at the methods used and consider using them in their Practical Assessment Tasks which, in a sense, are open-ended and where use can be made of techniques not included in the curriculum (see Assessment Criteria 6 and 10 of the DBE's 2017 PAT for Grade 12).

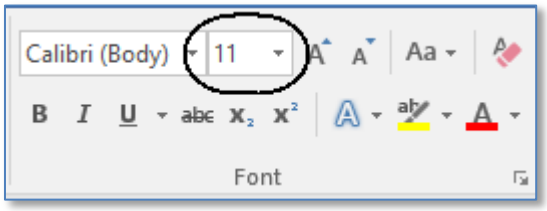
A: WORD-PROCESSING

Over the years, there have been numerous studies to show how playing different types of background music can influence shopping behaviour. Everything from music volume to tempo can all play a part in how consumers spend money and behave in shops. The document file **'Music in Retail Stores**' discusses some of the issues that owners need to consider. Use word processing features to answer the following questions.

1. What is the font size of most of the text in the document?	**11**

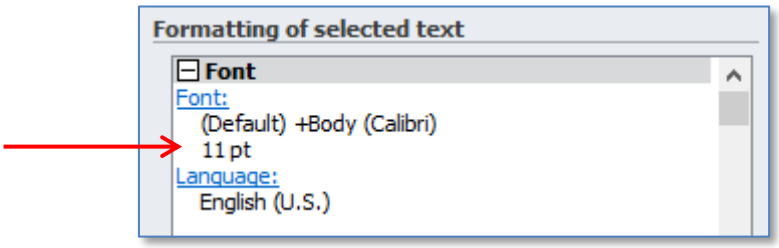
Method 1:

Put the cursor anywhere in the body of the document (not a heading). On the "Home" tab in the "Font" group the font size of 11 is displayed.



Method 2:

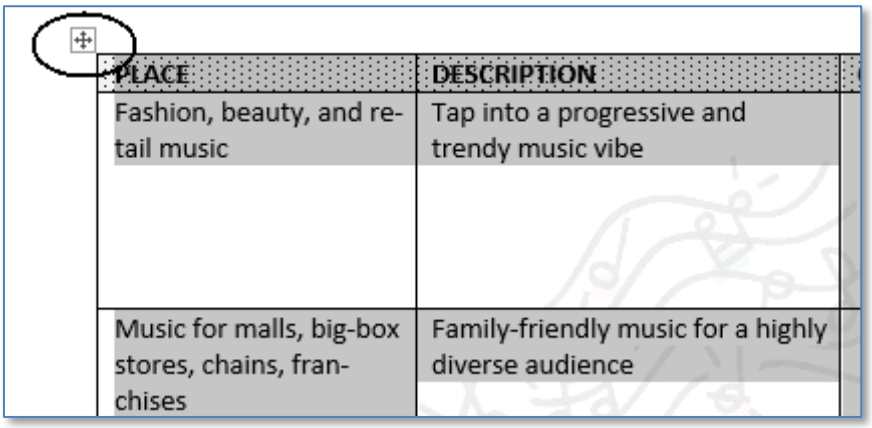
Put the cursor anywhere in the body of the document (not a heading). Turn on "Reveal Formatting" by clicking on <Shift><F1>. The "Reveal Formatting" window on the right-hand side of the screen shows in the "Font" section that the font size is 11 pt.



2. How many rows are in the table in the document?	**6**

Method 1:

Select the table by clicking on the symbol top-right of the table (see image below). All the rows will be highlighted you will note that there are no rows without borders. Count the number of rows with the eye. You will note that there are 6 rows.

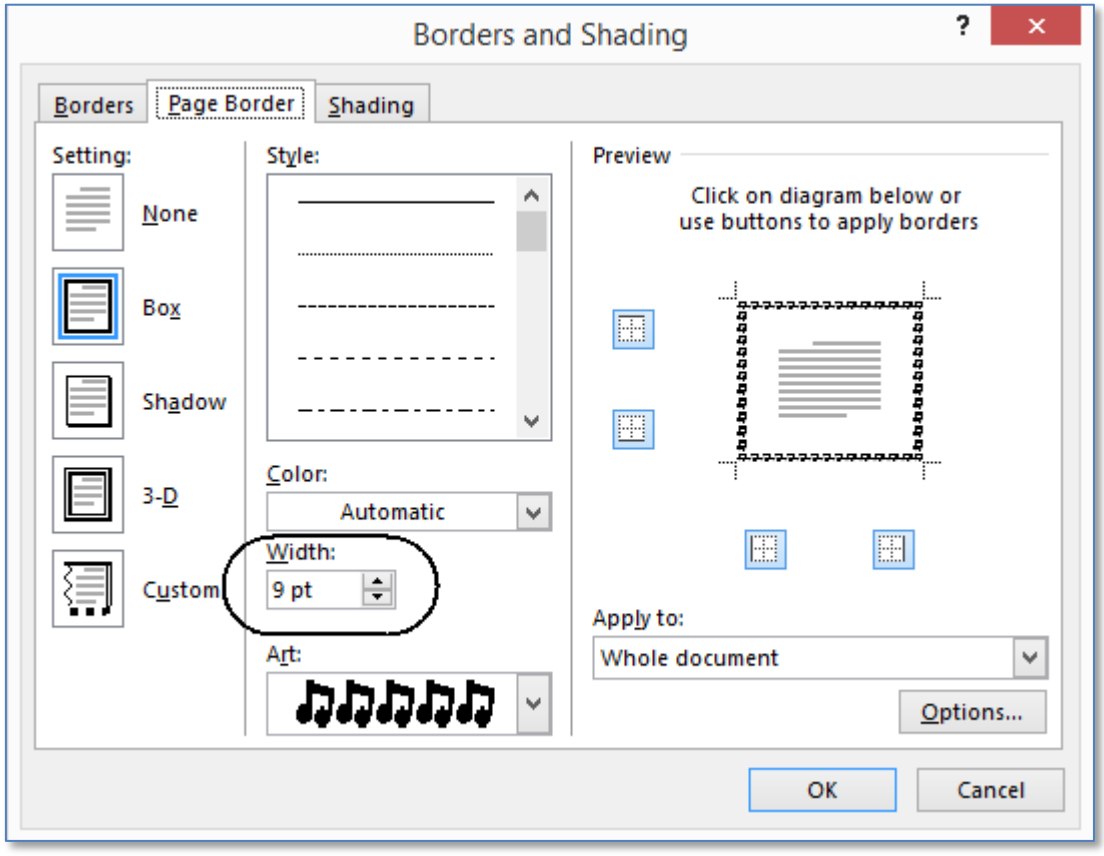


PLACE	DESCRIPTION
Fashion, beauty, and retail music	Tap into a progressive and trendy music vibe
Music for malls, big-box stores, chains, franchises	Family-friendly music for a highly diverse audience

3. What is the point size of the Art page border?	**9** **8.8**

Method 1:

Put the cursor in the body text. On the “Home” tab, in the “Paragraph” group, in “Borders and Shading” select “Page Border”. The size of the Art page border is displayed.

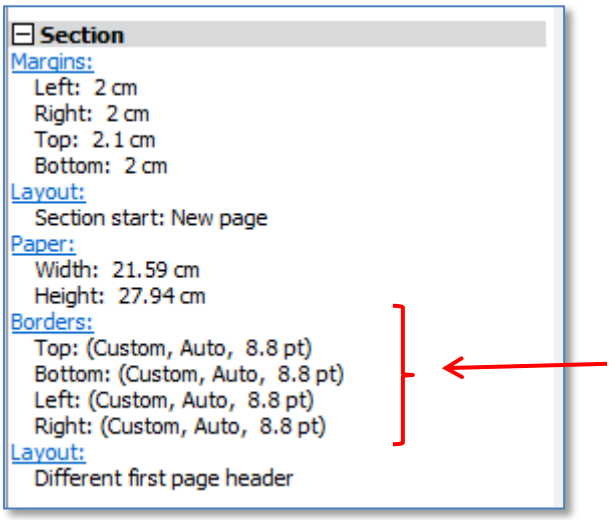


Method 2:

In the “Page Layout” tab click on “Page Borders”. The window shown above will open showing the point size of the border.

Method 3:

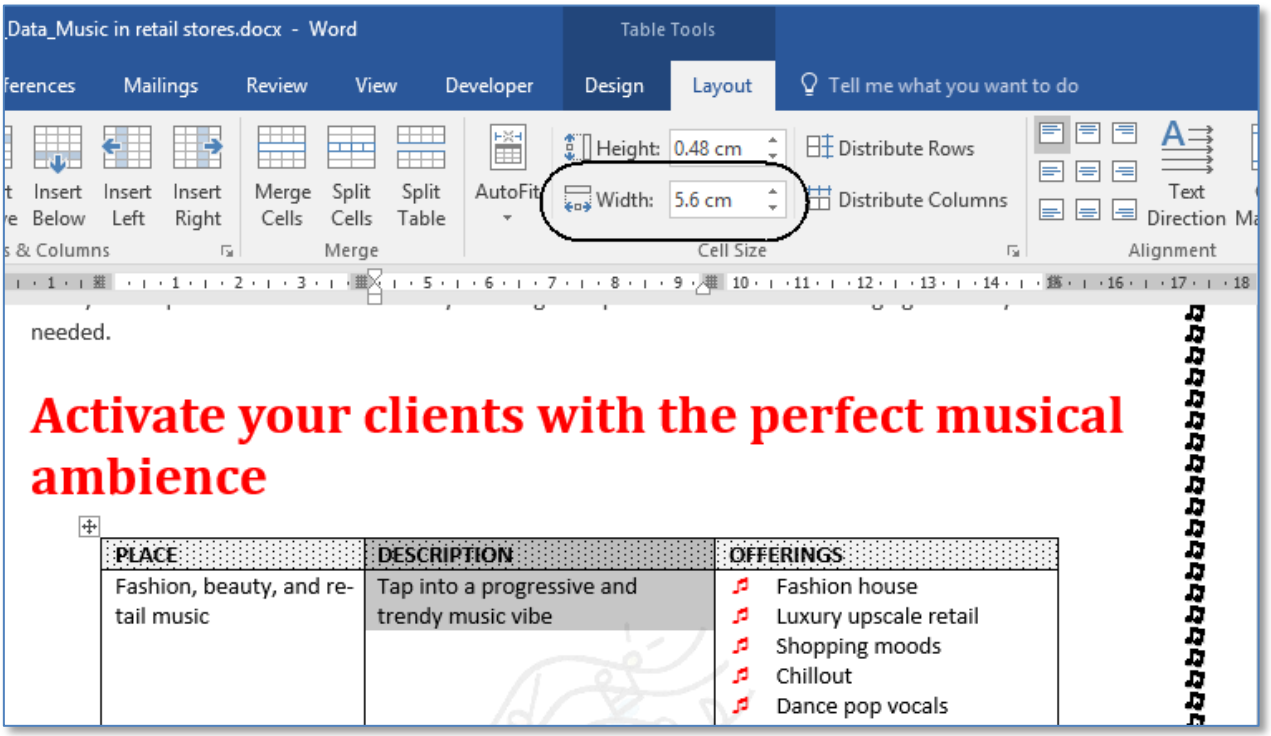
Put the cursor in the body text. Turn on the "Reveal Formatting" feature making sure that the "Section" properties are displayed. The properties of the page border are displayed.



4. What is the exact width of the centre/middle column in the table?	**5.6**

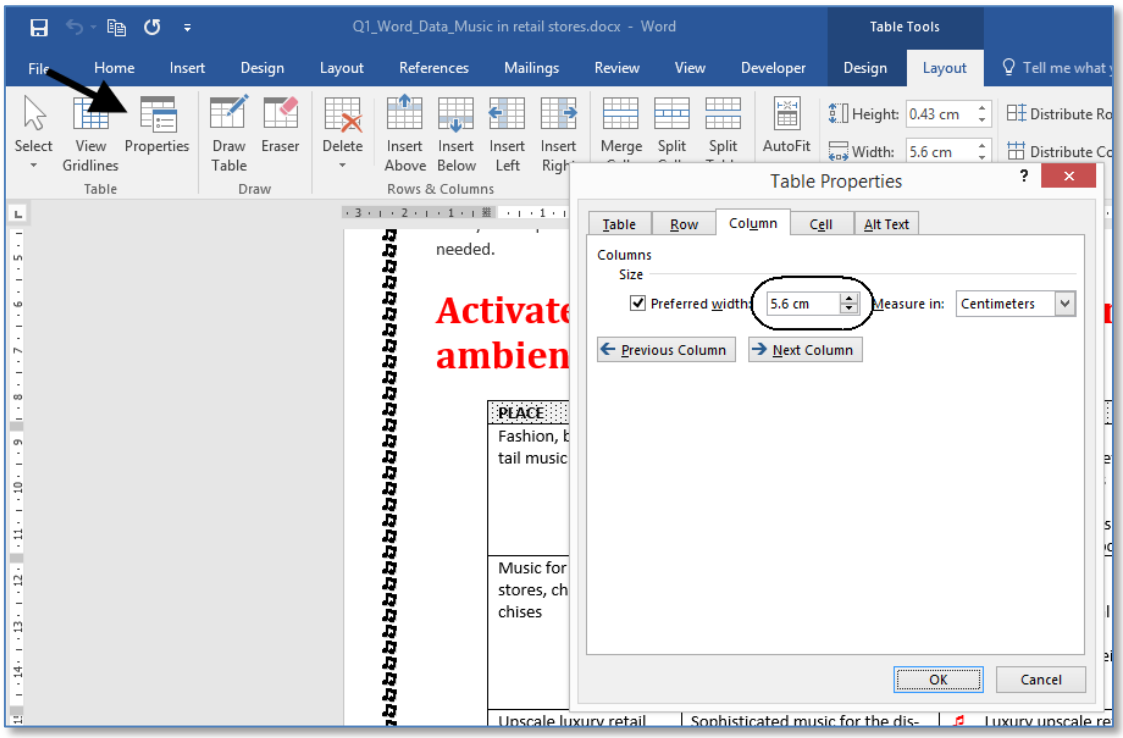
Method 1:

Select the centre column of the table. The width is displayed in the "Table Tools Layout" tab.



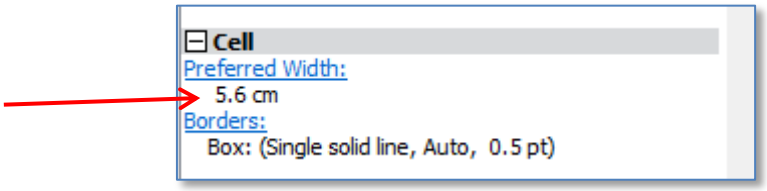
Method 2:

Select the centre column of the table. On the "Table Tools Layout" tab select "Properties". In the "Table Properties" dialog box select "Column". The width of the centre column is displayed.



Method 3:

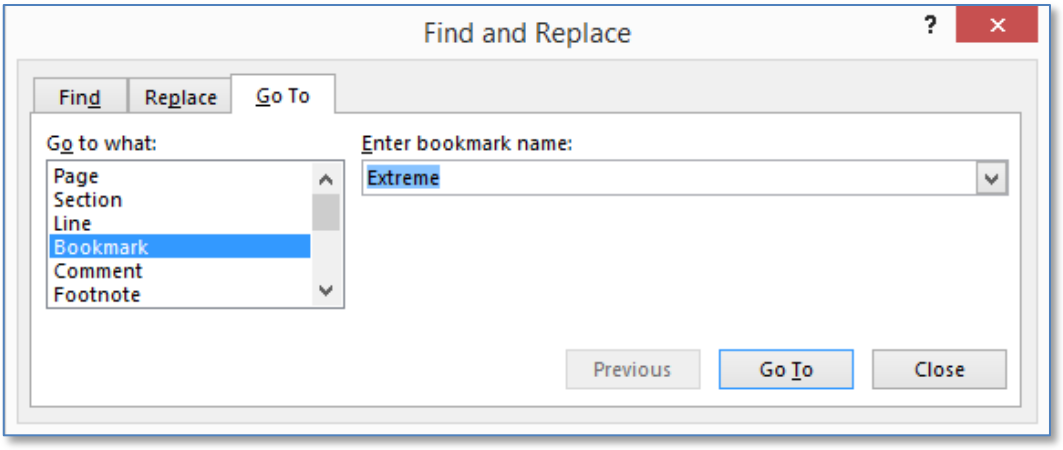
Select the centre column of the table. Turn on the "Reveal Formatting" feature ensuring that the "Cell" properties are displayed. The width of the cells in the middle column is displayed.



5. What word in the document is linked to the bookmark 'Extreme'?	skateboarders

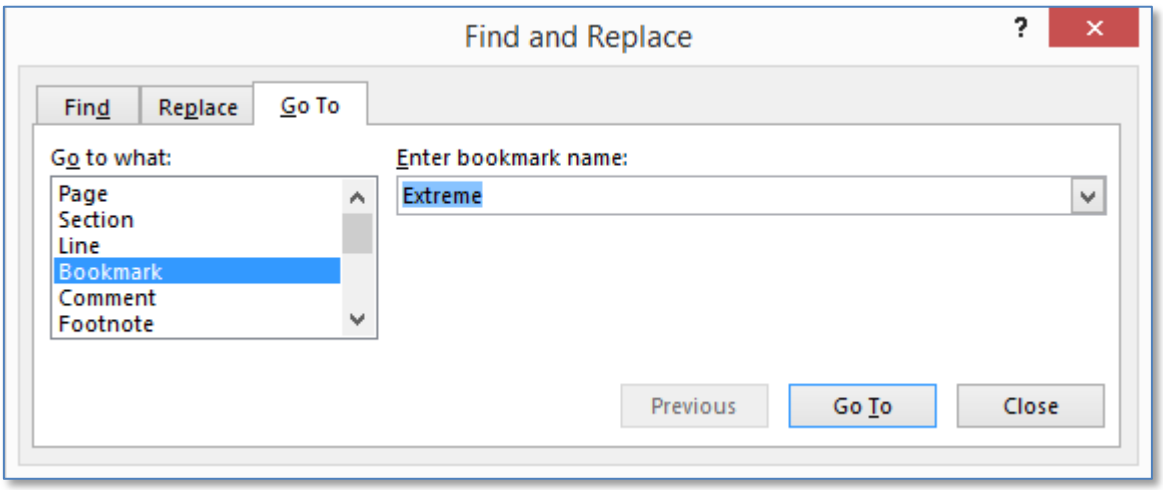
Method 1:

On the "Home" tab, in the "Editing" group, select "Find". Then select "Go To". In the drop-down "Find and Replace" dialog box select "Bookmark". The bookmark Extreme is highlighted. Click "Go To" and the cursor will move to the linked word which will be highlighted in the text.



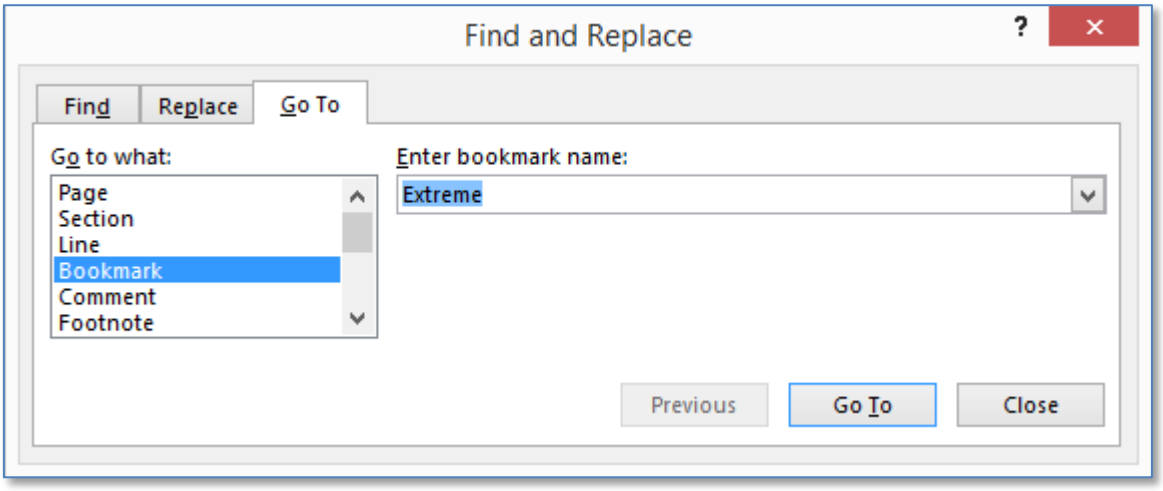
Method 2:

Press the function key F5. It opens up the drop-down dialog box “Find and Replace”. Select “Bookmark”. The bookmark Extreme is highlighted. Click “Go To” and the cursor will move to the linked word which will be highlighted in the text.



Method 3:

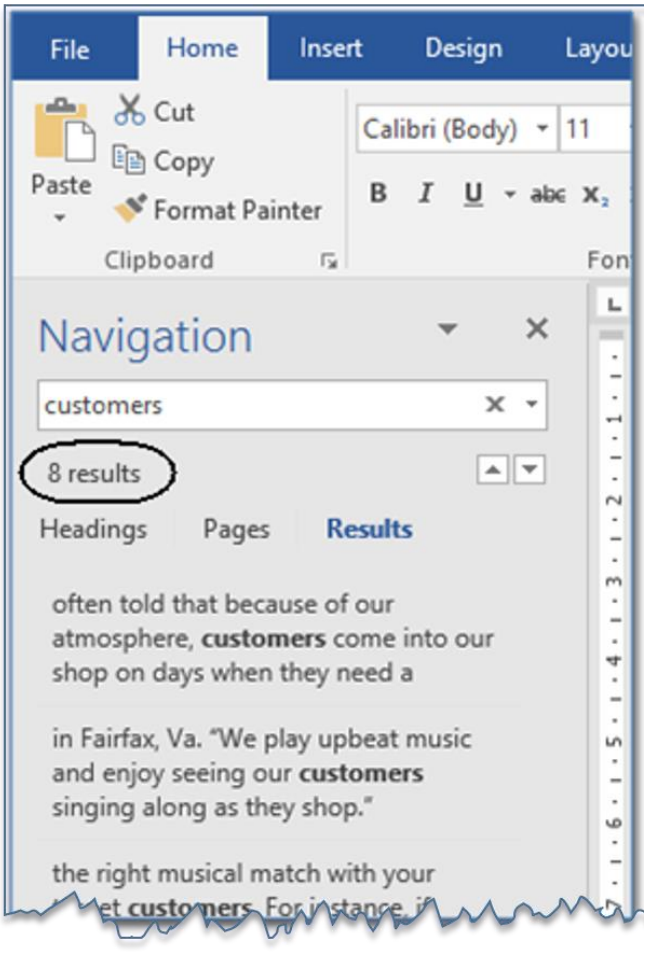
Press <Ctrl><G>. This opens up the “Find and Replace” dialog box. Select “Bookmark”. The bookmark Extreme is highlighted. Click “Go To” and the cursor will move to the linked word which will be highlighted in the text.



6. How many times is the word 'customers' found in the document?	**8**

Method 1:

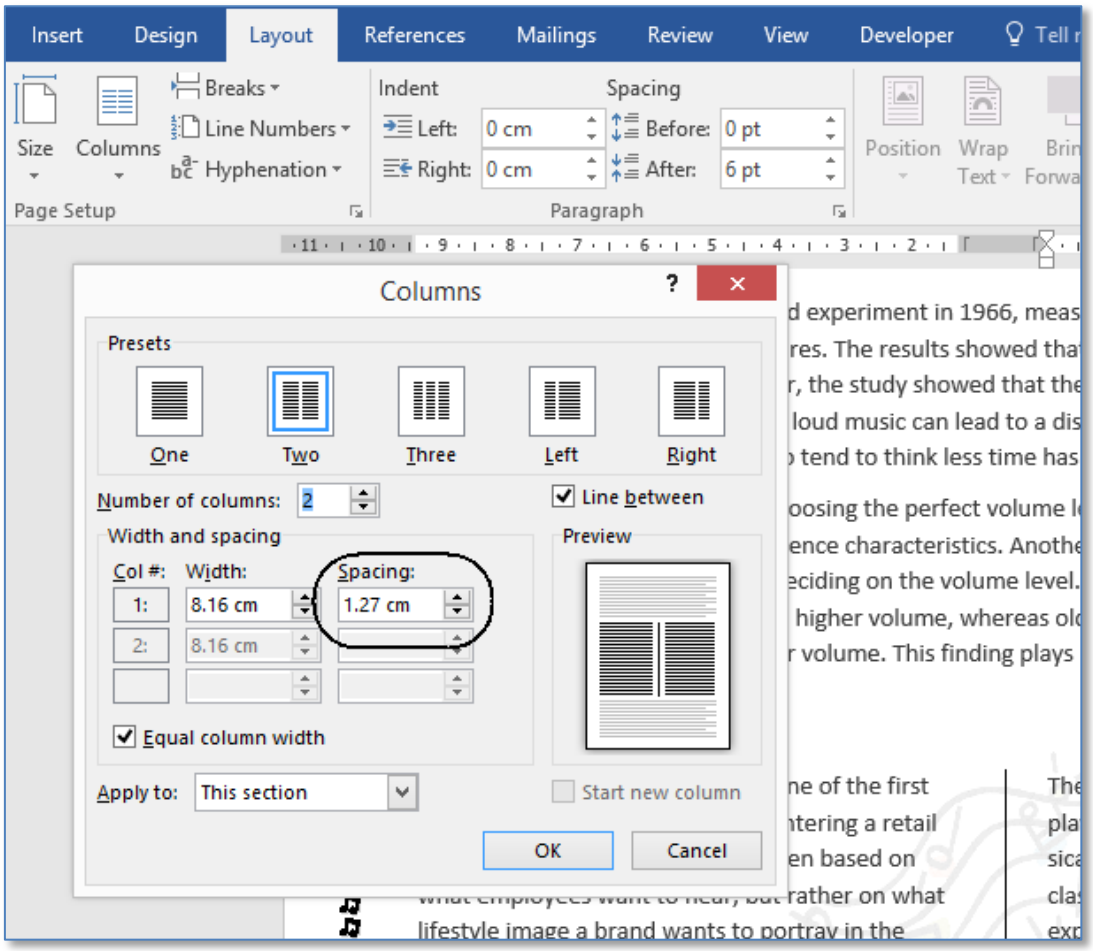
On the “Home” tab in the “Editing” group select “Find”. Enter the word 'customers'. In a panel on the left the number is displayed and also where it is found.



7. **What is the width of the spacing between the two columns under the heading 'Genre'?**	**1.27**

Method 1:

Put the cursor anywhere in the column text. On the “Page Layout” tab on the ribbon, select “Layout” and then “Columns” in the “Page Setup” group. Select “More Columns”. In the dialog box the spacing between the columns is displayed.

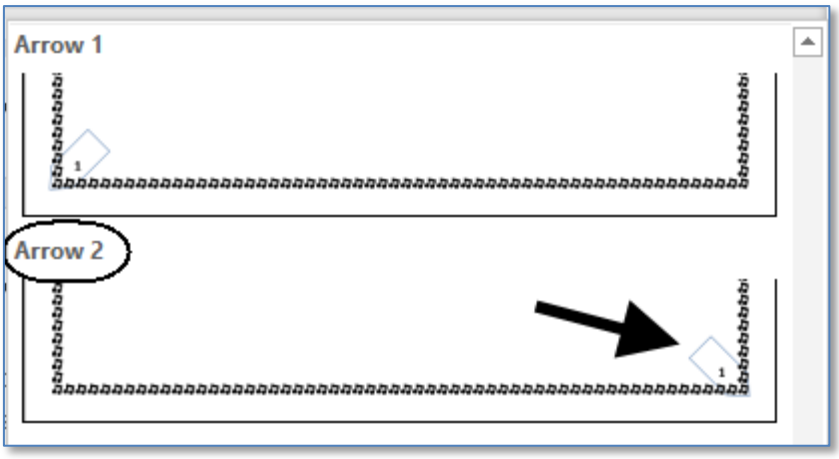


8. What style of page numbering is used in the document?	Arrow 2

Method 1:

It may be difficult to see the page numbering as the Art page border obscures it a bit. For the purposes of this question one can remove the page border.

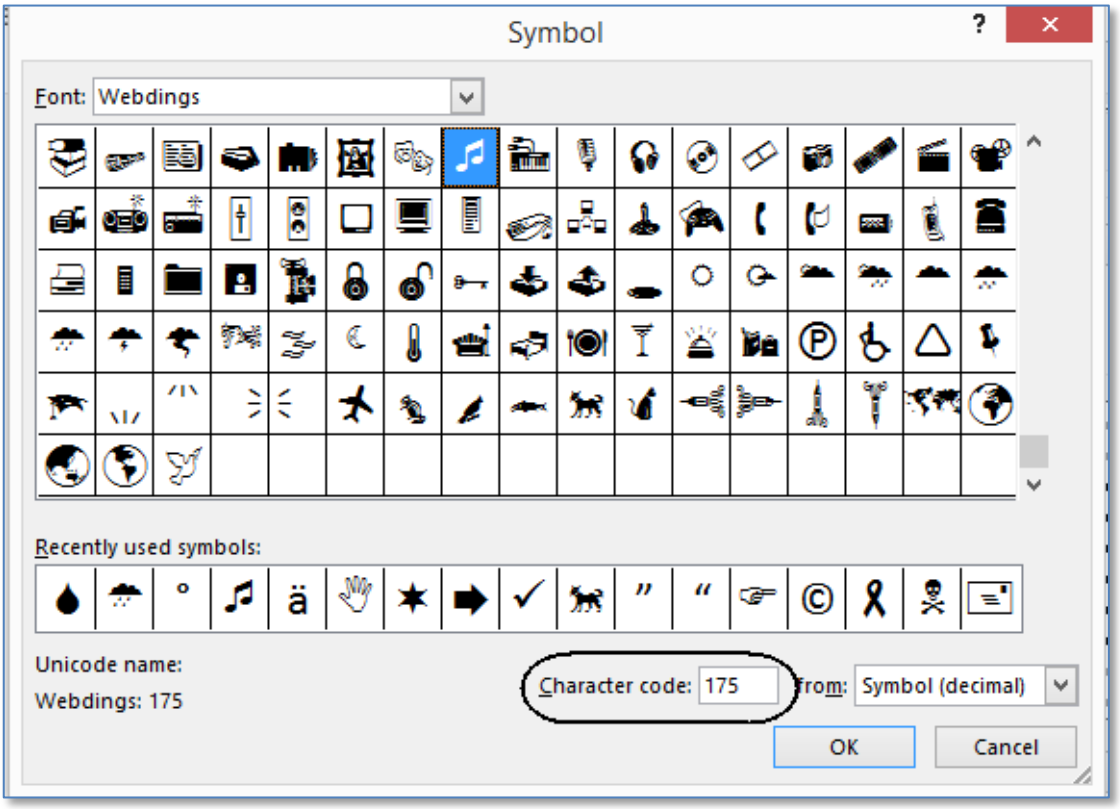
To identify the style of page number, on the “Insert” tab select “Page Number” in the “Header & Footer” group. Select “Bottom of Page”. Scroll down through the different styles until you find the style used which will be highlighted. The name of the style is indicated on the left.



9. What is the Webdings decimal character code for the musical notes used as bullets in the table?	175

Method 1:

Select text which has been bulleted with a musical note. On the “Home” tab, in the “Paragraph” group, select the “Bullets” drop-down box. Select “Define New Bullet”. In the “Define New Bullet” dialog box, select “Symbol”. The “Symbol” dialog box opens for the selected symbol. The character code is displayed.



B: SPREADSHEET

The Billboard Hot 100 is a chart that ranks the best-performing songs of the United States in any given year. Its data, published by Billboard magazine and compiled by Nielsen SoundScan, is based collectively on each song's weekly physical and digital sales, as well as airplay and streaming. The database '**Hot100**' contains some details of all the songs for the period 2001-2012. In the questions below a "*solo performing artist*" is an artist who performs by themselves and so only their name appears in the database as the artist.

The spreadsheet file called '**BBHot100HitsR1**' contains information on the songs which made it into the Billboard Hot 100 hits between 2001 and 2016.

Many of the questions below can best be answered by turning on the filter (under the Data tab).

1. Where the BPM (beats per minute) is given, what is the range (i.e. the difference between highest and lowest) of these values?	**110**

Method 1:

Use the filter feature by clicking on the arrowhead next to the column heading in column H. This will cause a drop-down window to be displayed. BPM values will be displayed in ascending order in this drop-down list. The lowest value is 82 and the highest value is 192. The difference between these two values is 110.

Method 2:

Enter the following formula in any empty cell to the right of the data.

=MAX(H3:H1602) - MIN(H3:H1602)

When executed this formula will subtract the minimum BPM value in column H (82) from the maximum BPM value in column H (192), giving the range of the values (110).

Method 3:

Enter the following formula in any empty cell to the right of the data.

=MAX(H:H) - MIN(H:H)

This formula differs from that used in Method 2 as it addresses all numeric values in column H – so it should be used with caution When executed on the given data this formula will also subtract the minimum BPM value (82) from the maximum BPM value (192), giving the range of the values (110).

Method 4:

Use the filter feature by clicking on the arrowhead next to the column heading in column H. This will cause a drop-down window to be displayed. In the drop-down window deselect the "(Blanks)" option right at the bottom of the list and click on "OK". The values in column H have now been filtered and only contain those rows that have a BPM value.

Sort the values in the column in descending order. The largest BPM value (192) will be at the top of the column and the smallest BPM value (82) will be at the bottom of the column. Subtract the smallest value from the largest value to get the answer (110).

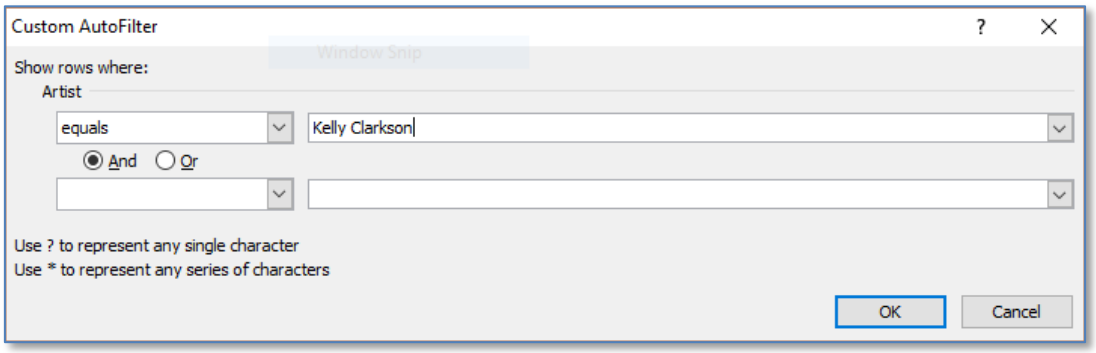
Method 5:

Sort the values in the column in ascending order. The smallest BPM value (82) will be at the top of the column and those rows with no BPM value will be at the end of the column. Scan the column for the largest BPM value (192). Subtract the smallest value from the largest value to get the answer (110).

2. In which year did Kelly Clarkson have the most hits on the Billboard Hot 100 hits?	**2005**

Method 1:

Click on the arrowhead next to “Artist” (col D) and then click on “Text Filters” followed by “Equals”. In the window that opens enter the words “Kelly Clarkson”.



Click on “OK” and the data will be filtered to give only those rows that contain the name “Kelly Clarkson” in the “Artist” field (col D).

Then click on the arrowhead next to “Year” (col B) and sort the values in either ascending or descending order so that it is easier to scan the values. You will note that in 2005 Kelly Clarkson had 4 hits and in all other years in which she appeared in the Billboard Hot 100 she had fewer hits.

Method 2:

Use can be made of the COUNTIFS function. Using an empty area to the right of the data (say columns M and N) enter the value 2001 into cell M5 and the following formula into cell N5:

=COUNTIFS(D3:D1602, "Kelly Clarkson", B3:B1602, "=2001")

OR

=COUNTIFS(D:D, "Kelly Clarkson", B:B, "=2001")

In cell M6 enter 2002 and in cell N6 enter the following formula:

=COUNTIFS(D3:D1602, "Kelly Clarkson", B3:B1602, "=2002")

OR

=COUNTIFS(D:D, "Kelly Clarkson", B:B, "=2002")

Continue this process until you have made provision for each of the years 2001-2016. Once completed one gets something like the following:

Year	No.
2001	0
2002	1
2003	1
2004	1
2005	4

2006	2
2007	1
2008	0
2009	3

This table shows that in 2005 Kelly Clarkson had 4 hits; she had 3 hits in 2009, etc. So 2005 is the year in which she had the most hits on the Billboard Hits 100.

Method 3:

Use can be made of the COUNTIFS function. Use an empty area to the right of the data (say columns N and O). In cells N5 to N20 enter the values 2001 to 2016. In cell O5 enter the following formula:

=COUNTIFS(D:D, "Kelly Clarkson", B:B, N5)

OR

=COUNTIFS(D:D, "Kelly Clarkson", B:B, "="&N5)

OR

=COUNTIFS($D$3:$D$1602, "Kelly Clarkson", $B$3:$B$1602, N5)

Copying the above formula down to the other cells from O6 to O20 gives the following set of values:

Year	No.
2001	0
2002	1
2003	1
2004	1
2005	4
2006	2
2007	1
2008	0
2009	3

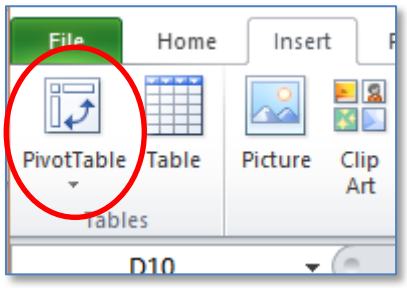
The above table shows that in 2005 Kelly Clarkson had 4 hits; she had 3 hits in 2009, etc. Scanning the table reveals that in 2005 Kelly Clarkson had the most hits on the Billboard Hits 100.

Method 4:

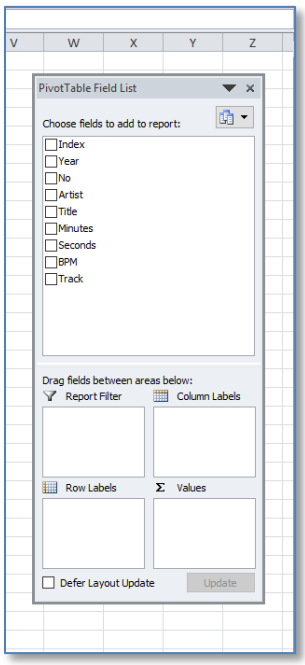
A pivot table can also be used to find the solution. To find out more on pivot tables go to any of the following:

- https://exceljet.net/things-to-know-about-excel-pivot-tables
- www.excel-easy.com/data-analysis/pivot-tables.html
- www.youtube.com/watch?v=Vx-Fuw46VbY

Select “Pivot Table” in the “Tables” group on the “Insert” tab on the ribbon.

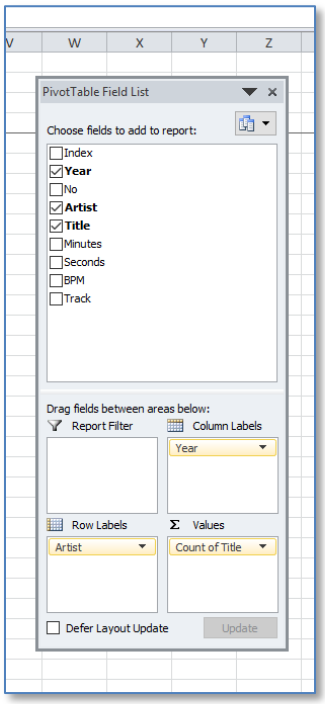


Accept the options presented in the window that opens by clicking on “OK”. A new sheet will open. This sheet contains a Pivot Table Field List (on the right) which is effectively the list of column headings of the main sheet.



Now click on the “Artist” field name and drag it into the area called Row Labels. As you do this you will note that the list of artists in alphabetical order is inserted into column A of the newly opened spreadsheet. Click on the “Year” field name and drag it into the area called Column Labels. Once again the years from 2001 to 2016 are inserted into row 4 of the newly opened spreadsheet. You can also place the “Artist” field in Column Labels and the “Year” field in the Row Columns.

What is now lacking are the data that links the Artists to the Years.



The link between Artist and Year is the Title of the song(s). So click on the "Title" field name and drag it into the area called Values. As you do this Excel automatically calculates how many titles each artist had in each of the BillBoard Hot 100 years. The following table should be created (note that some of the year columns have been hidden in this example):

Count of Title	Column Labels				
Row Labels	**2001**	**2002**	**2015**	**2016**	**Grand Total**
112	1				1
*NSYNC	1	1			2
*NSYNC featuring Nelly		1			1
112	1				2
2 Chainz					1
2 Chainz featuring Drake					1
2 Pac					1
2 Pistols					1
3 Doors Down	2				7
3LW	1				1
3OH!3					1
3OH!3 featuring Kesha					1

From here there are two ways of obtaining the answer:

- Scroll down to "Kelly Clarkson" in the list of artists and under 2005 you will find that she had 4 songs in the BillBoard Hot 100 hits.
- You will note that there are downward pointing arrowheads next to "Row Labels" and "Column Labels" (top left of the table). These can be used in exactly the same way as the arrowheads in a spreadsheet where the filters have been turned on. So click on the arrowhead next to "Row Columns", deselect "(Select All)", scroll down and select "Kelly Clarkson". When you do this you should get the following which once again shows that in 2005 Kelly Clarkson had 4 songs in the

BillBoard Hot 100 hits:

Count of Title	Column Labels											
Row Labels	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2009**	**2010**	**2012**	**2013**	**2015**	**Grand Total**
Kelly Clarkson	1	1	1	4	2	1	3	1	1	1	1	17
Grand Total	**1**	**1**	**1**	**4**	**2**	**1**	**3**	**1**	**1**	**1**	**1**	**17**

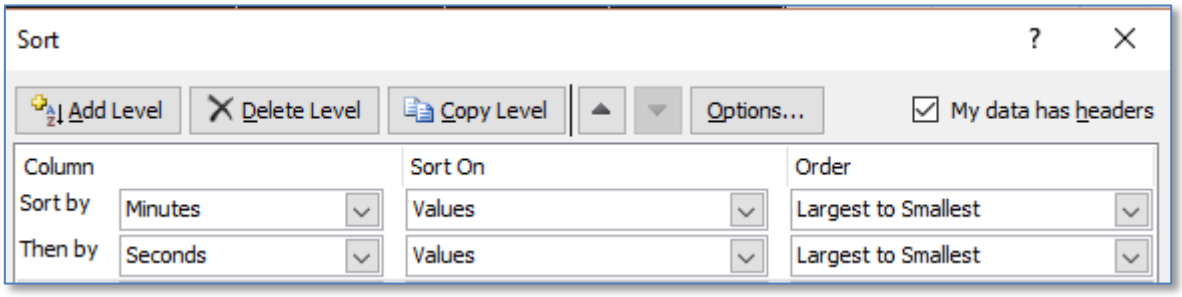
The beauty of using a pivot table is that if you right click on a value, in this case 4, a drop-down list opens up. If you then select “Show Details” from this list a new sheet opens up with all the details of the 4 songs in that year.

Index	Year	No	Artist	Title	Minutes	Seconds
0498X14	2005	4	Kelly Clarkson	Since U Been Gone	3	8
0492X14	2005	10	Kelly Clarkson	Behind Hazel Eyes	3	14
0475X14	2005	27	Kelly Clarkson	Breakaway [Radio Edit]	3	54
0430X14	2005	72	Kelly Clarkson	Because of You	3	38

3. For those songs where the length is given, how long is the longest song? Give your answer in seconds, to the nearest second.	**485**

Method 1:

Sort the duration of each song in descending order by minute (col F) and then by second (col G). Use a custom sort as follows:



The song with the longest playtime will be at the top of the data. The song Mirrors by Justin Timberlake with a playtime of 8 min 5 sec is the song with the longest playtime. Converting this to seconds give 485 seconds.

Method 2:

One can use the ISBLANK function to test whether a cell is blank. Insert the following formula into cell J2:

=IF(ISBLANK(F2), "", F2*60+G2)

The above formula tests whether cell F2 is blank, in other words no playtime is given. If it is blank then a blank is inserted in cell J2. If cell F2 is not blank then the value in cell F2 (minutes) is multiplied by 60 and added to the value in cell G2 (seconds) to give the playtime in seconds. This formula should then be copied down to all the other cells in column J.

Sort the data in descending order according to column J. The song with the longest playtime will be at

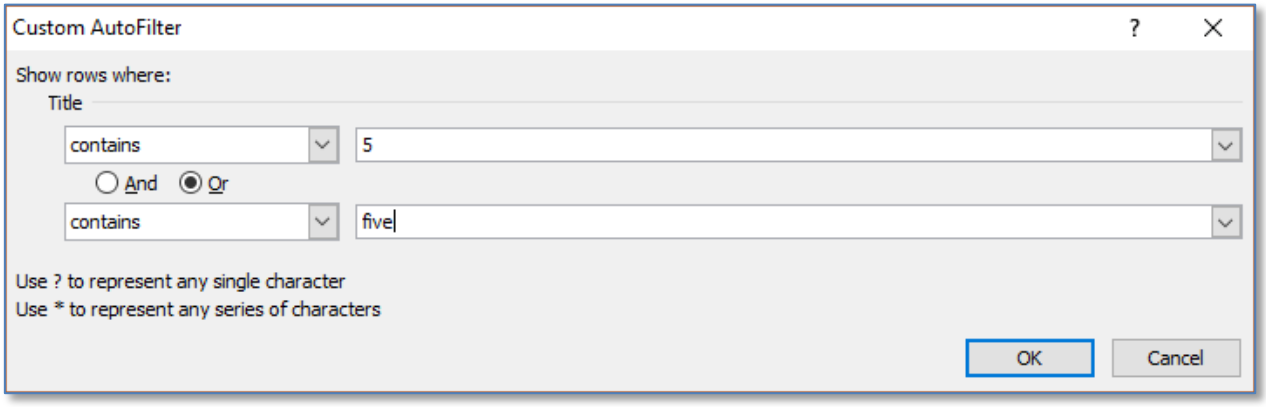
the top of column J.

4. The number five appears in the title of four songs. What is the title of the shortest song in which it appears?	**FourFiveSeconds**

A quick scan of the data in column E (Title) suggests that the question is slightly ambiguous as the number “five” could be seen as the word “five” or the numeral 5. This means that one would have to search for both the word “five” and the numeral 5.

Method 1:

With the filters turned on click on the arrowhead next to the “Title” field and select “Text Filters” and the “Contains” from the subsequent drop-down lists. A window opens allowing one to enter criteria as shown on the next page.



Notice the use of the “Or” operator as one needs to search for both the numeral 5 and the word “five”. Using the AND operator would look for both the word “five” and the numeral 5 in the title. On clicking “OK”, 4 rows are identified as containing the numeral 5 or the word “five”, as shown below (only Title, Minutes and Seconds columns shown):

Title	Minutes	Seconds
It's **Five** O'Clock Somewhere	3	52
5 O'Clock	3	7
50 Ways To Say Goodbye	3	53
Four**Five**Seconds	3	5

As the number of titles is small the playtimes can be scanned. The title with the shortest playtime is FourFiveSeconds with a playtime of 3:05.

If the number of titles was large this list could then be sorted in ascending order first by Minutes and then by Seconds with the title of the song with the shortest playtime being at the top of the list.

5. Track number 1 appears most often. Which track number appears the 7th most times?	**6**

A quick scan of column I (Track) will show that the values range between 1 and 20 and that there are a number of blanks, i.e. where no track number is given.

Method 1:

Use can be made of the COUNTIF function. Use an empty area to the right of the data (say columns K and L). In cells K4 to K23 enter the values 1 to 20 in ascending order. To facilitate checking later on the values 1 to 20 are also placed in column J. In cell L4 enter the following formula:

=COUNTIF(I:I, K4)

OR

=COUNT($I$3:$I$1602, K4)

Copy this formula down to cells L5 to L23 will give the following values:

J	K	L
Pos.	Track	No.
1	1	132
2	2	102
3	3	90
4	4	67
5	5	59
6	6	66
7	7	83
8	8	79
9	9	56
10	10	56

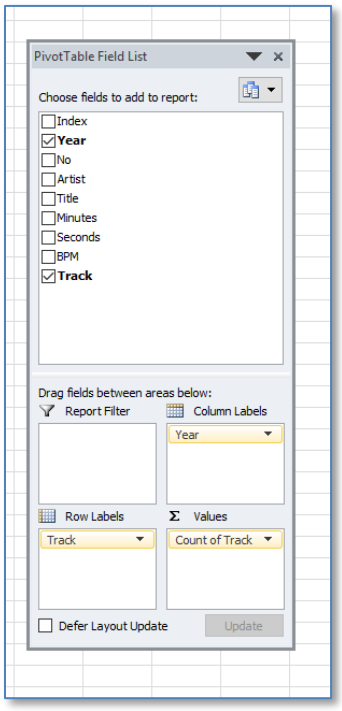
If the set of values in columns K (Track) and L (No.) (not column J) are sorted in descending order according to the number (column L) the following is obtained:

J	K	L
Pos.	Track	No.
1	1	132
2	2	102
3	3	90
4	7	83
5	8	79
6	4	67
7	6	66
8	5	59
9	9	56
10	10	56

The above shows that track number 6 with 66 appearances is the track with the 7th most appearances.

Method 2:

This problem can also be solved using a pivot table by placing the “Track” field in the Row Labels block, the “Year” field in the Column Labels block and the “Track” field in the Values block



This will produce a table similar to the one on the next page (some columns have been hidden):

Count of Track	Column Labels						
Row Labels	**2001**	**2002**	**2003**	**2004**	**2015**	**2016**	**Grand Total**
1	3	5	5	5			132
2	5	7	4	4			102
3	11	8	6	5	1		90
4	5	5	4	2			67
5	1	2	7	6		1	59
6	3	2	4	7			66
7	2	5	5	3			83
8	2	5	6	6			79
9	2	5	2	2			56
10	5	1	2	7			56
11	3	1	4	4	1		36
12	4	3	4	2		1	38
13	5	4	4	6			36
14	3	7		2			27
15	5	4	6	6			25
16	2	3	5	2			27
17	4	3	7	3			45
18	3	2	2	5			28
19	2	5	3	5			35
20		2	1	3			19
				11			29
(blank)							
Grand Total	**70**	**79**	**81**	**96**	**2**	**2**	**1135**

One can then either

- search the values under Grand Total for the 7th largest number; or
- sort the data in descending order and then get the track number that is number 7 in the resulting list. To sort the pivot table simply select one of the cells in the column you wish to sort on and click the sort largest to smallest button in the "Sort & Filter" group on the ribbon.

6. For all the songs where a length is given, what is the average song length? Give your answer in seconds, to the nearest second.	**230**

Method 1:

Insert the following formula into cell J2:

=IF(ISBLANK(F2), "", F2*60+G2)

The above formula tests whether cell F2 is blank, in other words no playtime is given. If it is blank then a blank is inserted in cell J2. If cell F2 is not blank then the value in cell F2 (minutes) is multiplied by 60 and added to the value in cell G2 (seconds) to give the playtime in seconds. This formula should then be copied down to all the other cells in column J.

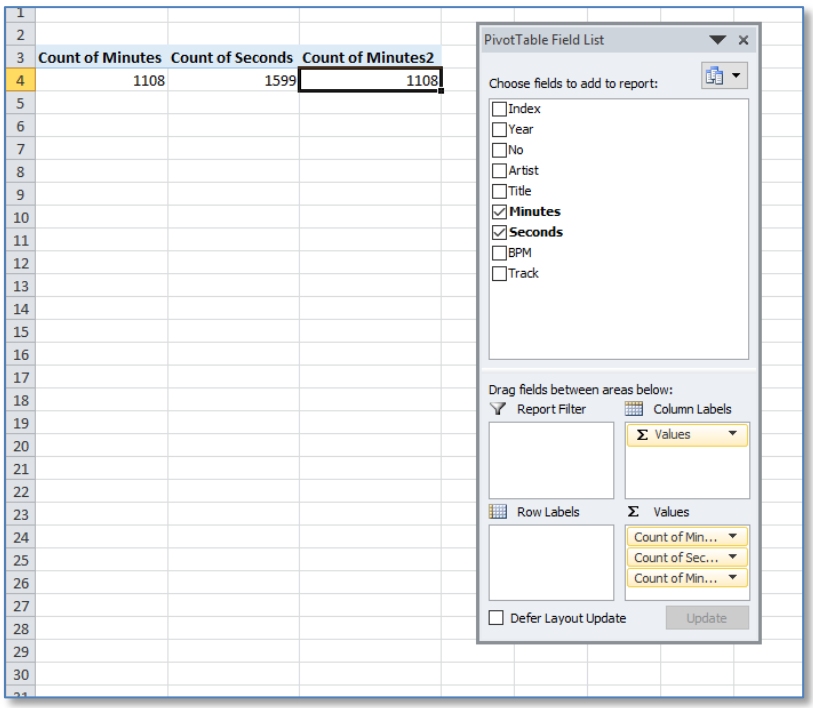
Having obtained the playtime in seconds for each of the songs one can then use a combination of the ROUND and the AVERAGE functions to determine the average song length, to the closest second. Enter the following formula at the end of column J, say cell J1605

=ROUND(AVERAGE(J3:J1602), 0)

The answer given is 230.

Method 2:

This problem can also be solved using a pivot table by dragging and dropping the "Minutes" field and the "Seconds" field into the Values block. In this instance drag and drop the "Minutes" field for a second time into the Values block. You should have something similar to what appears below:



Click on the arrowhead next to each of “Count of Minutes” and “Count of Seconds” in the value block. On the drop-down list that appears select “Value Field Settings”, followed by “Sum” and then ÖK”. Leave the second instance of “Count of Minutes” as it is.

Assuming that the values of the previous operations were automatically inserted in cells A4, B4 and C4 you can now enter the following formula in cell D4:

=ROUND((A4*60+B4)/C4, 0)

The answer will be calculated as 230.

7. How many titles by the same artist(s) appear on the Billboard Hot 100 hits in two consecutive years?	**138**

The solution focuses on titles by the same artist. In other words we first need to check whether the same title appears in consecutive years and then check that where this does happen whether the artist(s) is the same. It is possible for the same title to reach the Hot 100 hits but it could be performed by different artists.

The solution to this problem will require the use of a number of additional columns to be used as “building blocks”.

Method 1:

Sort the dataset in ascending order according to Artist, then Title and then Year. This should place songs with the same title in alphabetical order one below the other. Where a particular title is sung by more than one artist the artists should be placed in alphabetical order one below the other next to the correctly ordered song title. Where a particular artist appears more than once then the years in which they appear should be in ascending order.

For example:

	B	C	D	E
	Year	**No**	**Artist**	**Title**
3	2009	87	Britney Spears	3
4	2010	69	Britney Spears	3
5	2013	71	Taylor Swift	22

One can now read through the list noting where the title/artist combination occurs in consecutive years. For a list of 1 600 titles this is quite time-consuming.

Method 2:

Sort the dataset in ascending order according to Artist, then Title and then Year. This should place songs with the same title in alphabetical order one below the other. Where a particular title is sung by more than one artist the artists should be placed in alphabetical order one below the other next to the correctly ordered song title. Where a particular artist appears more than once then the years in which they appear should be in ascending order.

For example:

	B	C	D	E
	Year	No	Artist	Title
3	2009	87	Britney Spears	3
4	2010	69	Britney Spears	3
5	2013	71	Taylor Swift	22

The next step will be to check whether consecutive titles and artists are the same and whether the difference between the two years is 1.

The following method makes use of empty columns to the right of the data, say columns J, K, L and M. Enter the following formula in cell J4:

=(E4 = E3)

The above formula tests whether the title in cell E4 is the same as the title in cell E3. If the titles are the same the value in cell J4 will be TRUE otherwise it will be FALSE. Copy this formula down to all other cells in column J.

In the example given above the value in cell J4 will be TRUE as the titles are the same. The value in cell J5 will be FALSE as the titles differ.

Enter the following formula in cell K4:

=(D4 = D3)

The above formula tests whether the artist in cell D4 is the same as the artist in cell D3. If the artists are the same the value in cell K4 will be TRUE otherwise it will be FALSE. Copy this formula down to all other cells in column K.

In the example given above the value in cell K4 will be TRUE as the artists are the same. The value in cell K5 will be FALSE as the artists differ.

Enter the following formula in cell L4:

=(B4 - B3) = 1

OR

=B4 = (B3 + 1)

The above formula tests whether the difference between the value in cell B4 and that in cell B3 is 1. If the difference is 1 the value in cell L4 will be TRUE otherwise it will be FALSE. Copy this formula down to all other cells in column L.

In the example given above the value in cell L4 will be TRUE as the years differ by 1. The value in cell L5 will be FALSE as the years differ by more than 1.

Now that we've ascertained the logical values for the title, artist and years the AND function can be used to determine the overall logical value. Enter the following formula in cell M4:

=AND(J4, K4, L4)

Copy this formula down to all other cells in column M.

In the example given above the values of J4, K4 and L4 are all TRUE so the value of cell M4 will be TRUE. This is correct as the song with title 3 sung by Britney Spears appeared in consecutive years, viz.

2009 and 2010. The value in cell L5 will be FALSE as the values of J5, K5 and L5 are all FALSE.

Now use the COUNTIF function to count the number of occurrences of the word TRUE in column M. Enter the following formula in cell M1603

=COUNTIF(M3:M1602, "=TRUE")

The cell will display the value 138 which is the number of titles by the same artist that appeared on the Billboard Hot 100 hits in consecutive years.

Method 3:

Use the same sorting procedure as given in Method 1.

In cell J4 enter the following formula which is a combination of all the separate formulas used in Method 2:

=AND(D2=D3, E2=E3, B3=B2+1)

Now count the number of times TRUE occurs in column J using the following formula:

=COUNTIF(J3:J1602, "=TRUE")

Or if you insert the formula in a different column you could use

=COUNTIF(J:J, "=TRUE")

C: DATABASE

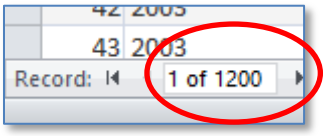
NB. Many of the database questions can also be solved by exporting the table as an Excel spreadsheet and then using spreadsheet functions.

The Billboard Hot 100 is a chart that ranks the best-performing songs of the United States in any given year. Its data, published by Billboard magazine and compiled by Nielsen SoundScan, is based collectively on each song's weekly physical and digital sales, as well as airplay and streaming. The database '**Hot100**' contains some details of all the songs for the period 2001-2012. In the questions below a "*solo performing artist*" is an artist who performs by themselves and so only their name appears in the database as the artist.

1. How many songs are there in the database?	**1200**

Method 1:

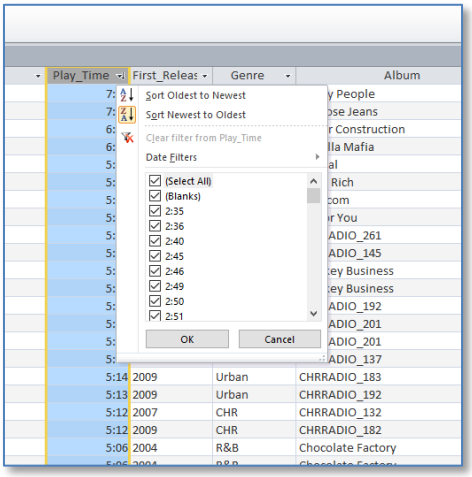
Open the database in Datasheet View. The number of records in the database will be displayed in the status bar, bottom left of the screen. In this case there are 1 200 records in the database.



2. What is the title of the song with the longest playtime?	**Happy People**

Method 1:

Using the automatic filters provided in Access click on the down arrow to the right of the Play_Time field. In the drop-down list select "Sort Newest to Oldest". The records in the database will be sorted in descending order according to the Play_Time field. The song with the longest playtime, viz. Happy People by R. Kelly with a playtime of 7:49, will be at the top of the list. If you select "Sort Oldest to Newset" it will be at the bottom of the list.



Method 2:

Create a simple query based on the BillBoardHot100 table. The query should include at least the Title field and the Play_Time field. Other fields could be included but are not essential. Sort the records in descending order by Play_Time.

Field:	[Artist]	[Title]	[Play_Time]
Table:	BillBoardHot100	BillBoardHot100	BillBoardHot100
Sort:			Descending
Show:	☑	☑	☑
Criteria:			
or:			

When run, the query will display the following with the same overall result:

Artist	Title	Play_Time
R. Kelly	Happy People	7:49
Ginuwine	In Those Jeans [Dr.Octavo XXL Extended Mix]	7:06
Missy Elliott Featuring Ludacris	Gossip Folks [Fatboy Slim Remix]	6:45
Lil' Kim Featuring 50 Cent	Magic Stick	6:00
The Isley Brothers	Contagious	5:48
Big Tymers	Still Fly	5:35

3. Of the titles in the database released in 2010 how many had a playtime greater than 3:59?	**25**

Method 1:

Using the automatic filters provided in Access click on the arrowhead to the right of the First_Release_Year field. Deselect "(Select All)" and scroll down the list and select "2010". This will filter the records displaying the details of only those songs released in 2010.

Then click on the arrowhead to the right of the Play_Time field and select "Sort Newest to Oldest". This will sort the songs in descending order according to their playtime.

Using a manual count will show that 25 songs meet the criteria of being released in 2010 and having a playtime longer than 3:59.

Method 2:

Create a simple query based on the BillBoardHot100 table. The query should include at least the First_Release_Year field and the Play_Time field. Other fields could be included but are not essential.

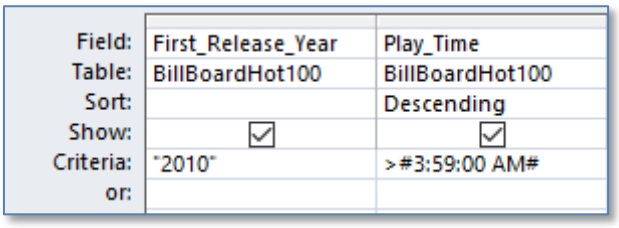
Setting the criteria for the First_Release_Year field to 2010 will ensure that only those songs released in 2010 will be displayed. Sort the Play_Time field in descending order will sort the list of songs in order from longest playtime to shortest playtime.

Field:	First_Release_Year	Play_Time
Table:	BillBoardHot100	BillBoardHot100
Sort:		Descending
Show:	☑	☑
Criteria:	"2010"	
or:		

When run, the query will display 98 records of which, by counting, 25 will have a playtime greater than 3:59.

Method 3:

Do as for Method 2 above but add a criteria to Play_Time of ">3:59"



Field:	First_Release_Year	Play_Time
Table:	BillBoardHot100	BillBoardHot100
Sort:		Descending
Show:	☑	☑
Criteria:	"2010"	>#3:59:00 AM#
or:		

When run, the query will display 25 records which will have a playtime greater than 3:59.

4. Some albums include more than one song that appeared in the Billboard Hot 100. In 2003, which album included the largest number of R&B songs to have appeared in the Billboard Hot 100?	**Stripped**

Method 1:

Using the automatic filters provided in Access click on the arrowhead to the right of the BillBoardHot100Year field. Deselect "(Select All)" and scroll down the list and select "2003". This will filter the records displaying the details of only those songs that reached the BillBoard Hot 100 Hits in 2003.

Then click on the arrowhead to the right of the Genre field. Deselect "(Select All)" and scroll down the list and select "R&B". This will now further filter the records displaying the details of only those R&B songs that reached the BillBoard Hot 100 Hits in 2003.

Lastly sort the Titles of the songs in alphabetical order so that titles with the same name appear next to each other. A close inspection of the results will show that the Album called Stripped included the largest number of hits songs in 2003. (NB. Some fields have been hidden during the filtering process.)

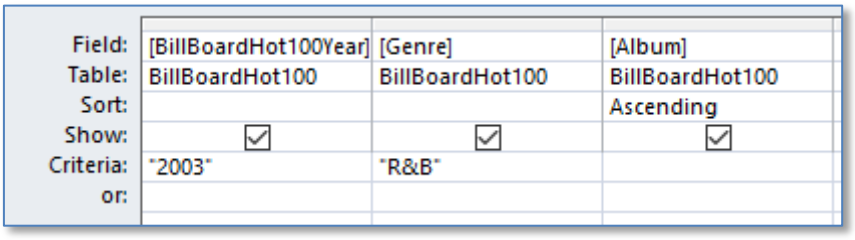
BillBoardHot100Year	Genre	Album
2003	R&B	Aaliyah
2003	R&B	After the Storm
2003	R&B	Almost Famous
2003	R&B	Angel
2003	R&B	Chapter II
2003	R&B	Chapter II
2003	R&B	Chocolate Factory
2003	R&B	Chocolate Factory
2003	R&B	I Care 4 U
2003	R&B	I Wanna Go There
2003	R&B	It Ain't Safe No More...
2003	R&B	Justified
2003	R&B	Justified
2003	R&B	Moodring
2003	R&B	Pandemonium!
2003	R&B	Still Ghetto
2003	R&B	Stripped
2003	R&B	Stripped
2003	R&B	Stripped
2003	R&B	The Neptunes Present...Clones
2003	R&B	The R. in R&B Collection, Vol. 1
2003	R&B	The Senior

Method 2:

Create a simple query based on the BillBoardHot100 table. The query should include at least the BillBoardHot100Year, Genre and Album fields. Other fields could be included but are not essential.

Setting the criteria for the BillBoardHot100Year field to 2003 will ensure that only those songs that appeared in 2003 will be displayed. Setting the criteria for the Genre field to “R&B” will further select only those songs that are classified as R&B songs.

Finally sort the data alphabetically according to the Album field.



Field:	[BillBoardHot100Year]	[Genre]	[Album]
Table:	BillBoardHot100	BillBoardHot100	BillBoardHot100
Sort:			Ascending
Show:	☑	☑	☑
Criteria:	"2003"	"R&B"	
or:			

When run, the query will display 22 records satisfying the criteria that they should be R&B songs that appeared on the BillBoard Hot 100 hits in 2003. A close inspection of the results will show that the album called Stripped included the largest number of hits songs in 2003.

BillBoardHot100 Query2

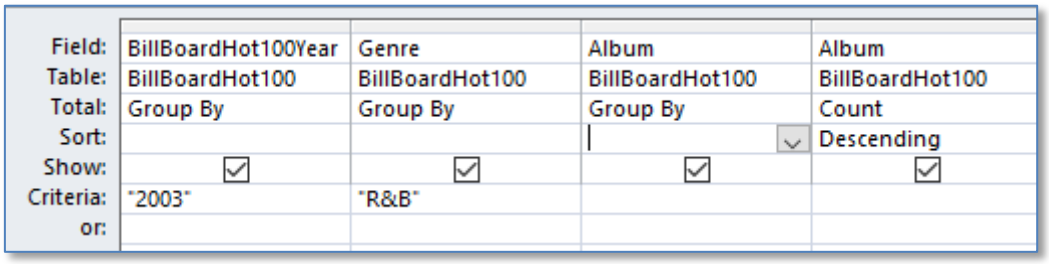
BillBoardHot100Year	Genre	Album
2003	R&B	Aaliyah
2003	R&B	After the Storm
2003	R&B	Almost Famous
2003	R&B	Angel
2003	R&B	Chapter II
2003	R&B	Chapter II
2003	R&B	Chocolate Factory
2003	R&B	Chocolate Factory
2003	R&B	I Care 4 U
2003	R&B	I Wanna Go There
2003	R&B	It Ain't Safe No More...
2003	R&B	Justified
2003	R&B	Justified
2003	R&B	Moodring
2003	R&B	Pandemonium!
2003	R&B	Still Ghetto
2003	R&B	Stripped
2003	R&B	Stripped
2003	R&B	Stripped
2003	R&B	The Neptunes Present...Clones
2003	R&B	The R. in R&B Collection, Vol. 1
2003	R&B	The Senior

Method 3:

Create a simple query based on the BillBoardHot100 table. The query should include at least the BillBoardHot100Year, Genre and Album fields. Other fields could be included but are not essential.

In this instance include the Album field twice in the query (see below) as we're going to do TWO things with the values in this field.

Set the criteria for the BillBoardHot100Year field to 2003. Set the criteria for the Genre field to "R&B". Add Totals to the query by grouping the BillBoardHot100Year field, the Genre field and the first instance of the Album field. In the second instance of the Album field count the number of albums and sort in descending order.



Field:	BillBoardHot100Year	Genre	Album	Album
Table:	BillBoardHot100	BillBoardHot100	BillBoardHot100	BillBoardHot100
Total:	Group By	Group By	Group By	Count
Sort:				Descending
Show:	☑	☑	☑	☑
Criteria:	"2003"	"R&B"		
or:				

When run, the query will display the following with the album containing the largest number of hits at the top of the list:

BillBoardHot100 Query2

BillBoardHot100Year	Genre	Album	CountOfAlbum
2003	R&B	Stripped	3
2003	R&B	Justified	2
2003	R&B	Chapter II	2
2003	R&B	Chocolate Factory	2
2003	R&B	After the Storm	1
2003	R&B	Almost Famous	1
2003	R&B	Angel	1
2003	R&B	I Care 4 U	1
2003	R&B	Aaliyah	1
2003	R&B	It Ain't Safe No More...	1
2003	R&B	The Senior	1
2003	R&B	Moodring	1
2003	R&B	Pandemonium!	1

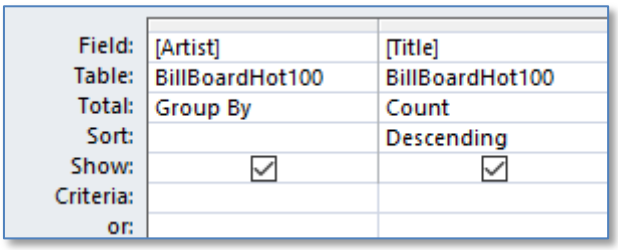
Once again the album called Stripped includes the largest number of hits.

5. Which solo performing artist appears the most times in the database?	Rihanna

Method 1:

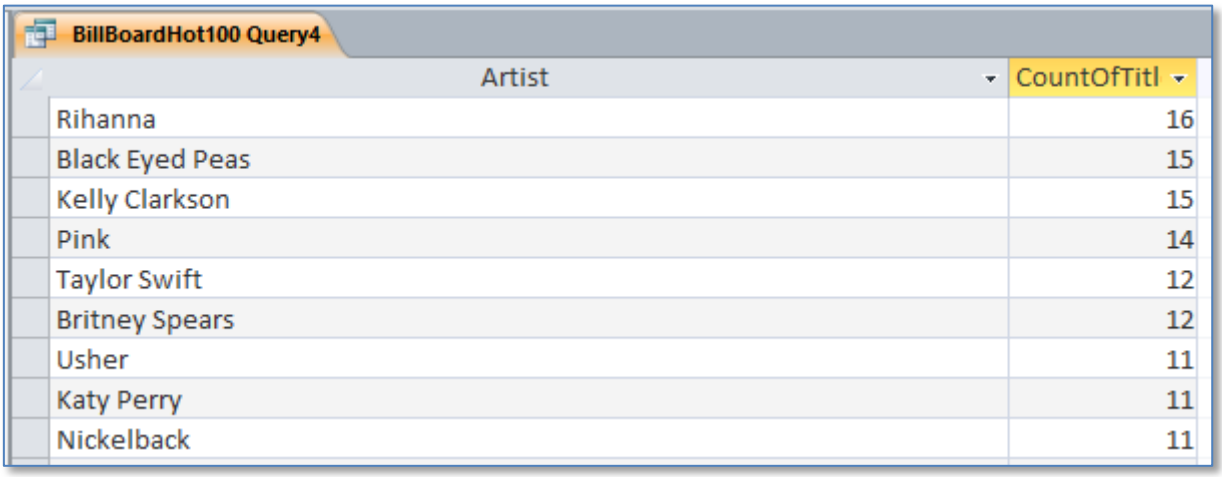
Create a simple query based on the BillBoardHot100 table. The query should include at least the Artist and Title fields. Other fields could be included but are not essential.

Turn on the groupings/totals and change the function in the Title field to Count – see below:



Field:	[Artist]	[Title]
Table:	BillBoardHot100	BillBoardHot100
Total:	Group By	Count
Sort:		Descending
Show:	☑	☑
Criteria:		
or:		

When run, this query produces the following list showing that Rihanna with 16 hits appears most often:



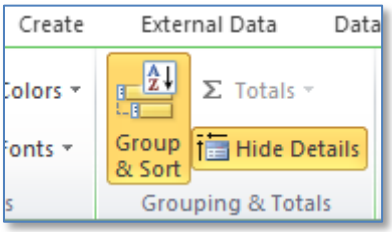
BillBoardHot100 Query4

Artist	CountOfTitl
Rihanna	16
Black Eyed Peas	15
Kelly Clarkson	15
Pink	14
Taylor Swift	12
Britney Spears	12
Usher	11
Katy Perry	11
Nickelback	11

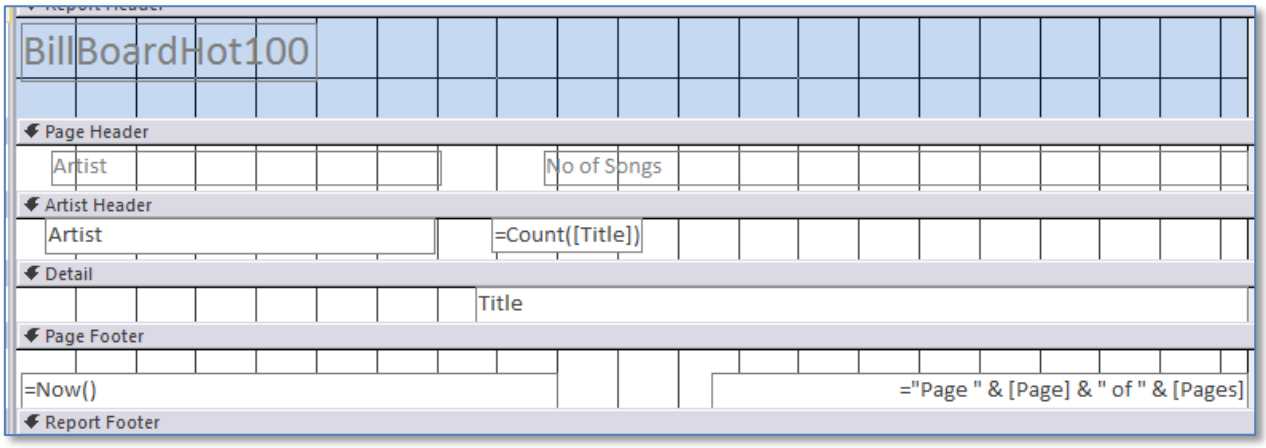
Method 2:

Create a report based on the BillBoardHot100 table. Include the Artist and Title fields in the report and group the records by Artist.

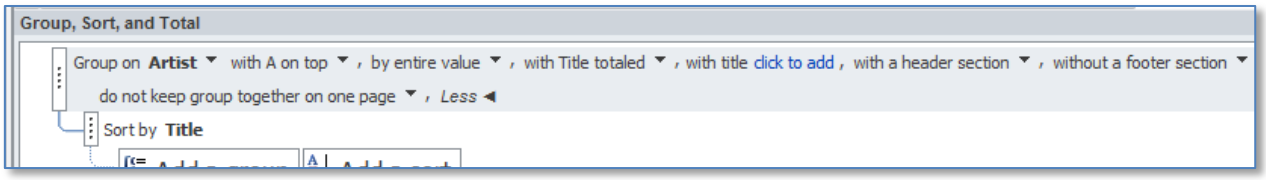
Add a calculated field to COUNT the number of Titles per Artist. Click on the “Hide Details” button in the “Grouping &Totals” group on the ribbon (see image below) to hide the details in the resulting report.



The report in Design View could look like the following:



The grouping and sorting could look like the following:



When viewed the report should look something like the following:

BillBoardHot100

Artist	No of Songs
*NSYNC	1
*NSYNC Featuring Nelly	1
112	3
2 Chainz Featuring Drake	1
2 Pistols	1
2pac	1
3 Doors Down	7
3LW	1
3OH!3	1
3OH!3 Featuring Kesha	1
50 Cent	6
50 Cent Featuring Justin Timberlake	1
50 Cent Featuring Mobb Deep	1
50 Cent Featuring Snoop Dogg & Lloyd E	1
Aaliyah	4

The report can now be scanned to find the Artist with the highest number of songs in the BillBoard Hot 100.

Ray J	1
Ray J Featuring Yung Berg	1
Red Hot Chili Peppers	2
Rich Boy Featuring Polow Da Don	1
Rick Ross Featuring T-Pain	1
Rihanna	16
Rihanna & Ne-Yo	1
Rihanna Featuring Calvin Harris	2
Rihanna Featuring Chris Brown	1
Rihanna Featuring Drake	1
Rihanna Featuring Jay-Z	1
Rihanna Featuring Young Jeezy	1

The report shows that Rihanna with 16 song titles is the solo performing artist with the highest number of song titles in the BillBoard Hot 100.

Method 3:

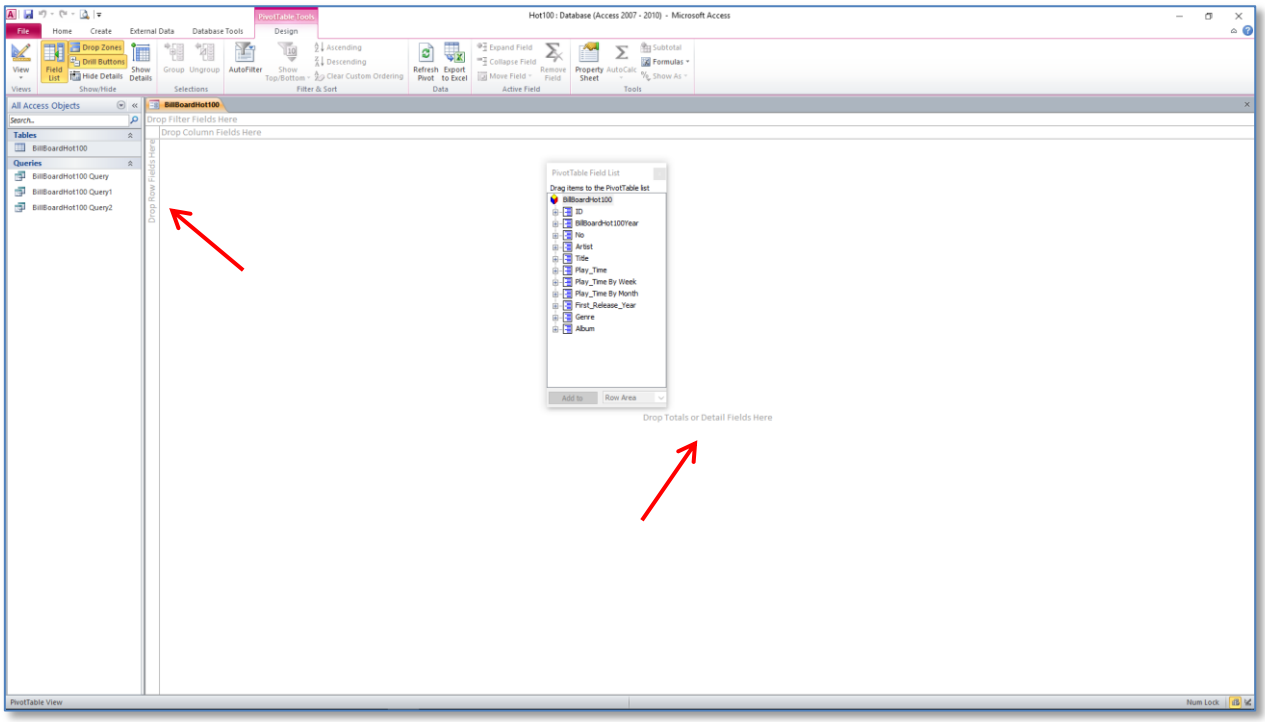
This method makes use of a pivot table. For more info on how to create pivot tables in Access have a look at the following videos on YouTube:

- https://www.youtube.com/watch?v=ZgerpTHzQes
- https://www.youtube.com/watch?v=-HNeqxnmrW0

Pivot tables are very useful in both Excel and Access for quickly summarising data. Unfortunately Access 2016 no longer contains the pivot table functionality so one would need to export the table to an Excel spreadsheet and then use the pivot table functionality that is embedded in Excel (see Method 3). The second YouTube video shows how one can get around this problem by integrating an Excel spreadsheet as an object in an Access database.

Close all tables, queries, forms and reports.

Highlight the BillBoardHot100 table. Select the “Create” tab on the ribbon. In the “Forms” group click on the arrowhead next to “More Forms” and select “Pivot Table” from the resulting drop-down. A window similar to the one shown below will open. If the PivotTable Field List does not appear click on the “Field List” option in the “Show/Hide” group.



In the PivotTable Field List pane click on the Artist field name and drag it to the left of the screen where it says “Drop Row Fields Here”. Click on the Title field in the PivotTable Field List pane and drag it to the area labelled “Drop Totals or Detail Fields Here”. You should now have something similar to the image below:

Drop Filter Fields Here

	Drop Column Fields Here
Artist	**Title**
*NSYNC	This I Promise You
*NSYNC Featuring Nelly	Girlfriend [The Neptune Remix]
112	Peaches & Cream
	It's Over Now
	U Already Know
2 Chainz Featuring Drake	No Lie
2 Pistols	She Got It
2pac	Thugz Mansion
3 Doors Down	When I'm Gone
	Here Without You [Radio Edit]
	Here Without You [Radio Edit]
	Kryptonite
	Be Like That
	Let Me Go [Rock Version]
	It's Not My Time

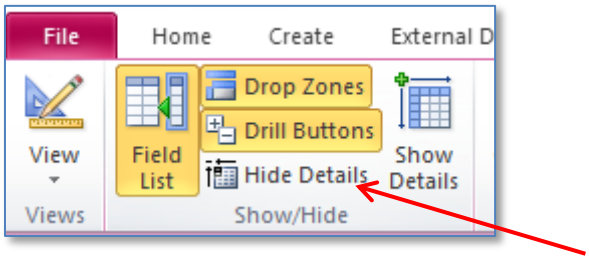
Now highlight the column headed Title by clicking on the cell containing the word Title. The whole column should now be selected. Right clicking on the highlighted column will cause a drop-down list to appear. Click on “AutoCalc” and then on “Count”. You should now have something similar to the image below:

BillBoardHot100

Drop Filter Fields Here

Artist	Title
*NSYNC	This I Promise You
	1
*NSYNC Featuring Nelly	Girlfriend [The Neptune Remix]
	1
112	Peaches & Cream
	It's Over Now
	U Already Know
	3
2 Chainz Featuring Drake	No Lie
	1
2 Pistols	She Got It
	1
2pac	Thugz Mansion
	1
3 Doors Down	When I'm Gone
	Here Without You [Radio Edit]
	Here Without You [Radio Edit]
	Kryptonite
	Be Like That
	Let Me Go [Rock Version]
	It's Not My Time
	7

Now click on the “Hide Details” option in the “Show/Hide” group on the ribbon.



This will hide the details and leave you with the following:

BillBoardHot100

Drop Filter Fields Here

Artist	Count of Title
*NSYNC	1
*NSYNC Featuring Nelly	1
112	3
2 Chainz Featuring Drake	1
2 Pistols	1
2pac	1
3 Doors Down	7
3LW	1
3OH!3	1
3OH!3 Featuring Kesha	1
50 Cent	6
50 Cent Featuring Justin Timberlake	1
50 Cent Featuring Mobb Deep	1
50 Cent Featuring Snoop Dogg & Lloyd Banks & Young Buck of G-Unit	1
Aaliyah	4
Adam Lambert	1

The above table shows that 50 Cent has had 6 songs in the Hot Hits in the period 2001-2012 while Adam Lambert has only had 1. We can now either scan this relatively long list looking for the artist with the highest count or we can sort the list in descending order on the “Count of Title” column.

This is best done by right clicking on the column header, i.e. right clicking on the words “Count of Title”, then selecting “Sort” and “Sort Descending” from the resulting drop-down list. Having done this produces the following result:

BillBoardHot100

Drop Filter Fields Here

Artist	Count of Title
Rihanna	16
Black Eyed Peas	15
Kelly Clarkson	15
Pink	14
Britney Spears	12
Taylor Swift	12
Alicia Keys	11
Beyonce	11
Katy Perry	11
Nickelback	11
Usher	11
Chris Brown	10
Eminem	10
Justin Timberlake	10

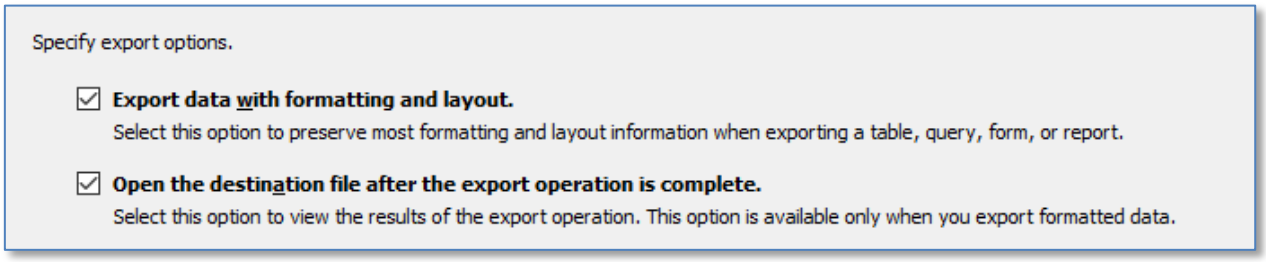
The table is now sorted in descending order and shows that Rihanna with a total of 16 hits is the solo

performing artist that appears the most times in the database.

Method 4:

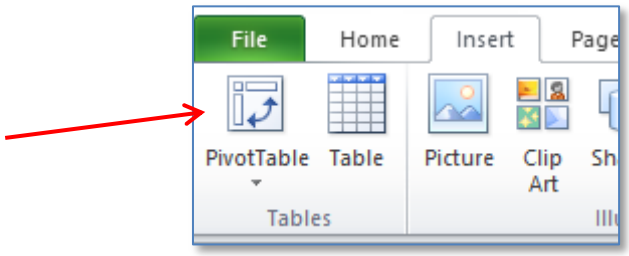
Close all tables, queries, forms and reports.

Highlight the BillBoardHot100 table. Select the “External Data” tab on the ribbon and in the “Export” group click on Excel. Select a suitable place in which to export the resulting spreadsheet, say the Desktop and give the file a suitable name. When exporting choose the keep formatting and layout option and open the destination file after exporting (see below).

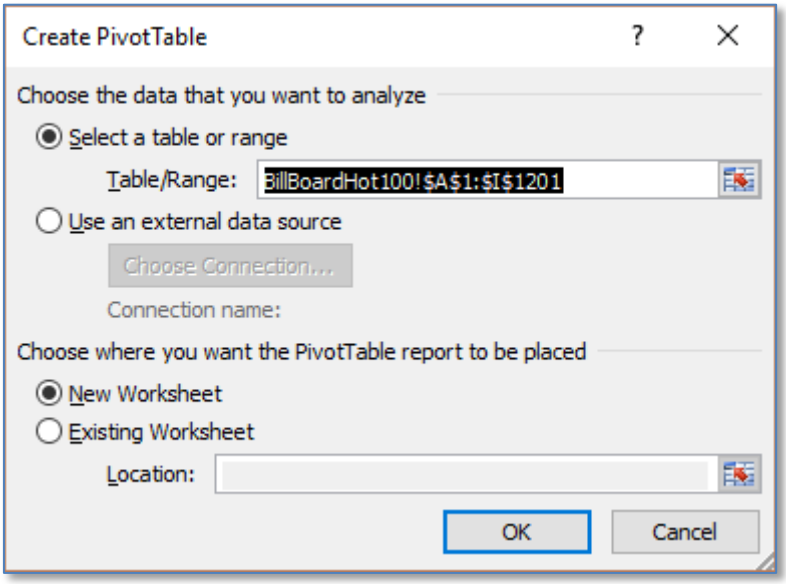


All the records in the database will now have been exported to a spreadsheet and the spreadsheet should open. Remember that from now on you are working in an Excel spreadsheet and that there is no link between the original Access data and the Excel data.

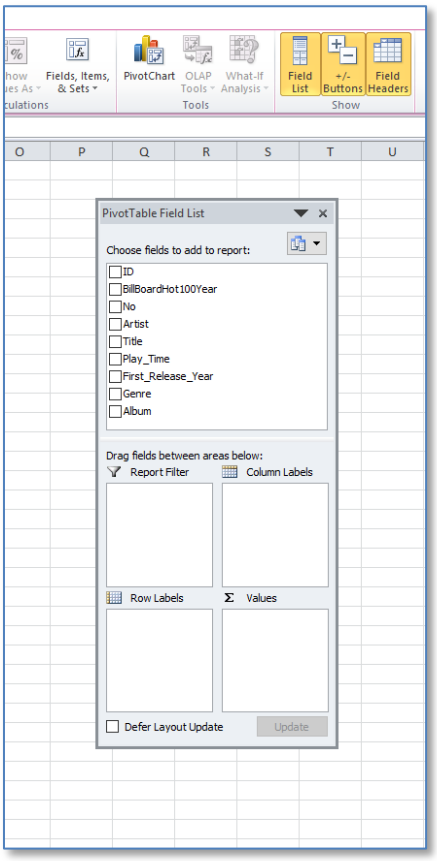
In Excel click on the “Insert” tab and then on “Pivot Table”



A window similar to the one below open:



Accept the suggested options by clicking on “OK”. This will then create a new worksheet in the Excel spreadsheet and present you with the following:



Now click on “Artist” and drag it into the box labelled “Row Labels” (bottom left). Then click on “Title” and drag it into the box labelled “Values” (bottom right). This sequence of operations will then give you the following which you will note is not dissimilar to the pivot table obtained using Access:

Row Labels	Count of Title
*NSYNC	1
*NSYNC Featuring Nelly	1
112	3
2 Chainz Featuring Drake	1
2 Pistols	1
2pac	1
3 Doors Down	7
3LW	1
3OH!3	1
3OH!3 Featuring Kesha	1
50 Cent	6
50 Cent Featuring Justin Timberlake	1
50 Cent Featuring Mobb Deep	1
50 Cent Featuring Snoop Dogg & Lloyd Banks & Young Buck of G-Unit	1

Highlight all the data, excluding the first row containing the column headers and the last row containing a grand total and then sort the data in descending order according to the second column of data, the column headed “Count of Title”. Having done this the data now displays as shown below once again showing that Rihanna has the most titles.

Row Labels	Count of Title
Rihanna	16
Kelly Clarkson	15
Black Eyed Peas	15
Pink	14
Taylor Swift	12
Britney Spears	12
Usher	11
Katy Perry	11
Nickelback	11
Alicia Keys	11
Beyonce	11
Chris Brown	10
Justin Timberlake	10
Eminem	10

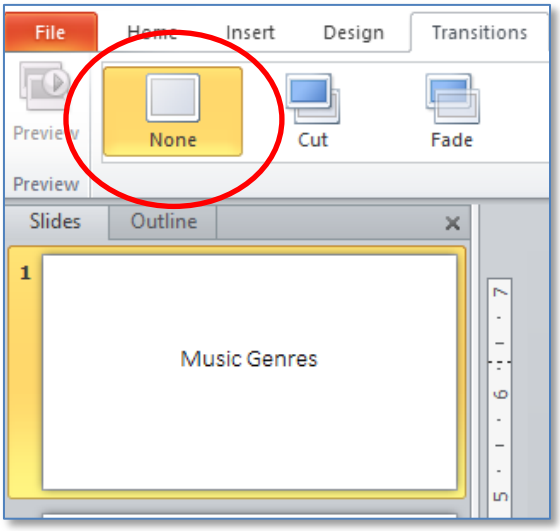
D: POWERPOINT

To answer the questions you should open and view the presentation '**Music Genres**'. All text on the slides should be clearly visible.

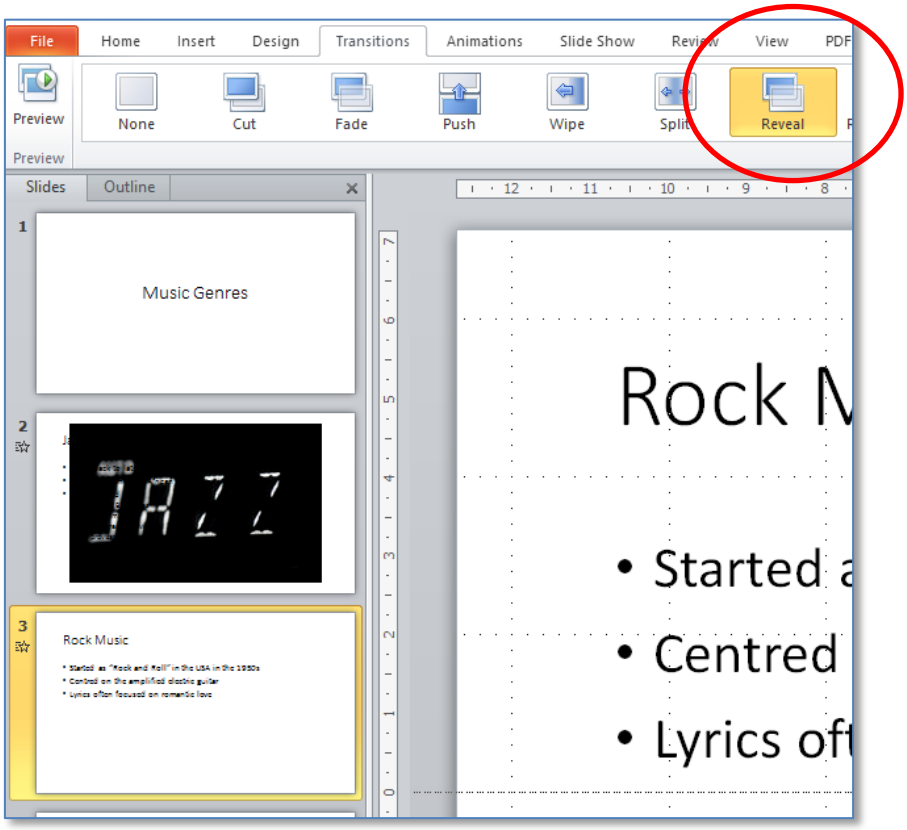
1. What transition is applied to most of the slides in the presentation?	**Reveal**

Method 1:

Click on the “Transitions” tab on the ribbon then click on the title slide of the presentation.



Now click on any of the other slides in the presentation.



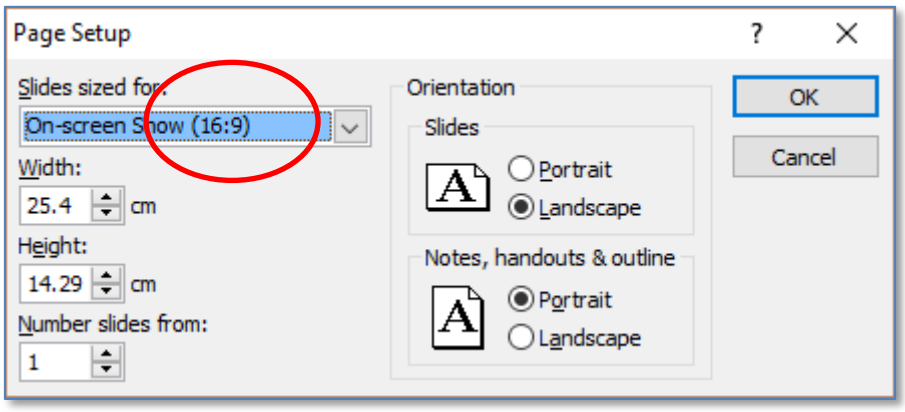
You will note that the title slide has no transition while each of the other slides uses the “Reveal”

transition.

2. What is the aspect ratio of the slides in the presentation? (Give the letter of the correct answer). **A 4:3** **B 16:9** **C 16:10**	**B**

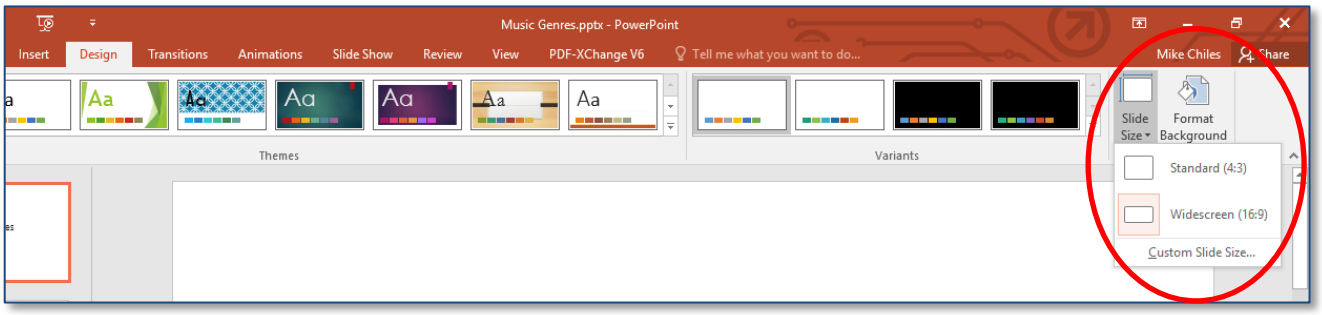
Method 1:

If you're using Office 2010 click on the "Design" tab on the ribbon. In the "Page Setup" group click on "Page Setup". A window such as the one shown below will open.



You will note that the slides are sized for an on-screen show with a 16:9 aspect ratio. Therefore, option B is the correct answer.

If you're using Office 2016 click on the "Design" tab on the ribbon. In the "Customize" group click on "Slide Size". A drop-down list will open displaying the aspect ratio as 16:9. One can also click on the "Customize Slide Size" option which will give one the window displayed above.

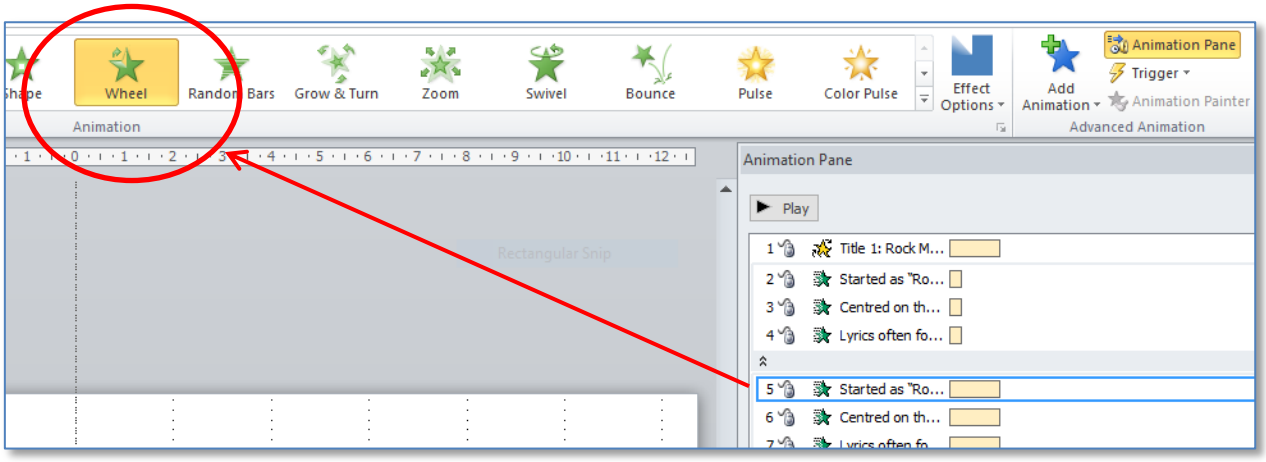


3. Each bullet point on the 'Rock Music' slide has two animations applied. Name any one of them.	**Wipe** **Wheel**

Method 1:

Select the Rock Music slide. Click on the "Animations" tab on the ribbon and then on the "Animation Pane" in the "Advanced Animation" group. The animation pane will open down the right-hand side of the screen.

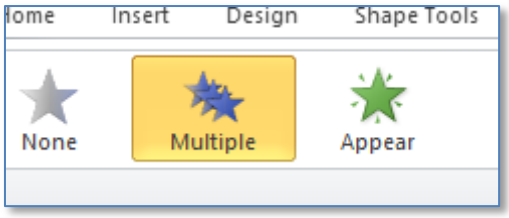
Click on any one of the items listed as 2, 3 or 4 or 5, 6 or 7. The type of animation applied will be shown in the "Animation" group on the ribbon. If one of 2, 3 or 4 is clicked on the animation is seen to be "Wipe". If one of 5, 6 or 7 is clicked on the animation is seen to be "Wheel".

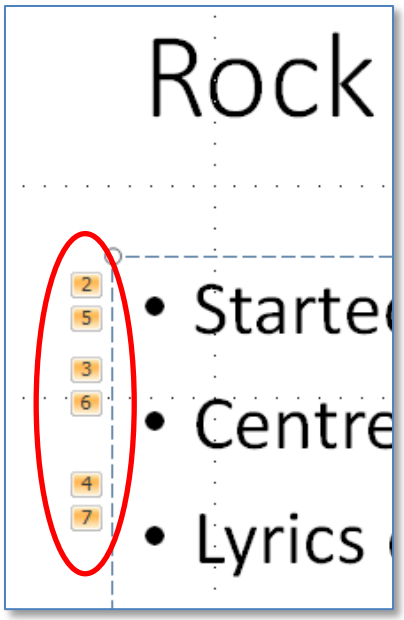


Also if you hover the mouse over one of the numbers in the Animation Pane a box opens up containing information on when the animation occurs, e.g. “On Click” and the type of animation, e.g. “Wipe”

Method 2:

Select the Rock Music slide. Click on the “Animations” tab on the ribbon. The ribbon will initially show that multiple animations have been applied. Two numbers also appear next to bullet point, these being the animations.





If you click on any of the numbers the type of animation applied is highlighted in the ribbon.

4. The 'Jazz' slide has a number of design flaws. The slide can be improved by: **(i) resizing the image and moving it so that it does not cover any text** **(ii) fading the image and sending it behind the text** **(iii) applying three animations instead of two to each bullet point.** **Which are correct? (Give only the letter of the correct answer)** **A Only (i)** **B (i) or (ii)** **C (ii) and (iii)** **D (i), (ii) and (iii)**	**B**

Method 1:

(i) Resizing the image and moving it to the bottom right corner could improve the overall aesthetics of the slide.

(ii) Recolouring the picture to a lighter colour (fading) and placing it behind the text could be an option to improve the overall aesthetics of the slide.

(iii) Applying three animations instead of two would not be appropriate as the lines of text will still be hidden behind the image. In any event having more than one animation is already overkill.

Of the three possibilities, options (i) and (ii) are the only that could be considered and although they could both be applied it would be more appropriate to apply either (i) or (ii). This being the case option B is considered to be the most correct answer.