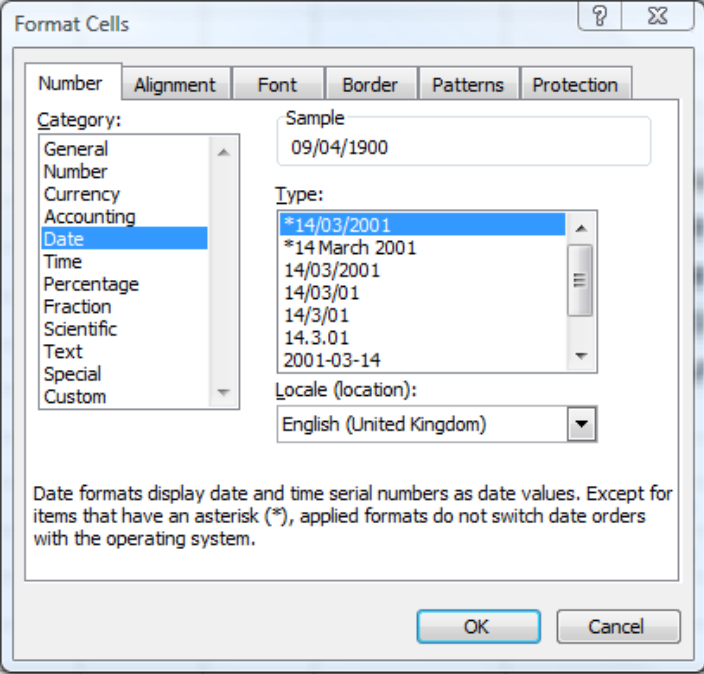


Lesson 9	Study Module 5: Working with numbers and charts (1/3)	Time																														
Lesson objectives	In this lesson students are learning how to: <ul style="list-style-type: none"> • select and apply appropriate formats • carry out calculations with relative and absolute references 																															
Learning outcomes	At the end of the lesson students will be able to: <ul style="list-style-type: none"> • display numbers and text in appropriate formats • enter formulas using (+, -, *, /) • use functions SUM, AVERAGE, COUNT, MAX and MIN • use absolute cell references 																															
Specification coverage	L1: 2.1, 7.1, 8.1, 8.2 L2: 2.1, 6.1, 7.1, 7.2																															
Resources Study Module 5 SAM Mark Scheme Images: L9.1-100-Display L9.2-100-Display-Format L9.3-100-DataEntry-Display-Format L9.4-10x10-text-number L9.5-10x10-results L9.6-10x10-warning L9.7-10x10-comment Key vocabulary Spreadsheet Value Formula	<p>Starter</p> <p>Tell students you have two puzzles for them.</p> <p>Puzzle1:</p> <p>Show them the image L9.1-100-Display.</p> <table border="1" data-bbox="724 1025 922 1256"> <tr><td>Display</td></tr> <tr><td>09/04/1900</td></tr> <tr><td>00:00:00</td></tr> <tr><td>1.00E+02</td></tr> <tr><td>C</td></tr> </table> <p>Ask students to tell you what was entered into the four cells and what format they have. If students struggle, show them the image L9.2-100-Display-Format and tell them that the same number was entered into all four cells.</p> <table border="1" data-bbox="636 1422 1011 1590"> <thead> <tr> <th>Format</th> <th>Display</th> </tr> </thead> <tbody> <tr> <td>Date</td> <td>09/04/1900</td> </tr> <tr> <td>Time</td> <td>00:00:00</td> </tr> <tr> <td>Scientific</td> <td>1.00E+02</td> </tr> <tr> <td>Roman (function)</td> <td>C</td> </tr> </tbody> </table> <p>The Roman number "C" should give students a clue. What is the number behind the display? Show them the image L9.3-100-DataEntry-Display-Format.</p> <table border="1" data-bbox="472 1720 1174 1951"> <thead> <tr> <th>data entry</th> <th>Format</th> <th>Display</th> </tr> </thead> <tbody> <tr> <td>100</td> <td>Date</td> <td>09/04/1900</td> </tr> <tr> <td>100</td> <td>Time</td> <td>00:00:00</td> </tr> <tr> <td>100</td> <td>Scientific</td> <td>1.00E+02</td> </tr> <tr> <td>100</td> <td>Roman (function)</td> <td>C</td> </tr> </tbody> </table>	Display	09/04/1900	00:00:00	1.00E+02	C	Format	Display	Date	09/04/1900	Time	00:00:00	Scientific	1.00E+02	Roman (function)	C	data entry	Format	Display	100	Date	09/04/1900	100	Time	00:00:00	100	Scientific	1.00E+02	100	Roman (function)	C	5 -10 mins
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Lesson 9	Study Module 5: Working with numbers and charts (1/3)	Time																																										
<p>Key vocabulary</p> <p>Function</p> <p>SUM, MAX, MIN, AVERAGE, IF, COUNT, LOOKUP</p> <p>Range</p> <p>Cell reference</p> <p>Relative</p> <p>Absolute</p> <p>View data</p> <p>View formulas</p> <p>Tab / Tabs</p>	<p>Puzzle 2:</p> <p>'Spot the difference'. Show the image L9.4-10x10-text-number.</p> <table border="1" data-bbox="507 416 1139 568"> <tr> <td>10</td> <td>10</td> <td>=A1*B1</td> </tr> <tr> <td>10</td> <td>10</td> <td>=A2*B2</td> </tr> </table> <p>Ask students to predict the result for each line (10 x 10 = 100). Show them the image L9.5-10x10-results.</p> <table border="1" data-bbox="604 667 1042 808"> <tr> <td>10</td> <td>10</td> <td>100</td> </tr> <tr> <td>10</td> <td>10</td> <td>=A2*B2</td> </tr> </table> <p>Can students explain why cell C1 displays the expected and correct result but C2 still shows the formula. Show image the L9.6-10x10-warning.</p> <table border="1" data-bbox="518 943 1128 1140"> <thead> <tr> <th></th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> <th>E</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>10</td> <td>10</td> <td>100</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>10</td> <td>10</td> <td>=A2*B2</td> <td></td> <td></td> </tr> <tr> <td>3</td> <td></td> <td></td> <td colspan="3">The number in this cell is formatted as text</td> </tr> </tbody> </table> <p>Explain that spreadsheets can treat numbers as text if (a) the cell is formatted to text, or (b) the user put a ' in front of the number, e.g. '100.</p> <p>Show them the image L9.7-10x10-comment - point out the different colour (red) and location (top-right) of the marker to indicate a comment. Stress that comments do not impact in calculations or formatting.</p> <table border="1" data-bbox="619 1473 1027 1744"> <tr> <td>10</td> <td>10</td> <td>100</td> </tr> <tr> <td>10</td> <td>10</td> <td>=</td> </tr> </table> <p>This is an example of a comment</p> <p>Conclude the starter by stressing that formatting matters.</p>	10	10	=A1*B1	10	10	=A2*B2	10	10	100	10	10	=A2*B2		A	B	C	D	E	1	10	10	100			2	10	10	=A2*B2			3			The number in this cell is formatted as text			10	10	100	10	10	=	
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3			The number in this cell is formatted as text																																									
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	<p>Share lesson objectives</p> <p>Introduce the lesson and share learning objectives and outcomes.</p>	5 mins																																										

Lesson 9	Study Module 5: Working with numbers and charts (1/3)	Time
	<p>Formatting cells</p> <p>Write the number 45.27 on the board. Ask students what formats they could apply. Use section Formatting cells on page 4 to illustrate some of the possible formats. Extend formatting of Number to Alignment, Font, Border and Patterns - students can explore Protection as part of their homework.</p> 	5 mins
	<p>Formulas and functions</p> <p>Remind students of the formula used in puzzle 1 to multiply ten by ten ($=A1*A2$). Check that they know about + for additions, - for subtractions, / for divisions.</p> <p>Tell them that spreadsheets have a range of ready-made formulas for users to choose from. Using them is (a) more efficient (saves time), and (b) reduces the risk of making mistakes when typing in a formula from scratch.</p> <p>Illustrate the two points by asking students how often they would have to enter the + symbol to add together the points of 100 members in the Loyalty Card Scheme. Explain that the Function SUM is much better as it adds up all points between the first and last member. The first and last cell set the range over which the function works.</p> <p>Use the table on top of page 4 to introduce Functions AVERAGE, COUNT, MAX and MIN.</p>	15 mins

Lesson 9	Study Module 5: Working with numbers and charts (1/3)	Time
	<p>Ask students to open digital asset SB4.1.1, the Loyalty Card Scheme spreadsheet and demonstrate the use of the SUM function. Show them how they can switch between data-view and formula-view by using Ctrl + ` (to the left of the number key 1).</p> <p>Ask students on which fields it would not make any sense to use the SUM function (all pure text fields, text-number fields like postcodes and number fields such as telephone numbers).</p> <p>Tell students they need to find the number of entries, the total, average, highest and lowest entries in (a) the Points and then (b) in CashValue fields. Can they suggest a way so that they do not have to do the work twice? If students do not know how to copy a formula, give them a brief demonstration.</p> <p><i>Extension: LOOKUP Function - see page 5</i></p>	
	<p>Relative and absolute cell references</p> <p>Introduce Skill Builder 5.4 as a challenge to create a flexible times table. Tell students to work in pairs. When the first pair has used the \$ sign for the necessary absolute reference, stop the class. Through discussion of this example ensure that students understand the difference between relative and absolute cell references and how they are entered into a spreadsheet.</p> <p>Remind students of their work on the Loyalty Card Scheme spreadsheet earlier in the lesson. Ask them to describe the outcomes if they had used absolute cell references in the functions under Points and then copied the Function across to CashValue.</p> <p>Tell students to continue with Skill Builder 5.4.</p>	20 mins
	<p>Plenary</p> <p>Remind students of the learning objectives and recap on what they have learnt in this lesson.</p> <p>Recap how students protected files in Lessons 2 and 3 and introduce the homework:</p>	5 mins
Homework	<p>Ask students to:</p> <ul style="list-style-type: none"> • create a simple spreadsheet and find ways to protect it • complete Skill Builder 5.2. 	40 mins

Lesson 9	Study Module 5: Working with numbers and charts (1/3)	Time
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Extension

Tell students you have one piece of information about a member but need a second one. Introduce the LOOKUP function as an easy way to find linked information. Use the images as illustrations.

L9.8-LOOKUP

A	D	F	G	H	I	J	K	
1	Card number	Surname	Town	Postco	Telephone	Points	Cash Value	JoinedDate
2	115000	Barker	LLANBEDR	NP8 4M	077 2601 1894	249	£31.13	14-Feb-08
3	126382	Porter	DALBLAIR	KA18 8	079 3091 0649	250	£31.25	12/12/2009
4	129887	King	DWYGIFYLCHI	LL34 3	079 3632 2915	499	£62.38	28/08/2008
5	134116	Murray	WAUNCLYNDA	SA19 9	079 5299 1386	500	£62.50	19-Jan-08
6	136988	Whitehouse	LINBY	NG15 6	078 5174 8205	749	£93.63	19-Jul-10
7	Have ... in:	Myers	UPTON	TQ7 8T	Look-up in:	751	£93.88	27-Sep-07
8	143974	Atkinson	FINEDON	NN9 1W	078 6100 8361	800	£100.00	01-Dec-07
9	174092	Pope	OLD BUCKENHAM	NR17 5	070 2300 1228	601	£75.13	27-Mar-07
10	174807	Gray	SOUTH HYKEHAM	LN6 0M	070 1804 6924	Have ... in:	£10.00	28-May-10
11	175393	Graham	Look-up in:	WV10 C	079 7078 5708	585	£35.38	12-May-08
12	176442	Harris	LONDON	E10 3L	077 5072 0546	585	£73.13	20-Dec-08
13	176528	Sutton	SANDHILLS	GU8 5K	079 7036 6645	345	£43.13	30-Jan-09
14	178771	Readley	WHEEN	DD8 2S	070 0753 4393	505	Look-up in:	05/03/2008
15	179208	Have ... in:	HALMER END	ST7 4Y	079 2875 9430	621	£47.50	08-Jan-10
16	179215	Scott	GANDON	GG9 2N	079 4040 9507	799	£91.88	15-Oct-07
17	179218	McLean	COURT BARTON	EX17 2I	070 5308 7244	380	£47.50	08-Jan-10
18	179375	O'Connor	BRAEMORE	KW6 0C	079 0365 5987	749	£93.63	09/11/2008
19	179863	Turnbull	LITTLE GRANSDE	SG19 8	078 1422 6447	532	£66.50	28-Jun-07
20	179950	Whitehead	SOUNDWELL	BS16 7	079 3937 2785	419	£52.38	25-Apr-08
21	180210	Allen	BURLEYDAM	SY13 0I	070 2297 1356	86	£10.75	05/02/2010
22	182213	Gough	KILLOCHYETT	TD1 0J	078 8554 0640	63	£7.88	01/11/2009

L9.9-LOOKUP-Function-Arguments

A	D	F	G	H	L	M
1	Card number	Surname	Town	Postco	Telephone	
2	115000	Barker	LLANBEDR	NP8 4M	077 2601 1894	
3	126382	Porter	DALBLAIR	KA18 8	079 3091 0649	
4	129887	King	DWYGIFYLCHI	LL34 3	079 3632 2915	
5	134116	Murray	WAUNCLYNDA	SA19 9	079 5299 1386	
6	136988	Whitehouse	LINBY	NG15 6	078 5174 8205	Have Card Number in Column A
7	142424	Myers	UPTON	TQ7 8T	077 8014 5279	143974
8	143974	Atkinson	FINEDON	NN9 1W	078 6100 8361	Look-up tel no in column H
9	174092	Function Arguments	OLD BUCKENHAM	NR17 5	070 2300 1228	=LOOKUP(M7,A2:A101,H2:H101)
10	174807					
11	175393					
12	176442					
13	176528					
14	178771					
15	179208					
16	179215					
17	179218					
18	179375					
19	179863					
20	179950					
21	180210	Allen	BURLEYDAM	SY13 0I	070 2297 1356	

Function Arguments

LOOKUP

Lookup_value: M7 = 143974

Lookup_vector: A2:A101 = {115000;126382;129887;134116;136988;142424;143974;174092;174807;175393;176442;176528;178771;179208;179215;179218;179375;179863;179950;180210}

Result_vector: H2:H101 = {077 2601 1894;079 3091 0649;079 3632 2915;079 5299 1386;078 5174 8205;077 8014 5279;078 6100 8361;070 2300 1228}

Looks up a value either from a one-row or one-column range or from an array. Provided for backward compatibility.

Result_vector is a range that contains only one row or column, the same size as Lookup_vector.

Formula result = 078 6100 8361

OK Cancel

L9.10-LOOKUP-result

A	D	F	G	H	L	M
2	115000	Barker	LLANBEDR	NP8 4M	077 2601 1894	
3	126382	Porter	DALBLAIR	KA18 8	079 3091 0649	
4	129887	King	DWYGIFYLCHI	LL34 3	079 3632 2915	
5	134116	Murray	WAUNCLYNDA	SA19 9	079 5299 1386	
6	136988	Whitehouse	LINBY	NG15 6	078 5174 8205	Have Card Number in Column A
7	142424	Myers	UPTON	TQ7 8T	077 8014 5279	143974
8	143974	Atkinson	FINEDON	NN9 1W	078 6100 8361	Look-up tel no in column H
9	174092	Pope	OLD BUCKENHAM	NR17 5	070 2300 1228	078 6100 8361

L9.11-LOOKUP-formula

A	D	F	G	H	L	M
2	115000	Barker	LLANBEDR	NP8 4M	077 2601 1894	
3	126382	Porter	DALBLAIR	KA18 8	079 3091 0649	
4	129887	King	DWYGIFYLCHI	LL34 3	079 3632 2915	
5	134116	Murray	WAUNCLYNDA	SA19 9	079 5299 1386	
6	136988	Whitehouse	LINBY	NG15 6	078 5174 8205	Have Card Number in Column A
7	142424	Myers	UPTON	TQ7 8T	077 8014 5279	143974
8	143974	Atkinson	FINEDON	NN9 1W	078 6100 8361	Look-up tel no in column H
9	174092	Pope	OLD BUCKENHAM	NR17 5	070 2300 1228	=LOOKUP(M7,A2:A101,H2:H101)