Mark Scheme (Results)

Summer 2019

Pearson Edexcel Level 3 Certificate
In Mathematics in Conext (7MC0) Paper 1

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

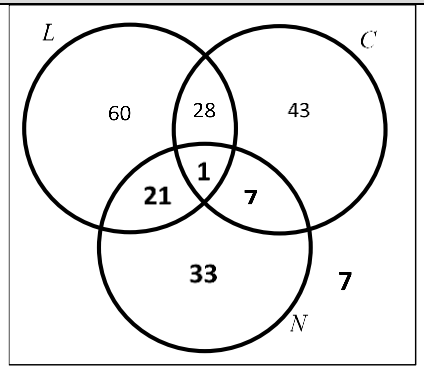
Summer 2019
Publications Code 7MC0_01_1906_MS

General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

<table>
<tr><th>Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr><td>1(a)</td><td>(67.5×1 000 000)÷(477×1000)</td><td>142</td><td>3</td><td>M1 for using 67.5×1 000 000 or 477×1000
M1 for 67.5 (×1 000 000)÷477(×1000)
A1 141 or 142 or awrt 142</td></tr>
<tr><td>1(b)</td><td>(75.7×1 000 000)÷(475×1000) – 142</td><td>18</td><td>3</td><td>M1 75.7(×1 000 000)÷475(×1000)
M1 for 75.7(×1 000 000)÷475(×1000) − “142”
A1 17 or 18 or awrt 18 only

NB ft “142” dependent on answer to part (a) being less than 75.7 million</td></tr>
<tr><td>2</td><td>475 000×1.0021^5
OR<table><tr><td>2016</td><td></td><td>475000</td></tr><tr><td>2017</td><td>475000×1.0021</td><td>475997.5</td></tr><tr><td>2018</td><td>475997.5×1.0021</td><td>476997.1</td></tr><tr><td>2019</td><td>476997.1×1.0021</td><td>477998.8</td></tr><tr><td>2020</td><td>477998.8×1.0021</td><td>479002.6</td></tr><tr><td>2021</td><td>479002.6×1.0021</td><td>480008.5</td></tr></table></td><td>Yes and
480008.(49..)</td><td>4</td><td>B1 for 1.0021 or 0.0021 seen or used
M2 for “475 000”×“1.0021”^{5} oe
(M1 for “475 000”×“1.0021” OR “475 000”×“0.0021”)
C1 for 480 008.(49..) oe AND Yes</td></tr>
</table>

Question	Working	Answer	Mark	Notes
3(a)(i)			3	B3 all values correct (B2 3 values correct) (B1 one value correct)
3(a)(ii)		7	1	B1ft their non-zero value in box outside circles (Don't accept 7/200 o.e)
3(b)(i)		C'	1	C1 C' (accept e.g. P(C')
3(b)(ii)		$C \cup N$	1	C1 $C \cup N$ (accept e.g. P($C \cup N$))
3(b)(iii)		$(L \cup C \cup N)'$ or $L' \cap C' \cap N'$	1	C1 $(L \cup C \cup N)'$ or $L' \cap C' \cap N'$ (accept e.g. P($L \cup C \cup N)'$)

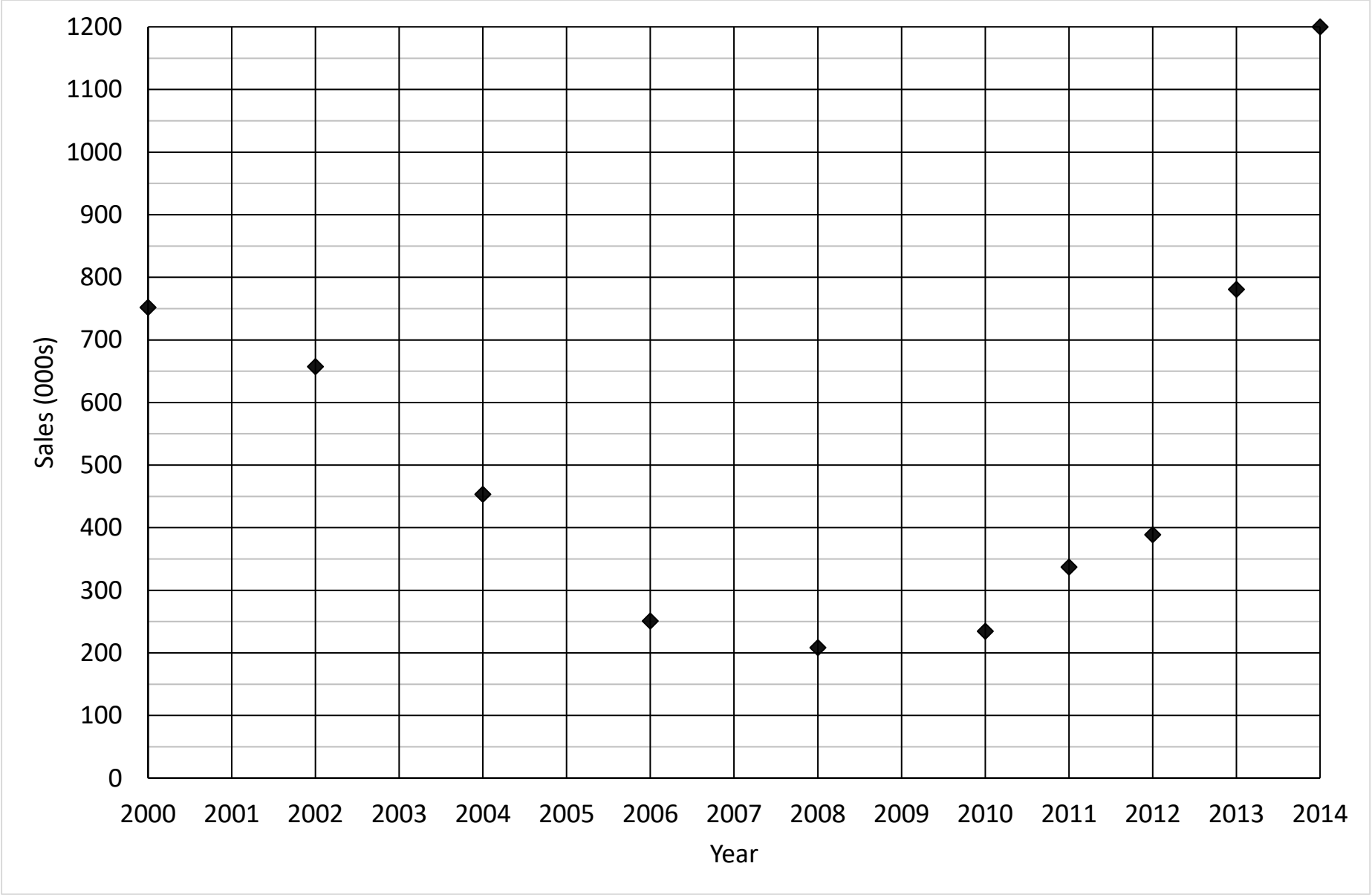
Question	Working	Answer	Mark	Notes
3(c)(i)		138/200	2	M1 (200 −"62")/y **OR** x/200 **AND** 0< P(N')<1 A1 138/200 o.e.
3(c)(ii)	P($L \mid N$)= P($L \cap N$) /P(N) =(22/200)/(62/200) or 22/200÷62/200 OR n($L \cap N$) /n(N) =22/62	22/62	2	M1 (("21"+"1")/200)/("79"/200) **OR** ("21"+"1")/"62" OR x/"62" OR "22"/y, y≠200 **AND** 0 < P($L \mid N$) < 1 A1 22/62 o.e. (Accept awrt 0.35)
3(d)(i)	P(L)=110/200=0.55 P($L \mid C$)= 29/79=0.367089 OR P(L)×P(C)= (110/200)×(79/200)= 0.21725 P($L \cap C$)= 29/200=0.145	Not independent (fully supported)	3	B1 Finding one of P(L), P(C), P($L \cap C$), P($L \mid C$) correctly M1 for comparable probabilities e.g. P(L)(=110/200) oe **and** P($L \mid C$)(=29/79) oe **OR** P(L)×P(C)(=0.21725) oe **and** P($L \cap C$)(=0.145) oe C1 A full numerically correct solution with clear statement e.g. P(L) ≠ P($L \mid C$) **OR** P(L)×P(C) ≠ P($L \cap C$) (ft their Venn diagram in Q3)
3(d)(ii)		Correct statement	1	C1 e.g. "Madeline is correct", dependent on B1 M1 in pt (i)

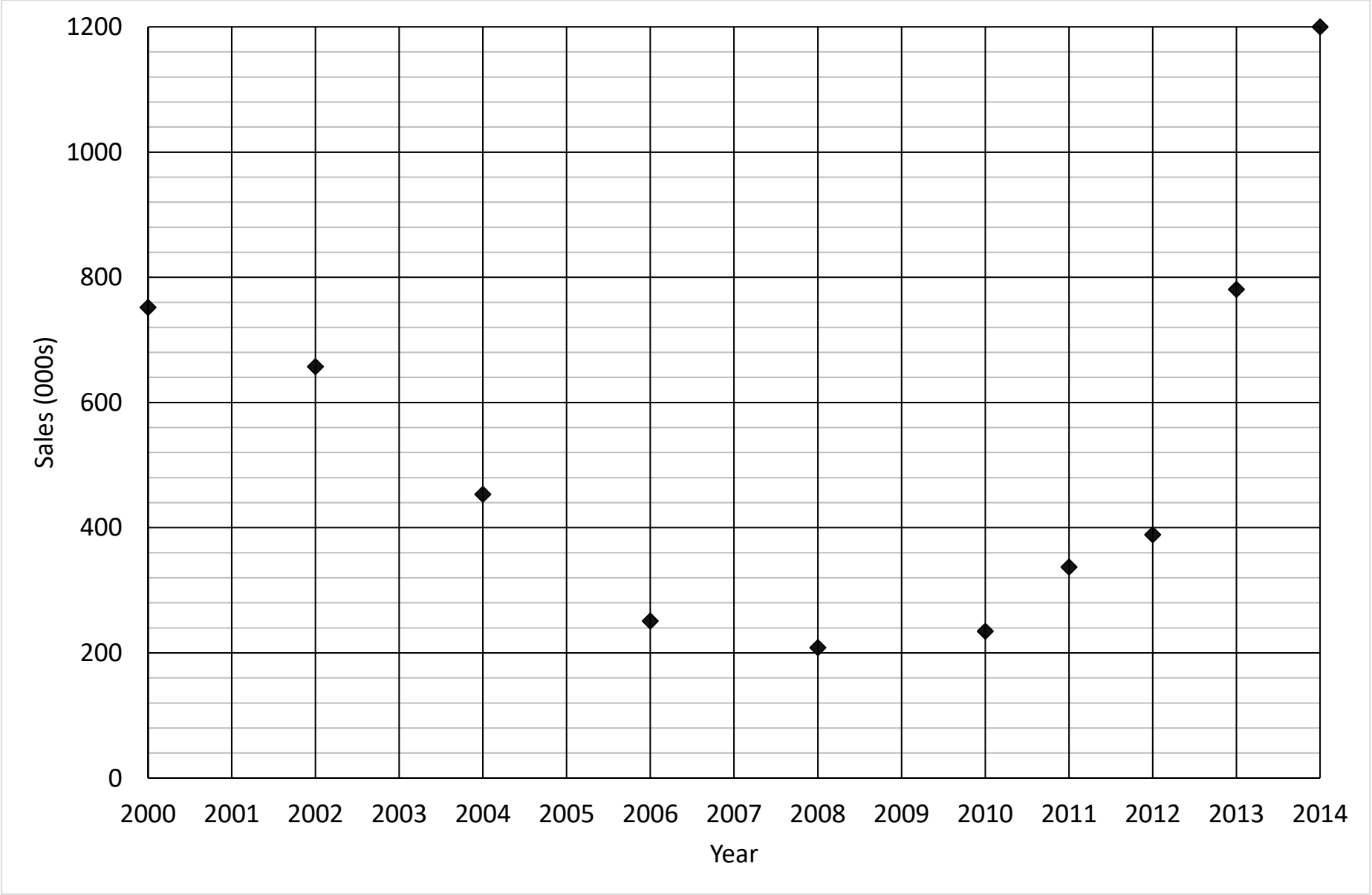
Question	Working	Answer	Mark	Notes
4(i)	110÷110 : 79÷110 : 62÷110	1 : 0.72 : 0.56	2	M1 110÷110 : 79÷110 : 62÷110 (in any order) OR 110 : 79 : 62 condone 110÷62 : 79÷62 : 62÷62 OR 110÷79 : 79÷79 : 62÷79 in any order OR sight of 1.77 : 1.27 : 1 or 1.39 : 1 : 0.78 in any order A1 1 : 0.72 : 0.56 cao allow (L)1 : (C)0.72 : (N)0.56 or similar
4(ii)	41.9÷41.9 : 30.2÷41.9 : 23.5÷41.9 OR 200×0.419 = 83.8 (84) 200×0.302 = 60.4 (60) 200×0.235 = 47	1 : 0.72 : 0.56 Appropriate comment	3	M1 41.9÷41.9 : 30.2÷41.9 : 23.5÷41.9 (in any order) OR e.g. 83.8÷83.8 : 60.4÷83.8 : 47÷3.8 (in any order) A1 1 : 0.72(076..) : 0.56(085..) (awrt) NB accept figures rounded to whole number of planes C1 comment e.g. the sample is representative as the ratios of each category are the same to 2 d.p OR "can't be sure as there are only three categories"
5a(i)	42(million)÷2.1(million)	42(million)÷ 2.1(million) = £20	1	B1 42(million)÷2.1(million) = (£)20
5a(ii)	(2 100 000 − 200 000)÷200 000×100	950%	2	B1 2.1 million and 200 000 NB may be seen in subsequent calculations. M1 ("2 100 000" − "200 000")÷"200 000" A1 950(%)

Question	Working	Answer	Mark	Notes
5b(i)	5.99×258.5÷138.5 22.38×138.5÷258.5	£11.18 £11.99	5	B1 Use of 258.5 and 138.5 M1 5.99×"258.5"÷"138.5" o.e. A1 (£)11.17 – (£)11.18 M1 22.38×"138.5"÷"258.5" o.e. A1 (£)11.99 – (£)12.00
5b(ii)	(Not true) for LPs since (cost is expected to be lower based on inflation than actual price which is higher) (True) for CDs (cost is expected to be higher based on inflation than actual price which is lower)	Appropriate statements	2	C1 Comment comparing prices of LP's or CDs e.g. (Cost of music via LP's in real terms has risen as the) inflation price of LP's is lower than actual price in 2015 C1 Comment comparing prices of CD's e.g. (Cost of music via CD's in real terms has fallen as the) inflation price of CD's is higher than actual price in 2015
5c(i)	e.g. 258.5÷126.1	2.049960349 and comment	2	M1 258.5÷126.1 o.e. OR 126.1×2 OR 258.5÷2 C1 awrt 2.05 OR 252.2 OR 129 **and** comment confirming that doubling has occurred
5c(ii)	e.g (258.5 − 192.0)÷192.0×100	34.6354167	2	M1 (258.5−192.0)÷192.0 o.e. A1 awrt 34.6 (%)

Question	Working	Answer	Mark	Notes
6(i)		Graph Drawn	4	B1 for appropriate axes drawn with scale to include complete data range M1 for 6 points plotted correctly M1 for all 10 points plotted correctly (allow 1 error or omission) A1 fully correct diagram including axes labelled NB Ignore any lines or curves of best fit
6(ii)	S_{xy} =10 569 972 – (20 080×5263)÷10 PMCC= 1868÷√(210×908 734)	0.135222461	4	B1 use of n=10 M1 10 569 972 – (20 080×5263)÷n, where $9 \leq n \leq 16$ M1dep "1868"÷√(210×908 734) or use of alternative formula with their n A1 answers in the range [0.13,0.14]
6(iii)		Valid decision with reason(s)	2	C2 for a fully correct statement eg. Yes as correlation is very close to zero (C1 for a partially correct statement eg. Correlation is close to zero) **OR** C2 for a fully correct statement eg. No as there is a weak positive correlation, **or** No as graph shows there could be a relationship that isn't linear (C1 for a partially correct statement eg. No and positive correlation)

Question	Working	Answer	Mark	Notes
7(i)		752	1	B1 752 cao
7(ii)	$1.88\times7^3-24\times7^2-0.37\times7+752$	218 250	3	B1 Use of t=7 M1ft For complete substitution with candidates t and c $1.88\times\text{“7”}^3-24\times\text{“7”}^2-0.37\times\text{“7”}+\text{“752”}$ A1 awrt 218 000 o.e.
7(iii)		Correct statement and valid reason	1	C1ft Valid statement and supporting reason e.g. Yes, reliable as it is close to the actual value for 2007 (only 10000 out) **OR** No, unreliable as the model estimates closer to the sales for 2009 than 2007


1200
1100
1000
900
800
700
600
500
400
300
200
100
0
Sales (000s)
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
Year


1200
1000
800
600
400
200
0
Sales (000s)
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
Year

Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London, WC2R 0RL, United Kingdom