



# Homework 17 – Solutions

1)


	A	B	C	D	E
1	Type of training	2011	2012	Decrease in number of applications	Percentage decrease
2	Secondary	22 585	19 019	3 566	15.79
3	Middle	260	134	126	48.46
4	Primary	25 337	21 862	3 475	13.72

- (a)(i) column D  
B1 1
- (a)(ii) their  $3566 \div 22\,585 \times 100$   
or their  $126 \div 260 \times 100$   
or their  $3475 \div 25\,337 \times 100$   
15.79 or 48.46 or 13.72  
M1  
A1ft  
ft their D column  
accept 15.8 or 16 or 15.78... for
- (b)  $\frac{D4}{B4} \times 100$  or  $\frac{B4 - C4}{B4} \times 100$   
or  $100 - \frac{C4}{B4} \times 100$   
or  $(1 - \frac{C4}{B4}) \times 100$   
or  $D4 \div (B4 \div 100)$   
B1 1  
Condone (E4) = before the expression or = E4 after the expression  
Accept \* instead of x  



2)

Solution	Marks	Total	Comments
in 2012-2013 taxable income is £41 895 20% tax is $34370 \times 20p = £6874$ 40% tax is $7525 \times 40p = £3010$ annual tax paid is £9884	B1 M1 A1		
in 2013-2014 taxable income is £40 795 20% tax is $32245 \times 20p = £6449$ 40% tax is $8550 \times 40p = £3420$ annual tax paid is £9869 reduction in income tax is £15	B1 M1 A1 B1	7	ft 1 correct 
<b>Total</b>		<b>7</b>	

3)

	Butter	B1	
(a)	Additional Guidance		
b)	Ticks yes and states that all of the index numbers are above 100	B1	oe 
(c)	$\frac{130}{100}$ or $130 \times 0.4$ or $\frac{30}{100} \times 40$ or 12 or $\frac{30}{100} \times 0.4$ or 0.12	M1	oe
	52 or £0.52	A1	Correct money notation

4)

(a)	$365.25 \times 100\,000$ $36\,525\,000$ $3.65(25) \times 10^7$	M1 A1 A1ft	3	
	$3\,000\,000\,000 \div \text{'their'}\ 36\,525\,000$ $82.1(355.....)$ 82	M1 A1 B1ft	3	(Round their answer to nearest whole number if 1dp or more) 

5)	15	B1	
(a)	<b>Additional Guidance</b>		
	Accept fifteen		
	$\frac{23+1}{2}$ or 12 or 12 <sup>th</sup> piece of data	M1	
	45	A1	
	$\frac{23+1}{4}$ or 6 or 6 <sup>th</sup> piece of data or $3\left(\frac{23+1}{4}\right)$ or 18 or 18 <sup>th</sup> piece of data	M1	
	(Lower quartile =) 32	A1	
	(Upper quartile =) 53	A1	
(c)	<b>Additional Guidance</b>		
	Median at 45	B1ft	$\pm \frac{1}{2}$ square tolerance ft their median from part (b)
	Lower quartile at 32 and upper quartile at 53	B1ft	$\pm \frac{1}{2}$ square tolerance ft their lower quartile and their upper quartile from part (c)
(d)	Minimum at 20 and maximum at 65 and box and whiskers drawn with median between the quartiles	B1	$\pm \frac{1}{2}$ square tolerance
	Class 11A had higher marks on average	B1ft	oe ft their box plot from part (d)
	Class 11B had a wider variety of marks	B1ft	oe ft their box plot from part (d)

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	Solution	Mark	Total	Comment
(a)	Class intervals correct 11, 10, 10, 5, 5, 10, 10	M1	5	Accept 10 for first interval. At least 6 correct
	Frequency densities correct 18.7, 46.3, 64.5, 75.8, 74, 60.3, 22.4	M1A1		Accept 20.6 for first value M1 for at least 5 correct. Accept rounding to nearest integer.
	Histogram drawn correctly	M1 A1ft		ft their frequency densities M1 for at least two bars correct
(b)	379 ÷ 5 or 75.8 Their 152 + 370 + 603 + 224 or 1348 or 2890 – (206 + 463 + 645 + their 227) or 2890 – 1541 or 1349 $\left[\frac{1348}{2890}, \frac{1349}{2890}\right]$	M1 M1	3	Finds any number of fifths of 379
	or [0.466, 0.467] or 0.47 or [46.6%, 46.7%] or 47%	A1		oe fraction  SC2 $\left[\frac{1272}{2890}, \frac{1273}{2890}\right]$ oe fraction, decimal or percentage [0.440, 0.441] [44.0%, 44.1%]
<b>Total</b>			<b>8</b>	

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7)	Any two from - No label on vertical axis - Symbols wider as well as taller / other referencing of 2D (allow 3D) issue - Difficult to read off values - Title incomplete / unclear	B2	oe B1 any one correct reason
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