

Homework 10 – Solutions

1)	Solution	Mark	Total	Comment
(a)	Taxable income is £60,000 – £12,500 = £47,500	M1	4	
	20% tax is £37,500 × 0.2 = £7,500	B1		
	40% tax is charged on £47,500 – £37,500 = £10,000	M1		
	Tax at 40% is £10,000 × 0.4 = £4,000	A1		
	Annual tax paid is £11,500	A1		
(b)	National insurance 2% rate is on £60,000 – £50,000 = £10,000	M1, A1	4	
	National insurance is 12% of £50,000 – £9500 = £40,500 Plus 2% of £10,000 = £4860 + £200 = £5,060	M1		
	Monthly rate is £5,066.56 ÷ 12 = £421.67	A1		
(c)	Student loan repayment is 9% of £33,425 Monthly repayment is £3008.25 ÷ 12 = £250.69	B1	3	
	Monthly income after deductions is £5,000 – $\frac{£11,500}{12}$ – £421.67 – £250.69 = £3,369.31	M1 A1		
	Total			

2)	$R = \sqrt[n]{\frac{A}{P}} - 1 = \sqrt[5]{\frac{3412}{2800}} - 1$ $= \sqrt[5]{1.2185714} - 1$ $= 1.0403278 - 1$ interest rate is 4.03% per year	M1	1	If clearly seen even if worked out inverted B1 for 1.21857 M1B1 for 4% or 4.0%
		B1	1	
		A1	1	
		Total	3	

3)	Mean	B1	oe Accept any indication that one of the values is non-typical, or that the mean would be non-typical
	One value not representative	B1	

4)	(a)	East, North-West and Wales	B1	all correct
	(b)	0.722 × 46 500 001 or 33 573 000.722	M1	oe
		33 573 000 or 33 573 001	A1	
		their 33 573 001 – 16 141 241	M1	
		17 431 760	A1 ft	ft their value for total who voted as long as less than 46 500 001 and more than 16 141 241

(c)	Value has been obtained through rounding	B1	oe
	Or		
	Unlikely that vote was counted to precisely the correct value		
	Or		
	There may be spoilt/invalid votes		oe

(d)	Full comment on statement eg data fully supports what Sadiq said as the three regions to vote leave, had the three highest % of people who voted	B2	B1 partial statement eg the table supports what Sadiq said
(e)	The vertical scale has been shortened (which exaggerates differences)	B1	oe
	(This is a bar chart and so) the bars should have gaps between them	B1	oe
(f)(i)	Reads off remaining areas voting %	B2	B1 allow up to two errors
	Finds mean or median % who voted in regions for leave and regions for remain	B2 ft	B1 finds mean or median % who voted in regions for either leave or regions for remain Ft if work visible showing incorrect values for reading off from graph
	Average % who voted is higher in leave regions than remain regions	B1 ft	ft their means or medians
	Finds range of % who voted in regions for leave and regions for remain	B1 ft	ft if work visible showing incorrect values for reading off from graph
	The spread of the % who voted for leave is greater than that who voted for remain	B1 ft	ft their ranges accept that the ranges are similar based on correct values

(f)(ii)	Very few regions' worth of data to look at Or Reading off from graph can only give approximate values	B1	oe any issue with obtaining the comparison in (f)(i)
	Get more detail of the voting % (by breaking regions down into smaller areas) Or Obtain the exact percentages (from another data source)	B1	oe any reasonable solution to the issue raised

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	Solution	Mark	Total	Comment
5)	(a) Annual income is $12 \times \text{£}4,075 = \text{£}48,900$ Taxable income $\text{£}48,900 - \text{£}10,000 = \text{£}38,900$	B1 M1 A1	3	
	(b) 20% Tax is $\text{£}37,500 \times 0.2 = \text{£}7,500$ 40% tax is charged on $\text{£}38,900 - \text{£}37,500 = \text{£}1,400$ Tax at 40% is $\text{£}1,400 \times 0.4 = \text{£}560$ Annual tax paid is $\text{£}8,060$	M1, A1 M1 A1 A1		
	Total		11	

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TOTAL: 46