

Homework 17 - Solutions

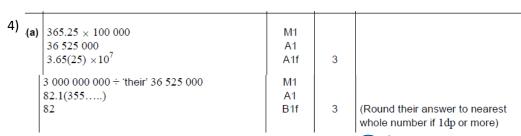


1)

		Α		В	С	D	Е
	1	Type of training	2	011	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)	colum	nn D		B1	1		
a)(ii)	or their or their	3566 ÷ 22 585 × 100 126 ÷ 260 × 100 3475 ÷ 25 337 × 100 or 48.46 or 13.72		M1		ft their D column accept 15.8 or 16	5 or 15 78 for
0	D4 B4 r 100	00 or $\frac{B4 - C4}{B4} \times 100$ $-\frac{C4}{B4} \times 100$		B1	1	Condone (E4) = before the e	expression
0	r (1 –	$\frac{C4}{B4}$) × 100				Accept * instead o	**************************************

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

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





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	15	B1		
(a)	Additional Guidance		uidance	
	Accept fifteen			
	23 + 1			_
	$\frac{23+1}{2} \text{ or } 12$ or 12^{th} piece of data	M1		
	45	A1		
	$\frac{23+1}{4} \text{ or } 6$ or 6^{th} piece of data	M1		
	or $3\left(\frac{23+1}{4}\right)$ or 18 or 18^{th} piece of data			
	(Lower quartile =) 32	A1		
(0)	(Upper quartile =) 53	A1		
(c)	ΔΑ	ditional G]
	Median at 45	B1ft	± ½ square tolerance ft their median from part (b)	_,
	Lower quartile at 32 and upper quartile at 53	B1ft	± ½ square tolerance ft their lower quartile and their upper quartile from part (c)	7)
(d)	Minimum at 20 and maximum at 65 and box and whiskers drawn with median between the quartiles	B1	± ½ 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		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	5	ft their frequency densities M1 for at least two bars correct
(b)	Their 152 + 370 + 603 + 224 or 1348 or 2890 - (206 + 463 + 645 + their 227) or 2890 - 1541 or 1349 [\frac{1348}{2890}, \frac{1349}{2890}] or [0.466, 0.467] or 0.47 or [46.6%, 46.7%] or 47%	M1 M1	3	oe fraction SC2 [\frac{1272}{2890}, \frac{1273}{2890}] oe fraction, decimal or percentage [0.440, 0.441] [44.0%, 44.1%]
	Total		8	

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

