1	7.645	P1	for process to use area to find at least one frequency, eg for first frequency $(7.2 - 6.4) \times 10$ (= 8) or $(7.2 - 6.4) \times 5$ (= 4) or $4 \times 5 \times 5$ (= 100)	Frequencies could be written on the graph
		P1	for process to find all frequencies, eg 8, 20, 40, 12 or multiples eg 4, 10, 20, 6 or 100, 250, 500, 150	Marks are for correct processes, one or more frequencies may be incorrect
		P1	(dep P2) for process to estimate mean, eg $((6.8 \times [8]) + (7.4 \times [20]) + (7.8 \times [40]) + (8.1 \times [12]))$ $\div ([8] + [20] + [40] + [12])$	

		A1	for 7.645 (accept 7.65)	Award full marks if a correct answer is seen in working and is then incorrectly rounded.

2	(a)	histogram drawn	B3	for fully correct histogram, eg. relative heights 90, 96, 44, 8, 6	
			(B2	for 4 correct bars **or** for frequency ÷ class interval for all 5 frequencies and 2 correct bars of different widths)	
			(B1	for 2 correct bars of different widths or for frequency ÷ class interval for at least 3 frequencies)	
	(b)	$0.4n$	M1	for finding ratio of heights or widths of bars, eg 5 : 1 or $\frac{1}{5}$, 1 : 2 or $\frac{n}{5}$ oe or $2n$ oe as answer or compares areas of bars, eg 6 and 2.4 or 3 and 1.2 or 150 and 60	Evidence for this mark may be seen on the diagram Any 2 numbers in the ratio 2.5 : 1 score M1
			A1	for $0.4n$ oe	

3	Histogram drawn	B3	for fully correct histogram, eg relative heights 1, 5, 6, 1.5	Frequency densities are 1, 5, 6, 1.5
		(B2	for 3 correct bars **or** for frequency ÷ class interval for at least 3 frequencies and 2 correct bars of different widths)	
		(B1	for 2 correct bars of different widths **or** for frequency ÷ class interval for at least 3 frequencies)	

4	(a)	Bar of height 2.4 cm (fd = 1.2) drawn for interval 40 – 60 hours	M1	for using area to represent frequency, eg 11.2 (cm²) represents 28 (students) or for showing correct scale on fd axis, 2 cm = 1 unit or correct process to find the height of bar, eg $\frac{28}{10}$ (= 2.8) or $\frac{24}{20}$ (= 1.2)	May use any unit of area. Can be implied by frequency of 32 or 36.
			A1	cao	Can ignore scale if bar is correct
	(b)	120	M1	ft their histogram for method to find total frequency, eg (1.6× 20) + (3.6× 10) + 28 + 24 oe **or** for method to find total area under the histogram, eg $(4 \times 3.2) + (2 \times 7.2) + (2 \times 5.6) + (4 \times 2.4)$ (= 48) oe	Condone 1 error in reading fd values or measurements.
			A1	for 120 ft	