1	(a)	20 + 45 or 20 + 9 × 5		2	M1	
			65		A1	
	(b)	164 – 20 (= 144)		3	M1	
		'144' ÷ 9 (= 16)			M1	
			16		A1	cao
	(c)			2	M1	for $T = an + 20$ or $T = 9n + k$ or $9n + 20$
			$T = 9n + 20$		A1	for $T = 20 + 9n$ or $T = 9n + 20$
						Total 7 marks

2	72 ÷ 3 (= 24) or $\frac{x}{68} = \frac{72}{3}$		4	M1	
	'24' × 68 (= 1632) or $(x =)\frac{72}{3} \times 68$ oe			M1	
	'1632' ÷ 60 (= 27.2) **or** 30 × 60 (= 1800) or '1632' ÷ 3600 (= $\frac{34}{75}$ = 0.453(333...))			M1	
		Yes with correct figures		A1	Yes and 27.2 **or** (1632 and 1800) seen or Yes and 0.453 oe seen
					Total 4 marks

Alternative Mark Scheme for Q2 (calculation in minutes)

2	72 ÷ 60 (= 1.2)		4	M1	
	'1.2' ÷ 3 (= 0.4)			M1	
	68 × '0.4' (= 27.2)			M1	
		Yes, with correct figures		A1	Yes and 27.2 seen
					Total 4 marks

3	15 × 24 (= 360) **or** 25 × 18 (= 450)		3	M1	may be implied by 810 seen
	$\frac{'360' + '450'}{40}$ $(= \frac{810}{40})$			M1	dep on M1
		20.25 oe		A1	for 20.25 accept 20.3 (allow 20 from correct working)
					Total 3 marks

4	E.g. (72 ÷ 3) × 1.34 (= 17.91) **or** 34.5 × 1.34 (= 46.23) **or** 72 ÷ 1.34 (= 53.73) **or** (34.5 × 3) × 1.34 (= 138.69)		4	M1	for converting £ to $ or $ to £
	34.5 – '17.91' (= 16.59) **or** '46.23' – (72 ÷ 3) = (22.23) **or** (34.5 × 3) – '53.73' (= 49.77) **or** '138.69' – 72 (= 66.69)			M1	for profit of 1 pair of jeans or 3 pairs of jeans
	$\frac{'16.59'}{'17.91'} \times 100$ **or** $\frac{'22.23'}{72 \div 3} \times 100$ **or** $\frac{'49.77'}{'53.73'} \times 100$ **or** $\frac{'66.69'}{72} \times 100$			M1	for a complete method
		93		A1	for 92.625 – 93
					Total 4 marks

5	eg $\frac{1}{2} \times (20 + 26) \times 12$ (= 276) **or** $12 \times 20 + \frac{1}{2} \times (26 - 20) \times 12$ (= 276) **or** $12 \times 26 - \frac{1}{2} \times (26 - 20) \times 12$ (=276)		5	M2	complete method to find the area of the shape M1 for method to find the area of a rectangle 12 × 20 (= 240) **or** 12 × 26 (=312) **or** the area of the triangle $\frac{1}{2} \times (26 - 20) \times 12$ (= 36)
	"276" ÷ 20 (= 13.8)			M1	(indep) method to find the number of tins for their area ft any value from a calculation that includes at least two of 20, 26 & 12
	eg 3 × $40 + 2 × $13 (= $146) or 14 × $13 (= $182) or 4 × $40 (= $160)			M1	method to calculate a cost for their number of tins dep on previous M1 (NB: use n × $40 where n is the next multiple of 4 greater than the number of tins needed, divided by 4)
		146		A1	cao dep on accurate figures
					Total 5 marks

6	eg $1 \times 6 + 2 \times 3.50 + 4 \times 4.20$ (= 29.8(0)) $40 - 1 \times 6 - 2 \times 3.50$ (= 27.(00))			M1	for working with at least three of hammer, nails, wood, money, gloves
	$40 - (1 \times 6 + 2 \times 3.50 + 4 \times 4.20)$ (= 10.2(0))			M1	complete method to find the remaining money
	"10.20" ÷ 1.80 (= 5.66...) **or** [their remaining money] ÷ 1.80 **or** 1.80×5 (= 9) **or** 1.80×6 (= 10.8(0))			M1	(dep on M1) method to find the number of pairs of gloves
		5	4	A1	SC B2 for an answer of 14
					Total 4 marks

7	e.g. 36×50 (= 1800)			M1	for calculating outgoings could work in £ or p throughout
	e.g. $36 \times \frac{1}{2} \times 60$ (= 1080) **or** $36 \times \frac{1}{3} \times 40$ (= 480) **or** $36 \times \left(1 - \frac{1}{2} - \frac{1}{3}\right) \times 25$ (= 150)			M1	for working out one source of income
	e.g. $36 \times \frac{1}{2} \times 60 + 36 \times \frac{1}{3} \times 40 + 36 \times \left(1 - \frac{1}{2} - \frac{1}{3}\right) \times 25$ (= 1710)			M1	for complete method to find the total income
	e.g. $\frac{"1800" - "1710"}{"1800"} \times 100$ **or** $\frac{[\text{outgoings}] - [\text{income}]}{[\text{outgoings}]} \times 100$			M1	(dep on first 2 method marks) complete method to find percentage loss
		5	5	A1	accept −5
					Total 5 marks

8	$\pi \times 7.2^2 \div 2$ (= 81.4....)			M1	allow 81.3 – 81.5 for area of semi circle
	"81.4" ÷ 6 (= 13.5...) **or** 12×6 (= 72) **or** "81.4" ÷ 12 (= 6.7...)			M1	(dep) allow 13.5 – 13.6 for the number of boxes needed (NB: $12 \times 6 = 72$ alone is 0 marks)
		No with correct figures	3	A1	
					Total 3 marks

9	0.4×75(= 30) oe		4	M1	M2 for 0.6×75(= 45) oe
	75 – 30 (= 45)			M1	
	(T-Shirt =) $\frac{45-12}{2}$ or (Bag =) $\frac{45+12}{2}$ oe or $t + (t + 12) = 45$ oe			M1	(T-shirt = $16.50)
		28.5(0)		A1	
					Total 4 marks

10	$4x$ or $x - 7$		4	M1	Correct expression for B or C
	$x + 4x + x - 7 = 137$ oe			M1	Correct equation
	$x = 144 \div 6$ (=24) or $6x = 144$			M1	Gathering up the x's and numbers Dep on previous M1
		17		A1	
					Total 4 marks

11		240 ÷ 3 (= 80) **or** 240 ÷ 3 × 2 (= 160)		4	M1 for finding the number of large ice creams or small ice creams
		'80' × 3.8 (= 304)			M1 for finding the cost of large ice creams
		(640 – '304') ÷ '160'			M1 for a complete method to find the cost of a small ice cream
			2.1(0)		A1
					Total 4 marks

12		A: $0.6 \times (2 \times 80)$ (= 96) B: 0.6×80 (= 48) C: 0.55×80 (= 44) D: $(0.6 - 0.55) \times 80$ (= 4)		4	M2 for **two** compatible values: AC or BC or BD **or** $2 \times 60 - 55$ (= 65%) If not M2 then award M1 for any **one** of A or B or C or D
		E.g. '96' – '44' **or** 48 + (48 – 44) **or** 48 + '4' **or** '0.65' × 80			M1 for a complete method
			52		A1
					Total 4 marks

13		120 ÷ (3 + 5) (= 15)		6	M1	M2 for $\frac{3}{8}\times120$ (= 45) **or** $\frac{5}{8}\times120$ (= 75) oe
		'15' × 3 (= 45) **or** '15' × 5 (= 75)			M1	
		'45' ÷ 3 (= 15) **or** '45' ÷ 3 × 2 (= 30)			M1	
		'75' × $\frac{16}{25}$ (= 48) **or** '75' × $\frac{9}{25}$ (= 27)			M1	
		E.g. ('45' ÷ 3 × 2) + ('75' × $\frac{9}{25}$) oe **or** '27' + '30' **or** ('75' – '48') + ('45' – '15')			M1 for a complete method	
			57		A1	
						Total 6 marks

14	eg (36 ÷ 9) × 5 **or** 20 [ducks] **or** 20 : 36 **or** for writing the 3 parts of the ratio correctly eg 35 : 10 : 18 oe		3	M1	for a fully correct calculation for the number of ducks or stating 20 ducks – may be shown in a ratio – does not need to be labelled if it is clear that the number or calculation refers to the number of ducks
	"20" ÷ 2 = 10 and 10 × 7 oe or $\frac{36}{18}\times35$ oe			M1	for a correct calculation to find the number of chickens. (award the M2 for 70 : 20 : 36 or a different order if intention is clear eg by labels)
	Working not required, so correct answer scores full marks (unless from obvious incorrect working)	70		A1	
					Total 3 marks

15	5 × 74 (= 370) **or** 6 × 77 (= 462) **or** 5 × 0.74 (= 3.7) **or** 6 × 0.77 (= 4.62)		3	M1	one correct product	M2 for 74 + (3 × 6) oe **or** 77 + (3 × 5) oe (where 3 = 77 – 74)
	6 × 77 – 5 × 74 **or** "462" – "370" **or** (6 × 0.77 – 5 × 0.74) × 100 **or** ("4.62" – "3.7") × 100			M1	from correct working	
	Working not required, so correct answer scores full marks (unless from obvious incorrect working)	92		A1	allow 92/100 **or** 92% **or** 92 out of 100 (trial and error scores no marks unless correct – and then it gains full marks)	
						Total 3 marks

16	(a)	$65 \times 14 + 44$ oe eg $910 + 44$		2	M1	
		Working not required, so correct answer scores full marks (unless from obvious incorrect working)	954		A1	
	(b)	$750 - 44$ (= 706)		4	M1	
		"706" ÷ (65 + 12.5) (= 9.109...)			M1	dep or clearly adding at least 5 lots of (65 + 12.5) (77.5, 155, 232.5, 310, 387.5, 465, 542.5, 620, 697.5)
		"706" – "9" × (65 + 12.5) oe eg "706" – 697.5			M1	For the sum of (65 + 12.5) to the value under "706" with no more than one error **and** subtracting from "706"
		Working not required, so correct answer scores full marks (unless from obvious incorrect working)	8.5[0]		A1	
		Alternative method for (b)				**Total 6 marks**
		750 ÷ (65 + 12.5)(=9.677…) oe		4	M1	
		750 – "9" × (65 + 12.5) (= 52.5) oe			M1	
		52.5 – 44			M1	
		Working not required, so correct answer scores full marks (unless from obvious incorrect working)	8.5[0]		A1	

17	E.g. 42 ÷ 3 (= 14) or 68 ÷ 8 (= 8.5) or 42 × 3 (= 126) or $\frac{15}{8} \times 68$ (= 127.5)			M1	for a correct first step
	E.g. 9 × '14' + 15 × '8.5' oe or '126' + '127.5'			M1	for a complete method
		253.5	3	A1	
					Total 3 marks

18	$\frac{4}{15} \times 1200$ (= 320) **or** for $\frac{3}{15}$ or $\frac{8}{15}$ seen		4	M1	
	1200 – "320" (= 880) **and** "880" ÷ 11 (=80) **or** $\frac{3}{11} \times 880$ (= 240) oe **or** $\frac{3}{15} \times 1200$ (= 240) oe			M1	
	1200 – ("320" + "240") **or** 880 – 240 (= 640) **or** $\frac{8}{11} \times 880$ (= 640) **or** $\frac{8}{15} \times 1200$ oe			M1	
		320, 240, 640		A1	Must be on correct answer lines or clearly attributed to cake *A*, *B* and *C*, otherwise withhold final A mark.
					Total 4 marks

19	$x \times 1.05 = 1.26$ oe eg $(x =)\ 1.26 \div 1.05$ (= 1.2)	or 30 × 1.26 (= 37.80)	or 30 ÷ 1.05 (= 28.57)		3	M1
	30 × "1.2"	"37.80" ÷ 1.05	"28.57…" × 1.26			M1
				36		A1 cao If no marks awarded, SC B1 for one operation used correctly, even with another incorrect operation. eg $1.26 \times 0.95 \times 30$ oe or $1.26 \times 1.05 \times 30$ oe or $1.26 \div 0.95 \times 30$ oe
						Total 3 marks

20	(36 – 25) × 7.45 oe		3	M2	for a complete method
				(M1	for 36 – 25 (= 11) **or** for $W \times 7.45$ where W is their weight)
		81.95		A1	
					Total 3 marks

21	e.g. 0.7 × 20 160 oe (= 14 112) **or** 0.3 × 20 160 oe (= 6048)		4	M1	
	e.g. "14 112" ÷ (9 + 5 + 2) (= 882) **or** (20 160 – "6048") ÷ (9 + 5 + 2) (= 882)			M1	M2 for $\frac{9-2}{9+5+2} \times$ "14 112" oe
	e.g. 9 × "882" – 2 × "882"			M1	
		6174		A1	
					Total 4 marks

22	eg 10.5 ÷ (5 – 2) (= 3.5(0)) **or** $\frac{5}{7}-\frac{2}{7}\left(=\frac{3}{7}\right)$ **or** $10.5\times\frac{5}{5-2}(=17.5)$ **or** $10.5\times\frac{2}{5-2}(=7)$		3	M1	for finding the value of one share **or** the difference as a fraction **or** Bella's share **or** Millie's share
	eg "3.5"×7 **or** $10.5\div\text{"}\frac{3}{7}\text{"}$ or "17.5" + "7"			M1	for a complete method
		24.5(0)		A1	oe eg $\frac{49}{2}$
					SCB1 for an answer of 3 and/or 7.5 oe
					Total 3 marks

23	256 ÷ 8 (= 32) **or** 8 × 32 = 256 **or** 2.48 ÷ 8 (= 0.31)		3	M1	for a correct first step
	"32" × 2.48 **or** 256 × "0.31"			M1	for a complete method or $\frac{1984}{25}$
		79.36		A1	
					Total 3 marks

24	6 × 220 (= 1320) or 220 + 220 + 220 + 220 + 220 + 220 (= 1320) oe		4	M1 Allow a **correct** build-up method	
	5000 – "1320" (= 3680) or 5000 – ("220 + 220 + 220 + 220 + 220 + 220") (= 3680) oe or 5000 – 140 (= 4860) or 5000 – ("1320" + some multiples of 295) oe			M1 Allow a **correct** build-up method	
	("4860" – "1320") ÷ 295 or "3540" ÷ 295 or ("3680" – 140) ÷ 295			M1 Allow a **correct** build-up method	M1 A1 for 3680 ÷ 295 (= 12.4(745..)) **and** 12
		12		A1	
					Total 4 marks

25	12 × 1.40 + 12 × 0.5 ×1.40 (=25.20) oe eg (1.4 + 0.7) × 12 (= 25.20)		4	M1	correct method to find the cost for offer A
	0.8 × 7.20 × "4" (=23.04) oe or "4" × 7.20 – 0.2("4" × 7.20) oe eg 28.80 – 5.76 (= 23.04) where 4 = 24 ÷ 6			M1	indep correct method to find the cost for offer B
	12 × 1.40 + 12 × 0.5 ×1.40 – 0.8 × 7.20 × 4 or "25.20" – "23.04"			M1	dep on M2 A fully correct method to find the difference
		2.16		A1	allow –2.16
					Total 4 marks

26	12 × 11.75 (= 141)		3	M1	
	(181 – '141') ÷ 5			M1	
		8(.00)		A1	
					Total 3 marks

27	eg 2.5×6.5 (= 16.25) **or** $0.5 \times 6.5 \times 1$ (= 3.25) **or** 3.5×6.5 (= 22.75)		4	M1	M2 for $0.5(2.5 + 3.5) \times 6.5$ (= 19.5) **or** $2 \times (0.5(2.5 + 3.5) \times 6.5)$ (= 39)
	$2.5 \times 6.5 + 0.5 \times 6.5 \times 1$ (= 19.5) **or** $2 \times (2.5 \times 6.5 + 0.5 \times 6.5 \times 1)$ (= 39) **or** $3.5 \times 6.5 - 0.5 \times 6.5 \times 1$ (= 19.5) **or** $2 \times (3.5 \times 6.5 - 0.5 \times 6.5 \times 1)$ (= 39)			M1	
	$2 \times$ "19.5" ÷ 12 (= 3.25) **or** "39" ÷ 12 (= 3.25) **or** 12 + 12 + 12 + 12 (= 48) **or** 4×12 (= 48)			M1	**or** [their area] ÷ 12 (dep on M1) **or** using multiples of 12 for [their area] eg area = 19.5 **and** 12 + 12 (= 24) **or** 2×12 (= 24)
		4		A1	dep on M2, must be from correct working
					Total 4 marks

28	one of: Flour - $\frac{150\times10}{1500}\times1.30(=1.30)$ Choc spread - $\frac{10\times250}{500}\times2.60(=13)$ Eggs - $\frac{3\times10}{6}\times1.10(=5.50)$	one of Flour - $\frac{150}{1500}\times1.30(=0.13)$ Choc spread $\frac{250}{500}\times2.60(=1.30)$ Eggs $\frac{3}{6}\times1.10(=0.55)$		5	M1	No need for labels
	at least two of: Flour - $\frac{150\times10}{1500}\times1.30(=1.30)$ Choc spread - $\frac{10\times250}{500}\times2.60(=13)$ Eggs - $\frac{3\times10}{6}\times1.10(=5.50)$	at least two of Flour - $\frac{150}{1500}\times1.30(=0.13)$ Choc spread $\frac{250}{500}\times2.60(=1.30)$ Eggs $\frac{3}{6}\times1.10(=0.55)$			M1	No need for labels
	120 × 0.4 (= 48) oe	12 × 0.4 (= 4.80)			M1	indep
	(profit =) "48" – "1.30" – "13" – "5.50" **or** "48" – "19.80"	(profit =) 10("4.80"–"0.13"–"1.30 –"0.55") or 10("4.80" – 1.98)			M1	complete method to calculate profit by subtracting 3 amounts, all of which must be correct or from correct working
			28.2(0)		A1	
						Total 5 marks

29	eg 2.5 kg = 2500 g **or** 400 g = 0.4 kg **or** 350 g = 0.35 kg		4	B1	for a correct conversion between g and kg
	eg 400 + 350 (= 750) **or** 0.4 + 0.35 (= 0.75) **or** 400 × 2 (= 800) **or** 0.4 × 2 (= 0.8)			M1	for method to find the weight of parcel **B** or **C** ft incorrect conversion
	eg 2500 – (400 + "750" + "800") **or** 2.5 – (0.4 + "0.75" + "0.8") (= 0.55)			M1	for a complete method ft incorrect conversion
	Correct answer scores full marks (unless from obvious incorrect working)	550		A1	
					Total 4 marks

30	5 × 1000 (= 5000) **or** 350 ÷ 1000 (= 0.35)		4	M1
	"5000" ÷ 350 (= 14.2857…) **or** 5 ÷ "0.35" (= 14.2857…) **or** 14			M1 Allow their 5000 or their 0.35
	350 × "14" or 4900 or 0.35 × "14" or "0.49" or (14.28(57…) – 14) × 100			M1
	Correct answer scores full marks (unless from obvious incorrect working)	100 g or 0.1 kg		A1
				Total 4 marks

30 **ALT**	5 × 1000 (= 5000) **or** 350 ÷ 1000 (= 0.35)		4	M1
	350, 700, 1050, ……., 4900 **or** 0.35, 0.7, 1.05, ……., 4.9			M1 for repeated addition to at least 4900 or 4.9 (allow one error) or for repeated subtraction to at least 100 or 0.1 (allow one error)
	350, 700, 1050, ……., 4900 **or** 0.35, 0.7, 1.05, ……., 4.9			M1 for repeated addition to 4900 or 4.9 (no errors) or clearly indicated e.g. at the end of their list, circled, underlined etc or for repeated subtraction to 100 or 0.1 (no errors) clearly indicated e.g. at the end of their list, circled, underlined etc
	Correct answer scores full marks (unless from obvious incorrect working)	100 g or 0.1 kg		A1
				Total 4 marks

31	$\frac{30}{100} \times 250$ (= 75) oe or 250 −160 (= 90)		3	M1
	"90" – "75" or "75" – "90"			M1
	Correct answer scores full marks (unless from obvious incorrect working)	15		A1 allow −15
				Total 3 marks

32	eg 9.25 × 1000 (= 9250) **or** 750 ÷ 1000 (= 0.75)		4	M1	for a correct conversion	M2 for 750 × 13 (= 9750)
	eg "9250" ÷ 750 (= 12(.333…) or 13) **or** 9.25 ÷ "0.75" (= 12(.333…) or 13) **or** 750 × 12 (= 9000) **or** 0.75 × 12 (= 9) **or** eg 750, 1500, 2250, ……., 9000 or 0.75, 1.5, 2.25, ……., 9 **or** 9250, 8500, 7750, ……., 250 or 9.25, 8.5, 7.75, ……., 0.25			M1	for a method to calculate the number of bags required. Ft incorrect conversion **or** for repeated addition to at least 9000 or 9 (allow one error) **or** for repeated subtraction to at least 250 or 0.25 (allow one error)	
	eg "13" × 58			M1	for a complete method. Ft incorrect conversion – an attempt must have been made at a conversion to gain this mark. "13" must come from a number that is rounded up **or** ft subtraction/addition method to find the number of bags allowing only one error "13" must come from a number that is rounded up	
	Correct answer scores full marks (unless from obvious incorrect working)	754		A1	cao SCB1 for 9.25 ÷ 750 (= 0.123(333……))	
						Total 4 marks

33	$\frac{4}{5} \times 120$ (= 96) oe		4	M1
	"96" × 46 (= 4416) oe			M1
	"4416" – 120 × 28 or "4416" – "3360"			M1
	Correct answer scores full marks (unless from obvious incorrect working)	1056		A1
				Total 4 marks

34	135 ÷ (2 + 7) (= 15) oe **or** 135 ÷ 9 (= 15) oe **or** 9 × 15 (= 135) oe		4	M1	M2 for $\frac{2}{9}\times 135 (=30)$ or $\frac{7}{9}\times 135 (=105)$
	2 × "15" (= 30) oe **or** 7 × "15" (= 105) oe			M1	
	"30" × 8 + "105" × 5 (= 765) oe **or** 240 + 525 (= 765) oe			M1	
	Correct answer scores full marks (unless from obvious incorrect working)	65		A1	
					Total 4 marks

35	9, 18, 27, 36 **and** 12, 24, 36 **or** 36 **or** a multiple of 36 **or** (9 × 12 =) 108 **or** $3^2 \times 4$ (= 36) (from Venn diagram or table)		4	M1 for at least two multiples of 9 and 12 **or** 36 **or** a multiple of 36
	"4" × 7.6(0) or "3" × 4.8(0) **or** "30.4" or "14.4" **or** "4*n*" × 7.6(0) or "3*n*" × 4.8(0)			M1 for a correct method to find the cost of 4 or 8 or 12 etc of packets of pens **or** 3 or 6 or 9 etc packets of pencils
	"4" × 7.6(0) + "3" × 4.8(0) **or** "30.4" + "14.4" **or** "4*n*" × 7.6(0) + "3*n*" × 4.8(0)			M1 for a correct combination of number of packets of pens × 7.6(0) + number of packets of pencils × 4.8(0) with an intention to add, eg pens pencils 4 × 7.60 + 3 × 4.8 = 44.8(0) 8 × 7.60 + 6 × 4.8 = 89.6(0) 12 × 7.60 + 9 × 4.8 = 134.4(0) 16 × 7.60 + 12 × 4.8 = 179.2(0) 36 × 7.60 + 27 × 4.8 = 403.2(0) 48 × 7.60 + 36 × 4.8 = 537.6(0)
	Correct answer scores full marks (unless from obvious incorrect working)	44.8(0)		A1 allow 45 if 44.8(0) seen allow 4480 p or pence if £ sign crossed out M3A0 for 44.8*n* where *n* is an integer (eg 134.4(0))
				Total 4 marks

36	94.8(0) – 3 × 12 (= 58.8(0)) oe		4	M1	for a method to find the total cost of the children's tickets
	eg 0.3 × 12 (= 3.6(0)) oe **or** (1 – 0.3) × 12 (= 8.4(0)) oe			M1	(indep) for finding 30% or 70% of 12
	"58.8(0)" ÷ (12 – "3.6(0)") oe **or** "58.8(0)" ÷ "8.4(0)" oe			M1	for a complete method to find the number of children's tickets
	Correct answer scores full marks (unless from obvious incorrect working)	7		A1	
					Total 4 marks