

Question		Answer	Marks	Part Marks and Guidance	
1	(a)	13 : 15	3	Or $\frac{13}{15} : 15$ or $0.8\dot{6} : 1$ or $1 : \frac{15}{13}$ or $1 : 1.1\dot{5}384\dot{6}$ M1 for correct conversion of m to cm or vv M1FT for correct partial simplification of <i>their</i> ratio Allow M2 for 13 cm to 15 cm or 15 : 13 or $13 : 1500$ or rot versions of $0.8\dot{6} : 1$ or $1 : 1.1\dot{5}384\dot{6}$, if exact answer is not seen	M2 for 78 : 90 or 52 : 60 or 39 : 45 or 26 : 30 or 0.78 : 0.9 etc Condone inclusion of units for the Ms 2 nd M1 may be gained if conversion is not attempted 0.13 m : 15 cm gets M0M1 1.15 : 1 gets M1
	(b)	Sarah 2220 and David 1480	3	B2 for one correct or for answers reversed Or M1 for $3700 \div 5$ or 740	

Question		Answer	Marks	Part marks and guidance	
2		<p>180 ÷ 10</p> <p>Angles 36, 54, 90</p> <p>6 used as hypotenuse of right-angled triangle (may be implied by sketch or attempt at trig with 6 as hyp)</p> <p>Use of sine <i>their</i> 36 (attempt at right-angled trig or sine rule) or of cos <i>their</i> 54</p> <p>6 × sin 36 or 6 × cos 54 oe</p> <p>3.5(267...) rot to 2 sf or more</p> <p>Showing <i>their</i> answer : 6 ≠ 2 : 5 or obtaining for sides to be in same ratio, shortest side should be 2.4</p>	<p>M1</p> <p>A1</p> <p>M1</p> <p>M1</p> <p>M1</p> <p>A1</p> <p>B1</p>	<p>or eg $\frac{2}{10} \times 180$ seen oe for at least one angle</p> <p>or B2</p> <p>if this and subsequent M marks not earned, allow SC1 for the strategy of any attempt at using trig</p> <p>For this last M1, must work with correct angles</p> <p>After marks for angles; Allow B4 for 3.5(267...) rot to 3 sf or more (need not be identified as shortest side). If 3.5(267...) not found, allow SC2 for 4.8(541...) rot to 3 sf or more</p> <p>accept using 3.5 to 3.53 from correct answer but not approximation to 4 (oe FT <i>their</i> shortest side found)</p> <p>B0 for just '3.5 : 4.9 : 6 is not the same as 2 : 3 : 5'</p>	<p>allow this second M1 for accurate drawing</p> <p>or equivalent methods to find other side and then correct use of Pythagoras</p> <p>Condone poor notation e.g. sin (36 × 6) for this st M1</p> <p>or SC2 for 4.8 or 4.9 after correct use of trig</p> <p>using 3.5, 4.9 and 6 may eg work out perimeter and divide 14.4 in ratio 2:3:5 as 2.88: 4.32 :7.2;</p> <p>allow B1 for 2.4 : 3.6 : 6 seen</p> <p>NB in the absence of clear evidence of trigonometry used, the max mark is M1A1M1M0M0A0B1</p>

3	(a)	(i)	45	2	<p>M1 for $\frac{5}{8} \times 72$ oe or $\frac{5}{their(1+2+5)} \times 72$ oe or for [1 share =] 9 or for 9 : 18 : 45 as answer</p>	
		(ii)	1440	2	<p>M1 for $\frac{8}{2} \times 360$ oe or for [1 share =] £180</p>	
	(b)		59.33 to 59.34 or 59.3(0)	4	<p>M1 for midpoints 10, 30, 50 etc seen or used</p> <p>M1 for <i>their</i> midpoints \times freq (20, 150, 350, 770, 270, 220; total 1780)</p> <p>M1 for (<i>their</i> sum of midpoints \times freq) \div 30</p> <p>Allow A1 for 59 if M3 earned</p>	<p>At least three of them seen; may be implied by products Allow 9.99, 29.99, 49.99 etc</p> <p>At least 3 correct or total seen Accept 19.98, 149.95, 349.93, 769.89, 269.97, 219.98; total 1779.7</p> <p>Allow first two M1s if seen even if another method used for answer on answer line</p> <p>Second and third Ms are available for '<i>their</i> midpoints' being an attempt using other points in interval, or endpoints (at least 3 seen)</p> <p>Allow MOMOM1 for 600/30 following consistent use of class-width 20 instead of midpoints</p> <p>Answers of 69.33 to 69.34 or 69.3(0) (or 49.33 to 49.34 or 49.3(0)) imply second and third M1s</p>

4	(a)	<p>2000 [g] or 0.75 [kg] seen</p> <p>Interim step in simplification of 2000 : 750 or 2 : 0.75 leading to 8 : 3</p>	<p>M1</p> <p>M1 dep</p>	<p>May be implied by eg $\frac{1}{8}$ of blackberries = 250 [g]</p> <p>Or multiplier method eg $8/2 = 4$ and $3 \div 4 = 0.75$ Or $2000/8 = 250$ and $750/3 = 250$ Or $2000/250 = 8$ and $750/250 = 3$</p> <p>Or $2000/750 = 8/3$ [so 8 : 3] for M1 (bod using fraction button on calc)</p>	<p>NB answer 8 : 3 given, mark the method</p> <p>Similarly allow M1 for $2/0.75 = 8/3$</p> <p>Condone all reversed. leading to 3 : 8 Condone starting with 8 : 3 and getting to 2000 : 750 or 2 : 0.75</p>
	(b)	<p>(</p> <p>1125 or 1.125 or $1\frac{1}{8}$</p> <p>g or kg as appropriate</p>	<p>2</p> <p>1</p>	<p>M1 for 750×1.5 oe in kg or for figs 1125</p> <p>Accept kg with answer < 100 Accept g with answer ≥ 100 isw wrong conversion after a correct answer</p> <p>0 in qn for just 3000 g or 3 kg as answer</p> <p>Allow 3 for 1kg 125g</p>	<p>Or M1 for 375×3 or 0.375×3 or $\frac{3}{8} \times 3$</p> <p>Give one fewer marks than otherwise earned for answer left in ratio form eg give 1 for 3000 : 1125</p>
	(ii)	9	1		

5	(a)	27[.00]	2	M1 for 45×0.6 oe or $45/5$ or 9	Condone 27.0, 27.00p
	(b)	3 : 8 or 0.375 oe : 1 or 1 : 2.6 or exact equivalent mark final answer	2	M1 for 6 : 16 or 1 : 2.6-2.7 or correct answer seen then spoiled After 0 scored allow SC1 for correct ratio but reversed e.g. 8:3	Condone £3 : £8 for 1 or 2 marks

6	(a)	26	2	M1 for $325 \div (23 + 2)$ oe or for 13	Condone 299 : 26 for two marks
	(b)	<p>Use of tan</p> <p>(Height at end of first stage) = 8.6(08...)</p> <p>12.7 – <i>their</i> 8.6(08...) or 4.09 to 4.2 or FT</p> <p>$[x =]\tan^{-1}\left(\frac{\text{their } 4.09\dots}{35}\right)$</p> <p>6.6 to 6.843 or 7</p>	<p>M1</p> <p>A1</p> <p>M1</p> <p>M1</p> <p>B1</p>	<p>Even if used wrongly</p> <p>Accept 8.5 to 8.61 even if then used in wrong position on diagram; if not seen, may be implied by further correct working</p> <p>Dep on 2nd M1; condone poor notation</p> <p>This final mark may still be gained if eg \sin^{-1} used or scale drawing</p>	<p>Allow M1 for use of tan (or \tan^{-1} oe) anywhere in the question</p> <p>Throughout question allow complete equivalent methods using Pythagoras and sin and cos</p> <p>M0 for just $\tan[x] = \left(\frac{\text{their } 4.09\dots}{35}\right)$</p> <p>but M1 if their answer following this implies they have used invtan</p>