1	$4x + 12$ or $2(2x + 6)$ or $4(x + 3)$	B3	B2 correct expression for half the perimeter of T eg $x + 2 + x + 2 + (x + 2 - x)$ $x + 2 + x + 2 + 2$ $2(x + 2) + (x + 2 - x)$ $2(x + 2) + 2$ $2x + 4 + (x + 2 - x)$ $2x + 4 + 2$ $2x + 6$ $2(x + 3)$ or correct expression for the perimeter of T eg $x + 2 + x + 2 + x + 2 + x + 2 + 2(x + 2 - x)$ $x + 2 + x + 2 + x + 2 + x + 2 + 2 + 2$ $2(x + 2 + x + 2) + 2(x + 2 - x)$ $2(x + 2 + x + 2) + 2 \times 2$ $2(2x + 4) + 2(x + 2 - x)$ $2(2x + 4) + 2 \times 2$ $4x + 8 + 4$ B1 simplified correct expression for the longer side of T $2(x + 2)$ or $2x + 4$ seen or simplified correct expression for the two longer sides of T $4(x + 2)$ or $2(2x + 4)$ or $4x + 8$ seen SC1 $8x + 12$

	Additional Guidance	
1	Ignore further work with an incorrect attempt to factorise after $4x + 12$ eg $4x + 12$ and $2(2x + 12)$	B3
	Ignore further work with an incorrect attempt to expand after $2(2x + 6)$ or $4(x + 3)$ eg $2(2x + 6)$ and $4x + 6$	B3
	Do not ignore further work with an incorrect attempt to simplify after $4x + 12$ eg $4x + 12$ and $16x$	B2
	Ignore further work with an incorrect attempt to simplify after a correct B2 or B1 expression	
	Do not accept $2x + 4$ seen as part of $x^2 + 2x + 2x + 4$ for B1	B0

Q	Answer	Mark	Comments
2	$y = x + 3$	B1	

Q	Answer	Mark	Comments
3	$2s + 2w$	B1	

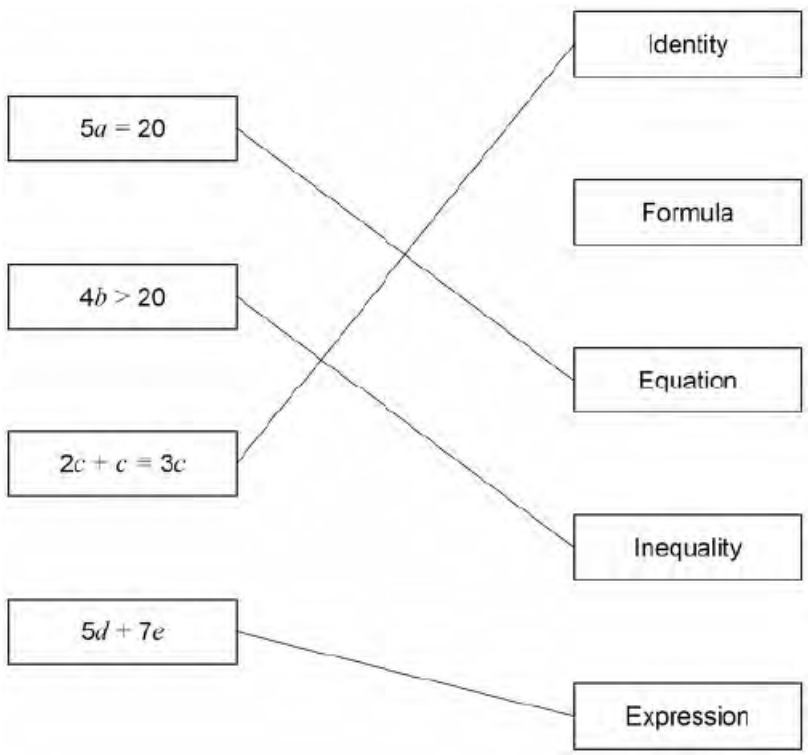
Q	Answer	Mark	Comments
4	**Alternative method 1** Shows algebraically that the angles are equal		
	$4x + 40$	M1	may be embedded or on the diagram
	$x + 2(2x + 20)$ or $x + 4x + 40$	M1	
	$x + 4x + 40 = 5x + 40$ and Yes	A1	
	Alternative method 2 Derives and solves an equation for angles at a point and substitutes into $5x + 40$ or $x + 2(2x + 20)$		
	$4x + 40$	M1	may be embedded or on the diagram or implied eg implied by $10x + 80 = 360$
	$x + 2(2x + 20) + 5x + 40 = 360$ or $x + 4x + 40 + 5x + 40 = 360$ or $(x =) 28$	M1	oe equation eg $10x + 80 = 360$ $(x =) 28$ may be on the diagram
	$140 + 40 = 180$ and Yes or $28 + 152 = 180$ and Yes	A1	oe must obtain $(x =) 28$ from one expression and substitute $(x =) 28$ into a different expression
	Alternative method 3 Assumes line is a diameter. Derives and solves an equation for angles on a line using $5x + 40$ and substitutes into $x + 2(2x + 20)$ or $x + 2(2x + 20) + 5x + 40$		
	$5x + 40 = 180$	M1	
	$(x =) (180 - 40) \div 5$ or $(x =) 28$	M1dep	oe $(x =) 28$ may be on the diagram
	$28 + 152 = 180$ and Yes or $28 + 152 + 140 + 40 = 360$ and Yes	A1	oe must obtain $(x =) 28$ from one expression and substitute $(x =) 28$ into a different expression

4 cont	**Alternative method 4** Assumes line is a diameter. Derives and solves an equation for angles on a line using $x + 2(2x + 20)$ and substitutes into $5x + 40$ or $x + 2(2x + 20) + 5x + 40$		
	$x + 2(2x + 20) = 180$ or $x + 4x + 40 = 180$	M1	
	$(x =)\ (180 - 40) \div 5$ or $(x =)\ 28$	M1dep	oe $(x =)\ 28$ may be on the diagram
	$140 + 40 = 180$ and Yes or $28 + 152 + 140 + 40 = 360$ and Yes	A1	oe must obtain $(x =)\ 28$ from one expression and substitute $(x =)\ 28$ into a different expression
	Alternative method 5 Assumes line is a diameter. Derives and solves two equations for angles on a line/angles at a point		
	$5x + 40 = 180$ or $x + 2(2x + 20) = 180$ or $x + 4x + 40 = 180$ or $x + 2(2x + 20) + 5x + 40 = 360$ or $x + 4x + 40 + 5x + 40 = 360$	M1	
	$(x =)\ (180 - 40) \div 5$ or $(x =)\ 28$	M1dep	oe $(x =)\ 28$ may be on the diagram
	Obtains $(x =)\ 28$ from two equations for angles on a line/ angles at a point and Yes	A1	

4 cont	**Additional Guidance**	
	Choose the scheme that favours the student	
	Up to M2 may be awarded for correct work, with no or incorrect answer, even if this is seen amongst multiple attempts	
	Correct response with other incorrect work	M1M1A0
	Alt 1 $2(2x + 20) = 4x + 20$ followed by $x + 4x + 20$ Alt 1 $x + 4x + 20$ with $2(2x + 20) = 4x + 20$ not seen Apply marks in a similar way in alts 2, 4 and 5	M0M1 M0M0
	$(x =)$ 28	M1M1
	Allow $(x =)$ 28 to be embedded	M1M1
	No method marks scored with a value of x $(\neq 28)$ substituted into $5x + 40$ and $x + 2(2x + 20)$ giving the same value	M0M0A0
	Yes can be implied eg Alt 1 $x + 4x + 40 = 5x + 40$ and It is a diameter	M1M1A1

Q	Answer	Mark	Comments
5	$5a + b + 4a + 7b + 2a + 3b$ or $2(4a + 2b) + 2(a + 4b)$	M1	oe
	$11a + 11b$ or $10a + 12b$	A1	oe
	$11a + 11b$ and $10a + 12b$ and cannot tell	A1	oe with no further incorrect working
	Additional Guidance		
	Condone $22ab$ after $11a + 11b$ or $10a + 12b$ for first A mark only		M1A1A0
	$11a$ and $11b$ or $10a$ and $12b$ implies M1		M1A0
	$5a + b = 6ab$ and $4a + 7b = 11ab$ and $2a + 3b = 5ab$ and $6ab + 11ab + 5ab$		M1A0
	$6ab$ next to $5a + b$ and $11ab$ next to $4a + 7b$ and $5ab$ next to $2a + 3b$ shown on diagram and $6ab + 11ab + 5ab$		M1A0
	$5a + 4a + 2a = 15a$ and $b + 7b + 3b = 12b$ and $15a + 12b$		M1A0

Q	Answer	Mark	Comments
6	$P = 2r$	B1	

Q	Answer	Mark	Comments
7	All 3 correct matches	B3	B1 for each correct match
	Additional Guidance		
	Mark intention		
	Matching to more than one box on the right is choice for that match		
			B3

Q	Answer	Mark	Comments
8(a)	11 5 4 or 10 7 3 or 10 6 4 or 9 8 3 or 9 7 4 or 9 6 5 or 8 7 5	B2	any order B1 answer of three positive numbers in any order with sum 20 eg 17 2 1 or $9\frac{1}{2}$ $8\frac{1}{2}$ 2 or 10 5 5 or $6\frac{2}{3}$ $6\frac{2}{3}$ $6\frac{2}{3}$ or correct equation in w, x and y eg $4w + 4x + 4y = 80$ or $w + x + y = 20$
	Additional Guidance		
	Ignore attempts to work out the volume or surface area eg 10 5 5 volume calculated as 500	B1	
	Negative numbers and/or zero used	B0	
	$wxy > 200$ or $wxy = 200$	B0	
	Allow $6.\dot{6}$ for $6\frac{2}{3}$		

Q	Answer	Mark	Comments
9	$d = c + 6$	B1	

Q	Answer	Mark	Comments
10(a)	The number of blueberries in the tub	B1	