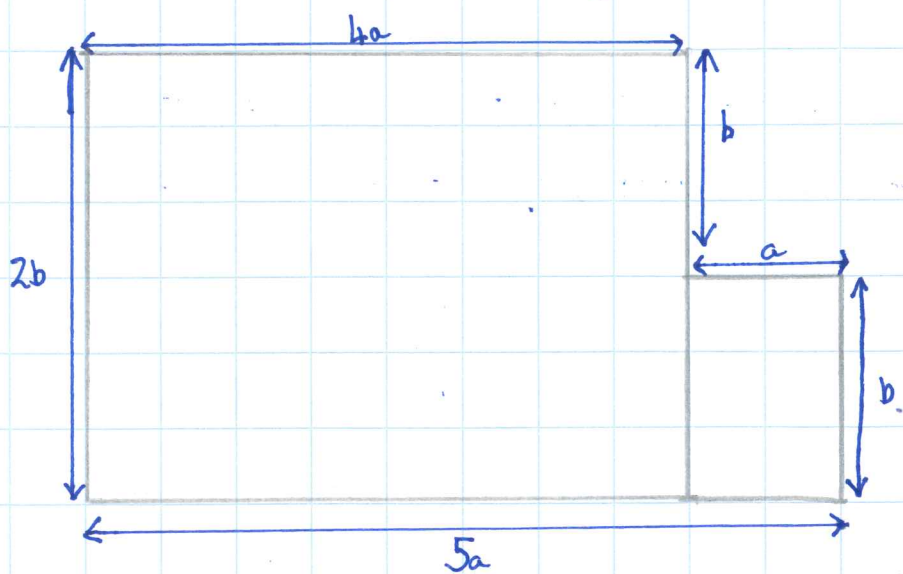


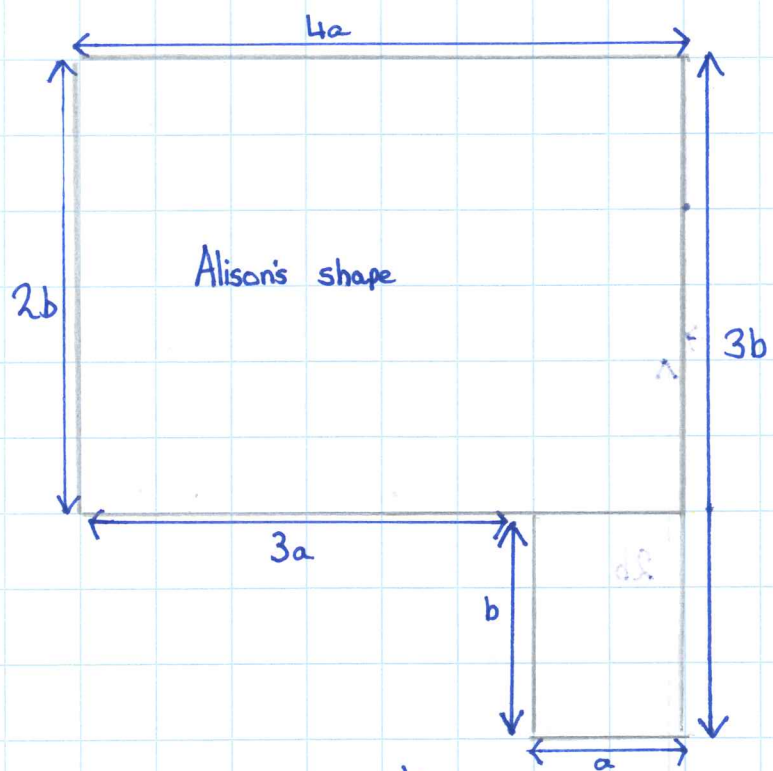
Charlie's shape



$$p = 5a + 2b + 4a + b + a + b = 10a + 4b$$

$$a = ab + (4a \times 2b) \text{ cm}^2 = ab + 8ab \text{ cm}^2 = 9ab \text{ cm}^2$$

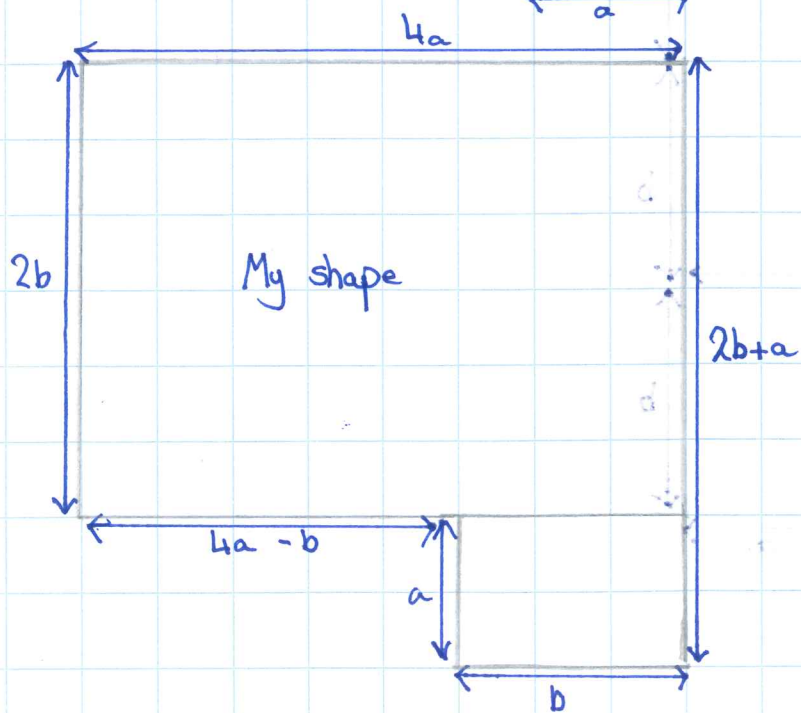
Alison's shape



$$p = 4a + 3b + a + b + 3a + 2b = 8a + 6b$$

$$a = ab + (4a \times 3b) \text{ cm}^2 = ab + 12ab \text{ cm}^2 = 13ab \text{ cm}^2$$

My shape

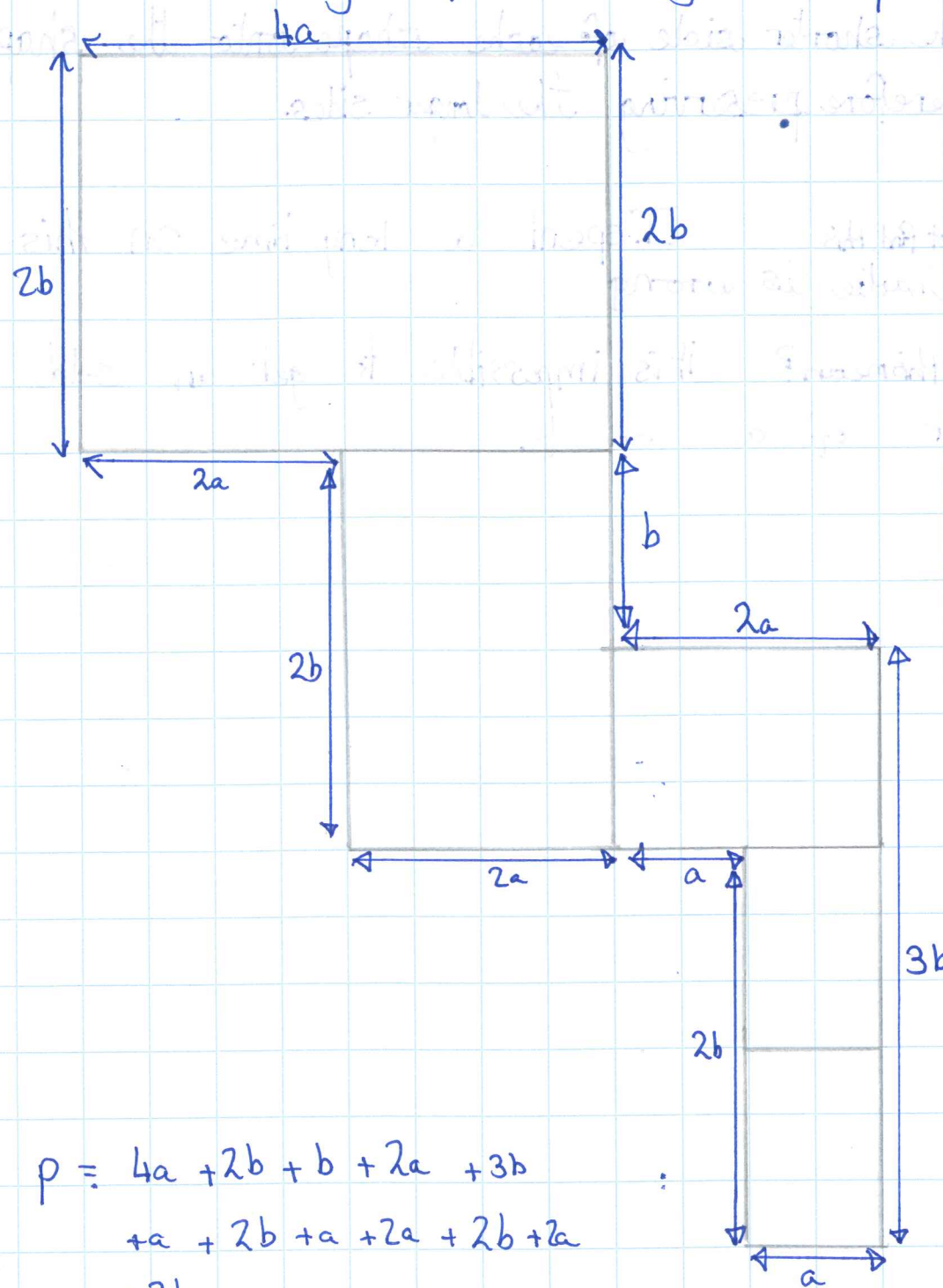


$$p = 4a + 2b + a + b + a + 4a - b + 2b = 10a + 4b$$

$$a = 9ab \text{ cm}^2$$

Questions

What is the largest perimeter using all the pieces?



$$p = 4a + 2b + b + 2a + 3b + a + 2b + a + 2a + 2b + 2a + 2b$$

2b	4a
1b	2a
3b	1a
2b	2a
2b	2a
2b	2a
12b	12a

$$= 12a + 12b$$

I think this is the largest possible perimeter using all the pieces because I have put the shorter side of each shape against the one before it.