1 Turn each sentence into an equation. **Try real numbers first, every time.**

(a) There are five times as many chairs, C, as tables, T (1)

(b) There are three times as many girls, G, as boys, B (1)

(c) A box holds twelve pens. P is the number of pens and X is the number of boxes (1)

(d) For every four goats, G, there are seven sheep, S (1)

(4 marks)

2 A pupil wrote $8P = S$ for *there are eight times as many pupils, P, as staff, S.*

(a) If there are 5 staff, how many pupils are there? (1)

(b) Substitute both numbers into $8P = S$ and write down what each side comes to (2)

(c) Write down the correct equation (1)

(d) Explain what the pupil did wrong (2)

(6 marks)

3 Stephanie is y years old and Kalama is three times as old.

(a) Write expressions for their ages in four years' time (1)

(b) If $y = 6$, work out both of their ages in four years' time (1)

(c) Will Kalama still be exactly three times Stephanie's age? Use your numbers to explain. (2)

(d) Is there any age at which adding four years would keep the multiple? Try a few and say what you find. (2)

(7 marks)

4 A rectangle has sides a and b. Its perimeter is $2a + 2b$ and its area is ab. When $a = 6$ and $b = 3$, the perimeter is 18 and the area is 18.

(a) Work out the perimeter and the area when $a = 6$ and $b = 4$ (2)

(b) Does a rectangle's area always equal its perimeter? Explain using your answer to (a) (2)

(c) Find one other pair of whole-number sides where the area and the perimeter come to the same number (2)

(6 marks)

5 Write **three different expressions** that are each equivalent to $6y - 4$, and show that each one is.

(6 marks)

6 Look at the two expressions $2(x + 3)$ and $2x + 6$.

(a) Work out both when $x = 1$ (1)

(b) Work out both when $x = 5$ (1)

(c) Work out both when $x = 0$ (1)

(d) Three agreements. Can you now say they are equivalent? Explain what you would need in order to be sure. (2)

(6 marks)