Equivalent Algebraic Expressions

1 Determine whether each statement below is true or false by substituting a number (of your own choice) for the variable and checking whether the left-hand side equals the right hand side.

   a) $6 + 4m + 4 = 10 + 4m$

   b) $5a + 3a = 8a^2$

   c) $4k - 7k = 3k$

   d) $7g + 8b - b - g = 7b + 6g$

   e) $3 + 7n + 13 + 2n = 25n$

   f) $3p \times 7q = 21pq$

   g) $21m \div 3m = 7m$

   h) $2y \times 4y = 24y$

   i) $\dfrac{-16a}{4} = -4a$

   j) $2r \times 2 \times 2r = 8r^2$

2 Write two different expressions that are equivalent to $4x + 2$.

3 There are many expressions that are equivalent to $3a + 5b + 2a - b + 4a$. Write an equivalent expression with as few terms as possible.

4 Prove that no two of these four expressions are equivalent: $4 + a$, $4a$, $a - 4$, $x \div 4$.

1 a) yes

   b) no

   c) no

   d) yes

   e) no

   f) yes

   g) no

   h) no

   i) yes

   j) yes

2 $2x + 2x + 2$, $x + 3x + 1 + 1$

3 $9a + 4b$

4 When you substitute a number of your choice you get a different answer for each
    eg if you substitute 4 you get 8, 16, 0, 1 so no two are equivalent