1. Suppose we use $b$ to represent the number of bees in a hive.
   
a) Write an expression for the number of bee in the hive if 65 bees died.
   
b) Write an expression for the number of bees in the hive if the original bee population doubled.
   
c) Write an expression for the number of bees in the hive if the original population increased by 50.
   
d) What would it mean if we said that a nearby hive contained $b + 100$ bees?
   
e) What would it mean if we said that another nest contained $b - 1000$ bees?
   
f) Another hive in an area where there are fewer flowers in contains $\frac{b}{2}$ bees. How much smaller than the original is this hive?

2. Find the value of the following expressions if $a = 3$ and $b = 15$.
   
a) $6a$
   
b) $7a - \frac{2b}{3}$

3. a) Substitute $r = 4$ and $s = 5$ into the expression $5(s + r)$ and evaluate.
   
b) Substitute $t = 4$, $x = 3$ and $y = 5$ into the expression $2x(3t - y)$ and evaluate.

4. a) Substitute $m = 7$ and $n = -2$ into the expression $m - n$ and evaluate.
   
b) Substitute $m = -2$ and $n = -2$ into the expression $2n - m$ and evaluate.
   
c) Substitute $a = 5$ and $b = -4$ into the expression $5ab - \frac{12}{b}$ and evaluate.

5. Simplify the following expressions.
   
a) $3a + 5a$
   
b) $7ab - 3a - 4a$
   
c) $2c - 6 + 4c + 15$

6. Simplify:
   
a) $5x - 4g$
   
b) $-3d \times 6ab \times 7$.

7. Simplify:
   
a) $\frac{16f}{4}$
   
b) $15n \div 3n$
8. Simplify $-12xy ÷ 27y$.

9. Use the Distributive Law to expand the following expressions.
   a) $3(a + 2)$  
   b) $x(x - 5)$

10. Expand the expressions below and then simplify by collecting any like terms.
    a) $3(x - 5) + 4$  
    b) $4(3x + 4) + 7x + 12$
    c) $2x(3y + 3) + 3x(y + 1)$  
    d) $4x(2x - 1) - 3(2x - 1)$

11. Find the highest common factor (HCF) of $8x$ and $10$.

12. Find the highest common factor (HCF) of $14fg$ and $21gh$.

13. Factorise the expression $3x + 6$.

14. Factorise $12gh - 8g$.

15. Simplify each of the following expressions.
    a) $\frac{x}{2} + \frac{x}{5}$
    b) $\frac{x}{3} - \frac{2y}{7}$

16. Simplify each of the following expressions.
    a) $\frac{1}{x} - \frac{3}{2x}$
    b) $\frac{2}{3y} + \frac{3}{5y}$

17. Simplify each of the following expressions.
    a) $\frac{x}{2} \times \frac{x}{5}$
    b) $\frac{y}{2x} \times \frac{2z}{3y}$

18. Simplify each of the following expressions.
    a) $\frac{1}{x} + \frac{4}{x}$
    b) $\frac{3xy}{2} + \frac{4x}{9y}$

19. Simplify $b^3 \times b^6$

20. Simplify $b^4 \times b \times b^3$

21. Simplify $5b^{10} \times 2b^6$

22. Simplify $7m^3 \times 3n^5 \times 2m^8 \times n^4$

23. Simplify $\frac{y^{10}}{y^5}$
24. Simplify \( b^{12} \div b^8 \)

25. Simplify \( 36a^7 \div 12a^3 \)

26. Simplify \( \frac{7y^3 \times 4y^8}{12y^4} \)

27. Simplify
   a) \( (a^4)^6 \)
   b) \( (3a^2b^5)^3 \)

28. Simplify \( (3b^5)^2 \times (2b^5)^3 \)

29. Simplify \( \left( \frac{2a^3}{a^2} \right)^3 \)