GCSE HIGHER - INDICES

**A. Simplify.**

1. x3 × x4 2. y6 × y7 3. z7 ÷ z5 4. z50 × z50

5. m3 ÷ m2 6. e-3 × e-2 7. y-2 × y4 8. w2 ÷ w-2

9. y½ × y½ 10. (x2)5 11. 170 12. w-3 × w-2

13. w-7 × w2 14. x3 ÷ x-4 15. (a2)4 16. (k½)6

17. e-4 × e4 18. x-1 × x30 19. (y4)½ 20. (x-3)-2

**B. Simplify.**

1. (2x3)2 2. (4y5)2 3. 2x2 × 3x2 4. 5y3 × 2y2

5. 5a3 × 3a 6. (2a)3 7. 3x3 ÷ x3 8. 8y3 ÷ 2y

9. 10y2 ÷ 4y 10. 8a × 4a3 11. (2x)2 × (3x)3 12. 4z4 × z-7

13. 6x-2 ÷ 3x2 14. 5y3 ÷ 2y-2

**C. Rewrite without brackets.**

1. (5x2)2 2. (7y3)2 3. (10ab)2 4. (2xy2)2

5. (4x2)½ 6. (5x0)2 7. [(5x)0]2 8. (7y0)2

9. [(7y)0]2 10. (2x2y)3 11. (10xy3)2 12. (abc)0

**D. Evaluate, giving the answer in standard form.**

1. (2 × 102) × (3 × 106) 2. (4·5 × 104) × (2 × 107)

3. (2·2 × 106) × (4 × 10-2) 4. (3·1 × 10-3) × (3 × 10-7)

5. (1·2 × 10-8) × (4 × 1010) 6. (8 × 106) ÷ (4 × 102)

7. (9·3 × 108) ÷ (3 × 10-2) 8. (8·6 × 10-4) ÷ (2 × 10-7)

9. (4·2 × 10-6) ÷ (2·1 × 105) 10. (2 × 10-3) - (1·4 × 10-4)

**E.**

1. If the number 2·74 × 1015 is written out in full, how many zeros follow the 4?

2. If the number 7·31 × 10-17 is written out in full, how many zeros would there be between the decimal point and the first significant figure?