

11. 672  
 12. 921 164 400  
 13. 25 200  
 14. 112

### Long questions

1. (a) 48  
 (b) 72  
 (c) 42
2. (a) 20  
 (b) 22  
 (c) 30
3. (a) 121 080 960  
 (b) 3 991 680  
 (c) 27 941 760
4. (a) We select 2 out of 4 places to put R's in.  
 (b)  $\binom{2n}{n}$   
 (c) 20  
 (d)  $\binom{n+m-2}{n-1}$
5. (b) 2047  
 (c) 5775
6. (a) 4495  
 (b) 22  
 (c) 26

## Chapter 2

### Exercise 2A

1. (a) (i)  $6^7$  (ii)  $5^8$   
 (b) (i)  $a^8$  (ii)  $x^9$   
 (c) (i)  $7^{-3}$  (ii)  $5^5$   
 (d) (i)  $x^2$  (ii)  $x^5$   
 (e) (i)  $g^{-12}$  (ii)  $k^{-8}$
2. (a) (i)  $6^1$  (ii)  $5^{-2}$   
 (b) (i)  $a^{-2}$  (ii)  $x^3$   
 (c) (i)  $5^9$  (ii)  $7^{15}$   
 (d) (i)  $x^6$  (ii)  $x^{-11}$
- (e) (i)  $2^2$  (ii)  $3^{-14}$   
 (f) (i)  $g^6$  (ii)  $k^{-8}$
3. (a) (i)  $2^{12}$  (ii)  $3^{14}$   
 (b) (i)  $5^{-4}$  (ii)  $7^{-6}$   
 (c) (i)  $11^2$  (ii)  $13^{15}$   
 (d) (i)  $2^{17}$  (ii)  $3^3$   
 (e) (i)  $6^{12}$  (ii)  $3^6$
4. (a) (i)  $2^{10}$  (ii)  $3^{14}$   
 (b) (i)  $2^9$  (ii)  $2^{20}$   
 (c) (i)  $2^{13}$  (ii)  $3^4$   
 (d) (i)  $2^9$  (ii)  $3^{11}$   
 (e) (i)  $2^{-6}$  (ii)  $3^{-6}$   
 (f) (i)  $2^2$  (ii)  $3^{10}$
5. (a) (i)  $8x^6$  (ii)  $9x^8$   
 (b) (i)  $2x^6$  (ii)  $3x^8$   
 (c) (i)  $9a^{10}$  (ii) 16  
 (d) (i)  $\frac{1}{2x}$  (ii)  $\frac{y^2}{9}$   
 (e) (i)  $\frac{2}{x}$  (ii)  $3y^2$   
 (f) (i)  $\frac{5x^2y^4}{9}$  (ii)  $\frac{ab^5}{8}$   
 (g) (i)  $\frac{p^3}{2q^2}$  (ii)  $\frac{2^73^{10}}{x^7}$
6. (a) (i)  $x^3$  (ii)  $x^{12}$   
 (b) (i)  $2x^5$  (ii)  $\frac{1}{2x^4}$   
 (c) (i)  $\frac{4}{3x^3}$  (ii)  $\frac{y^{12}}{x^6}$
7. (a) (i)  $\frac{5}{3}$  (ii)  $-\frac{3}{2}$   
 (b) (i)  $-\frac{1}{2}$  (ii)  $-\frac{3}{4}$   
 (c) (i) 4 (ii) 2  
 (d) (i) 4 (ii) 0  
 (e) (i) 4 (ii) 11  
 (f) (i) 3 (ii) 3
8.  $5 \times 10^{-4}$
9. 8cm
10. (a)  $k = \frac{1}{3}$   
 (b)  $A = 16 \text{ cm}^2$
11.  $2^{350} = (2^7)^{50} = (128)^{50}$   
 $5^{150} = (5^3)^{50} = (125)^{50}$
12.  $b = 1, a = \frac{3}{2}$