

1 (a) Simplify  $h^7 \times h^2$

.....  
(1)

$$G = c^2 - 4c$$

(b) Find the value of  $G$  when  $c = -5$

$$G = \text{.....}$$

(2)

(c) Solve  $\frac{5x - 3}{4} = 2x + 3$

Show clear algebraic working.

$$x = \text{.....}$$

(3)

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(Total for Question 1 is 6 marks)

**2** Given that  $150^x = 1$

(a) write down the value of  $x$ .

$$x = \dots\dots\dots$$

**(1)**

Given that  $3^{-8} \div 3^{-6} = 3^n$

(b) find the value of  $n$ .

$$n = \dots\dots\dots$$

**(1)**

---

**(Total for Question 2 is 2 marks)**

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3 (a) Simplify  $k + k + k + k$

.....  
(1)

$$f = 9 \times 9 \times 9 \times 9$$

(b) (i) Write  $f$  as a single power of 9

.....  
(2)

(ii) Write  $f$  as a single power of 3

.....  
(1)

(c) Write  $5^{17} \times 5^2$  as a single power of 5

.....  
(2)

(d) Write 800 as a product of its prime factors.  
Show your working clearly.

.....  
(Total for Question 3 is 6 marks)

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4 (c) Simplify  $(p^2 + 3)^0$

.....  
(1)

**(Total for Question 4 is 1 marks)**

5 (a) Simplify  $\frac{x^9}{x^2}$

.....  
(1)

(b) Write  $\frac{7^8 \times 7^4}{7^3}$  as a single power of 7

.....  
(2)

---

**(Total for Question 5 is 3 marks)**

---

6 (b) Write down the value of  $g^0$

.....  
(1)

---

**(Total for Question 6 is 1 marks)**

7 (a) Write down the value of  $y^0$

.....  
(1)

---

**(Total for Question 7 is 1 marks)**

---

**8** (b) Simplify  $a^0$  where  $a > 0$

.....  
(1)

(c) Simplify fully  $\frac{3xy^3}{6^2}$

.....  
(2)

---

**(Total for Question 8 is 3 marks)**

---

9 (a) Simplify  $8 \times (4t)^0$

.....  
(1)

$$x^6 \div x^{-5} = x^p$$

(b) Find the value of  $p$

$p =$  .....  
(1)

(c) Simplify fully  $(2k^2m^4)^3$

.....  
(2)

---

(Total for Question 9 is 4 marks)

**10** (a) Simplify  $x^4 \times x^5$

.....  
(1)

(b) Simplify  $(4y^2)^3$

.....  
(2)

(c) Factorise  $n^2 - 7n + 12$

.....  
(2)

---

**(Total for Question 10 is 5 marks)**

**11** (a) Write down the value of  $x^0$

.....  
(1)

Given that  $2^{-3} \times 2^9 = 2^n$

(b) find the value of  $n$

$n =$  .....  
(1)

Given that  $\frac{7^{206} \times 7^m}{7^{214}} = 7^{-3}$

(c) find the value of  $m$

$m =$  .....  
(2)

---

(Total for Question 11 is 4 marks)

---

**12 (c)** Simplify  $h + h + h + h + h$

.....  
(1)

**(d)** Simplify  $5a + 7f - 2a + 4f$

.....  
(2)

---

**(Total for Question 12 is 3 marks)**

**13** (a) Simplify  $a^7 \times a^4$

.....  
(1)

(b) Simplify  $w^{15} \div w^3$

.....  
(1)

(c) Simplify  $(8x^5y^3)^2$

.....  
(2)

(d) Make  $t$  the subject of  $c = t^3 - 8v$

.....  
(2)

---

(Total for Question 13 is 6 marks)

**14** (a) Write down the value of  $(m + 2)^0$  where  $m$  is a positive integer.

.....  
(1)

---

(Total for Question 14 is 1 marks)

---

**15** (a) Simplify  $m^{10} \div m^3$

.....  
(1)

$$k^n \times k^4 = k^{12}$$

(b) Write down the value of  $n$

$n =$  .....  
(1)

(c) Simplify  $(3x^6y^8)^2$

.....  
(2)

---

**(Total for Question 15 is 4 marks)**

---

**16** (a) Simplify  $(4^{-2})^0$

.....  
(1)

$$3^{-14} \times 3^8 = 3^m$$

(b) Find the value of  $m$

$m =$  .....  
(1)

---

**(Total for Question 16 is 2 marks)**

---

**17** (a) Simplify  $(2c^4d^7)^3$

.....  
(2)

(b) Find the value of  $5y^0$  where  $y > 0$

.....  
(1)

(c) Factorise fully  $16a^2b^3 + 20a^3b$

.....  
(2)

(d) (i) Factorise  $x^2 + 9x - 22$

.....  
(2)

(ii) Hence solve  $x^2 + 9x - 22 = 0$

.....  
(1)

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**(Total for Question 17 is 8 marks)**