1 (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 1 is 6 marks)

2 $w = 5y^2 - y^3$

(a) Work out the value of w when $y = -2$

$w =$ .....

(2)

(b) Factorise fully $8p^2 - 2p$

.....

(2)

(c) Expand $4t(3t - 2)$

.....

(2)

(d) Expand and simplify $(5x - 2)(x + 4)$

.....

(2)

(Total for Question 2 is 8 marks)

3 (a) Factorise fully $4p + 6pq$

(2)

(b) Expand and simplify $(e + 3)(e - 5)$

(2)

(c) Solve $y = \dfrac{2y + 1}{5}$

Show clear algebraic working.

$y =$

(3)

(Total for Question 3 is 7 marks)

4 (a) Simplify $g^6 \times g^4$

.....

(1)

(b) Simplify $k^{10} \div k^3$

.....

(1)

(c) Simplify $(3cd^4)^2$

.....

(2)

(d) Solve the inequality $4x + 7 > 2$

.....

(2)

(Total for Question 4 is 6 marks)

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

.....

(1)

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

.....

(2)

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

.....

(2)

(Total for Question 9 is 5 marks)

6 (a) Solve $p = \dfrac{3p - 5}{10}$

Show clear algebraic working.

$p =$ .....

(3)

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

.....

(1)

(c) Simplify fully $\dfrac{3xy^3}{6x^2y}$

.....

(2)

(d) Factorise fully $10c^3d^2 + 15cd^4$

.....

(2)

(Total for Question 6 is 8 marks)

7 (a) Simplify fully $\frac{20x^2y^6}{4x^2y^2}$

.....

(2)

(b) Make e the subject of the formula $h = 3e + f$

.....

(2)

(Total for Question 7 is 4 marks)

---

8 (a) Simplify $(3k^2)^4$

.....

(2)

(b) Simplify $(21m^4n) \div (3n^{-5})$

.....

(2)

(Total for Question 8 is 4 marks)

9 (a) Simplify $e^9 \div e^5$

.....

(1)

(b) Simplify $(y^2)^8$

.....

(1)

(c) Expand and simplify $(x + 9)(x - 2)$

.....

(2)

(d) Factorise fully $16c^4p^2 + 20cp^3$

.....

(2)

(Total for Question 9 is 6 marks)

10 (a) Simplify $\dfrac{x^9}{x^2}$

.....

(1)

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

.....

(2)

(Total for Question 10 is 3 marks)

---

11 (a) Simplify $e^8 \div e^2$

.....

(1)

(b) Expand and simplify $(x - 3)(x + 1)$

.....

(2)

(Total for Question 11 is 3 marks)

12 (a) Make a the subject of $d = g + 2ac$

.....

(2)

(b) Factorise fully $9ef - 12f$

.....

(2)

(c) Expand and simplify $(x + 2)(x - 5)$

.....

(2)

(d) Simplify fully $\dfrac{n^4 \times n^7}{n^5}$

.....

(2)

(Total for Question 12 is 8 marks)

13 (a) Expand and simplify $3x(2x + 3) – x(3x + 5)$

.....

(2)

(b) Make t the subject of the formula $p = at – d$

.....

(2)

Given that $\dfrac{w^5 \times w^n}{w^3} = w^{10}$

(c) work out the value of n.

$n =$ .....

(2)

(Total for Question 13 is 6 marks)

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

.....

(1)

$G = c^2 - 4c$

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

$G =$ .....

(2)

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

Show clear algebraic working.

$x =$ .....

(3)

(Total for Question 14 is 6 marks)

15 (a) Simplify $y^5 \times y^9$

.....

(1)

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

.....

(2)

(c) Solve $5(x + 3) = 3x - 4$
Show clear algebraic working.

$x =$ .....

(3)

(d) (i) Factorise $x^2 + 2x - 24$

.....

(2)

(ii) Hence, solve $x^2 + 2x - 24 = 0$

.....

(1)

(Total for Question 15 is 9 marks)

16 (a) Simplify $(2x^3y^5)^4$

.....

(2)

(b) (i) Factorise $x^2 + 5x - 36$

.....

(2)

(ii) Hence, solve $x^2 + 5x - 36 = 0$

.....

(1)

(Total for Question 16 is 5 marks)

17 (a) Simplify $(3x^2y)^0$

.....

(1)

(b) (i) Factorise $x^2 - 5x - 36$

.....

(2)

(ii) Hence solve $x^2 - 5x - 36 = 0$

.....

(1)

(Total for Question 17 is 4 marks)

18 (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 $\left(2k^2m^4\right)^3$

.....

(2)

(Total for Question 18 is 4 marks)

---

19 (a) Simplify $t^9 \div t^3$

.....

(1)

(b) Simplify $w^5 \times w^7$

.....

(1)

(c) Simplify $(5xy^2)^3$

.....

(2)

(Total for Question 19 is 4 marks)

20

(a) Expand and simplify $(m - 8)(m + 5)$

.....

(2)

(b) Factorise fully $5y + 20y^2$

.....

(2)

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

.....

(2)

(d) Solve $3(2x - 5) = \dfrac{9 - x}{2}$

Show clear algebraic working.

$x =$ .....

(4)

(Total for Question 20 is 10 marks)

21 Write $\dfrac{(6x^5y^3)^2}{3x^2y^7 \times 4xy^{-3}}$ in the form ax^by^c where a, b and c are integers.

.....

(Total for Question 21 is 3 marks)