1 (a) Simplify $c \times c \times c \times c \times c \times c$

.....

(1)

(b) Simplify $2h^3 + 5h^3 - h^3$

.....

(1)

(c) Expand $x(x + 5)$

.....

(1)

(d) Factorise $9y - 12$

.....

(1)

Rosanna sells m small bags of marbles and p large bags of marbles.

Each small bag contains 15 marbles.
Each large bag contains 40 marbles.

The total number of marbles that Rosanna sells is T

(e) Write down a formula for T in terms of m and p

.....

(3)

(Total for Question 1 is 7 marks)

2 (a) Expand $x(10 - x)$

.....

(1)

(b) Factorise $6y + 27$

.....

(1)

(c) Make m the subject of the formula $h = \frac{m}{2} + 4$

.....

(2)

(d) Solve $7g + 3 = 2g - 5$
Show clear algebraic working.

$g =$ .....

(3)

(Total for Question 2 is 7 marks)

3 (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 3 is 8 marks)

4 (a) Expand $5(3a + 4)$

.....

(1)

(b) Factorise $4c - 14$

.....

(1)

(c) Solve $5x - 11 = x + 6$
Show clear algebraic working.

$x =$ .....

(3)

(Total for Question 4 is 5 marks)

5 (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 5 is 9 marks)

6 $P = 2g + 3h$

(a) Work out the value of P when $g = 7$ and $h = -4$

.....

(2)

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

.....

(1)

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

.....

(1)

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

.....

(2)

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

.....

(2)

(Total for Question 6 is 8 marks)

7 (a) Expand $x(4 - x)$

.....

(1)

$t = ab - c$

$a = 1.5$ $b = 2.4$ $c = -5.6$

(b) Work out the value of t.

$t =$ .....

(2)

(c) Make d the subject of $y = dx - e$

.....

(2)

(Total for Question 7 is 5 marks)

8

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

.....

(1)

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

.....

(2)

(Total for Question 8 is 3 marks)

9 (a) Solve $8 - 2p = 15$

$p =$ .....

(2)

(b) Solve $\dfrac{7x - 2}{4} = 3x + 1$

Show clear algebraic working.

$x =$ .....

(3)

(Total for Question 9 is 5 marks)

10 (a) Expand and simplify $3(c - 7) + 2(3c + 4)$

.....

(2)

(b) Expand and simplify $(x + 7)(x - 2)$

.....

(2)

(c) Factorise fully $28y^2 - 21y$

.....

(2)

(Total for Question 10 is 6 marks)

11 (a) Factorise $3x^2 - x$

(1)

(b) Expand $4(2y + 3)$

(1)

$C = 5a + 4d$

(c) Work out the value of C when $a = -3$ and $d = 6$

$C =$

(2)

$P = 3t^2 + 7t$

(d) Work out the value of P when $t = -4$

$P =$

(2)

(Total for Question 11 is 6 marks)

12 (a) Solve $7x + 3 = x - 18$

$x =$

(2)

(b) Make w the subject of $t = 7w + 3$

(2)

Pencils cost 2 dollars each.
Rulers cost 3 dollars each.

Edith buys p pencils and r rulers.
The total cost is T dollars.

(c) Write down a formula for T in terms of p and r.

(3)

(Total for Question 12 is 7 marks)

13 (a) Expand $4(m + 2)$

.....

(1)

(b) Solve $2x + 5 = -19$

$x =$.....

(2)

(Total for Question 13 is 3 marks)

---

14 Solve $5(2x - 3) = 20$
Show clear algebraic working.

$x =$ .....

(Total for Question 14 is 3 marks)

15 $w = 5y^2 - y^3$

(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 15 is 8 marks)

16 (a) Solve $5c = 15$

$c =$ .....

(1)

(b) Expand $x(8 - x)$

.....

(1)

$T = 5m - 6n$

(c) Work out the value of T when $m = 4.2$ and $n = -2.5$

$T =$ .....

(2)

(d) Make g the subject of $k = 2g + t$

.....

(2)

(Total for Question 16 is 6 marks)

17 (a) Solve $5m + 7 = 24$

$m =$

(2)

(b) Make t the subject of $k = \frac{t - e}{2}$

(2)

(c) Simplify $p^8 \div p^3$

(1)

(d) Simplify n^0

(1)

(e) Simplify $(3x^2y^5)^3$

(2)

(Total for Question 17 is 8 marks)

18 (a) Expand $x(5 - x)$

.....

(1)

(b) Factorise $3y - 21$

.....

(1)

(c) Make p the subject of the formula $f = 3p - d$

.....

(2)

Sergio buys m boxes of seeds and n packets of seeds.

Each box contains 10 seeds.
Each packet contains 6 seeds.

The total number of seeds that Sergio buys is T.

(d) Write down a formula for T in terms of m and n.

.....

(3)

(Total for Question 18 is 7 marks)

19 (a) Factorise $25f - 10$

.....

(1)

(b) Make y the subject of the formula $c = 5y - h$

.....

(2)

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

.....

(2)

(Total for Question 19 is 5 marks)

20 $T = 6p - 4d$

(a) Work out the value of T when $p = 8$ and $d = 3$

$T =$ .....

(2)

$T = 6p - 4d$

(b) Work out the value of p when $T = -41$ and $d = 5$

$p =$ .....

(3)

(c) Solve $4(x - 3) = 7x + 15$

Show clear algebraic working.

$x =$ .....

(3)

(Total for Question 20 is 8 marks)

21 (a) Expand and simplify $x(2x - 3) + 7(2x + 1) - 5$

.....

(3)

(b) Expand and simplify $(y + 4)(2 - y)$

.....

(2)

(c) Factorise fully $15b^5c - 35b^3c^9$

.....

(2)

(Total for Question 21 is 7 marks)

22 (a) Make a the subject of the formula $M = ac - bd$

.....

(2)

(b) Solve the inequality $5x - 4 < 39$

.....

(2)

(c) Factorise fully $18e^2f^3 - 12e^3f$

.....

(2)

(Total for Question 22 is 6 marks)

23

(a) Expand and simplify $(n - 6)(n + 4)$

.....

(2)

(b) Solve $2x - 3 = \dfrac{3x - 5}{4}$

Show clear algebraic working.

$x =$ .....

(3)

(Total for Question 23 is 5 marks)

24 (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 24 is 4 marks)

25 Three tins, A, B and C, each contain buttons.

Tin A contains x buttons.
Tin B contains 4 times the number of buttons that tin A contains.
Tin C contains 7 fewer buttons than tin A.

The total number of buttons in the three tins is 137

Work out the number of buttons in tin C.

.....

(Total for Question 25 is 4 marks)

26 (a) Expand $e(3e - 5)$

.....

(1)

(b) Factorise $35 + 5f$

.....

(1)

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

.....

(2)

(Total for Question 26 is 4 marks)

27 Solve $3(2 - 4x) = 5 - 8x$

Show clear algebraic working.

$x =$ .....

(Total for Question 27 is 3 marks)

28 (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 $\dfrac{5x - 3}{4} = 2x + 3$

Show clear algebraic working.

$x =$ .....

(3)

(Total for Question 28 is 6 marks)