

1 (e) Factorise  $10d + 15$

The highest common  
factor of 10 and 15  
is 5

$$\begin{array}{cc} 10 \div 5 = 2 & 15 \div 5 = 3 \\ \downarrow & \downarrow \\ 5(2d + 3) \end{array}$$

$$\underline{5(2d + 3)} \quad \textcircled{1}$$

(1)

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(Total for Question 1 is 1 marks)

2 (a) Factorise  $x^2 - x - 42$

$$(x + 6)(x - 7)$$

$$\begin{array}{c} \textcircled{2} \\ (x + 6)(x - 7) \\ \hline (2) \end{array}$$

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(Total for Question 2 is 2 marks)

3 (b) Factorise fully  $16m^3g^3 + 24m^2g^5$

$$8(2m^3g^3 + 3m^2g^5) \text{ - factorise integers}$$

$$= 8m^2(2mg^3 + 3g^5) \text{ (1) - factorise m terms}$$

$$= 8m^2g^3(2m + 3g^2) \text{ (1) - factorise g terms}$$

$$\underline{8m^2g^3(2m + 3g^2)}$$

(2)

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(Total for Question 3 is 2 marks)

4 (a) Factorise  $25f - 10$

$$5(5f - 2)$$

$$5(5f - 2) \quad \textcircled{1}$$

(1)

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(Total for Question 4 is 1 marks)



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

$$\begin{aligned} & 9ef - 12f \\ & f(9e - 12) \\ & 3f(3e - 4) \end{aligned}$$

$$\begin{aligned} & \textcircled{2} \\ & 3f(3e - 4) \\ & \hline & (2) \end{aligned}$$

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(Total for Question 5 is 2 marks)

6 (b) Factorise  $35 + 5f$

$$5(7 + f) \text{ (1)}$$

(1)

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(Total for Question 6 is 1 marks)

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

$$\begin{aligned} & 5y + 20y^2 \\ & 5(y + 4y^2) \\ & = 5y(1 + 4y) \quad \textcircled{2} \end{aligned}$$

$$5y(1 + 4y)$$

(2)

(Total for Question 7 is 2 marks)

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8 (b) Factorise  $3y - 21$

$$3(y - 7)$$

$$\frac{3(y - 7) \text{ (1)}}{(1)}$$

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(Total for Question 8 is 1 marks)

9 (a) Factorise fully  $25a^4c^7d + 45a^9c^3h$

$$\textcircled{2} \quad \frac{5a^4c^3(5c^4d + 9a^5h)}{(2)}$$

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(Total for Question 9 is 2 marks)

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

$$(x - 4)(x + 6)$$

$$\frac{(x - 4)(x + 6) \textcircled{2}}{(2)}$$

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

$$\frac{x = 4, -6 \textcircled{1}}{(1)}$$

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(Total for Question 10 is 3 marks)

11 (b) Factorise  $4c - 14$

$$\frac{2(2c - 7)}{(1)}$$

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(Total for Question 11 is 1 marks)

12 (c) Factorise  $x^2 - 11x + 24$

$$x = \frac{11 \pm \sqrt{(-11)^2 - 4(1)(24)}}{2} \quad (1)$$

$$= \frac{11 \pm \sqrt{25}}{2}$$

$$= \frac{11+5}{2} \quad \text{or} \quad \frac{11-5}{2}$$

$$= 8 \quad \text{or} \quad 3$$

$$= (x-8)(x-3) \quad (1)$$

$$(x-8)(x-3)$$

(2)

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(Total for Question 12 is 2 marks)



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

$$2p(4p-1) \quad (2)$$

$$\frac{2p(4p-1)}{(2)}$$

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(Total for Question 13 is 2 marks)

14 (a) Factorise fully  $15y^4 + 20uy^3$

$$15y^4 + 20uy^3$$
$$5y^3(3y + 4u) \text{ (2)}$$

$$\frac{5y^3(3y + 4u)}{(2)}$$

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(Total for Question 14 is 2 marks)

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

$$x^2 + 5x - 36$$
$$(x + 9)(x - 4) \text{ (2)}$$

$$\frac{(x + 9)(x - 4)}{(2)}$$

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

$$(x + 9)(x - 4) = 0$$
$$x + 9 = 0 \quad \text{or} \quad x - 4 = 0$$
$$x = -9 \quad \quad \quad x = 4$$

$$4, -9 \text{ (1)}$$

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(Total for Question 15 is 3 marks)

16 (g) Factorise  $9t - 6$

$$9t - 6$$
$$3(3t - 2)$$

$$3(3t - 2) \quad \textcircled{1}$$

(1)

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(Total for Question 16 is 1 marks)

17 (b) (i) Factorise  $x^2 + 8x - 9$

$$x^2 + 8x - 9$$

$$(x - 1)(x + 9)$$

$$\frac{(x - 1)(x + 9)}{(2)}$$

(ii) Hence, solve  $x^2 + 8x - 9 = 0$

$$(x - 1)(x + 9)$$

$$x = 1 \text{ or } x = -9$$

$$\frac{1, -9}{(1)}$$

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(Total for Question 17 is 3 marks)

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

$$\begin{aligned}
 & 5(2c^3d^2 + 3cd^4) \\
 & = 5c(2c^2d^2 + 3d^4) \quad \textcircled{1} \\
 & = 5cd^2(2c^2 + 3d^2) \quad \textcircled{1}
 \end{aligned}$$

$$5cd^2(2c^2 + 3d^2)$$

(2)

(Total for Question 18 is 2 marks)

19 (d) Factorise  $9y - 12$

$$3(3y - 4)$$

$$3(3y - 4) \text{ (1)}$$

(1)

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(Total for Question 19 is 1 marks)

20 (i) Factorise  $x^2 + 5x - 24$

$$(x-3)(x+8) \quad \textcircled{2}$$

$$\frac{(x-3)(x+8)}{(2)}$$

(ii) Hence, solve  $x^2 + 5x - 24 = 0$

$$3, -8 \quad \textcircled{1}$$

$$(1)$$

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(Total for Question 20 is 3 marks)



**21** (a) Factorise  $6x - 15$

$$3(2x - 5)$$

$$\frac{3(2x - 5) \textcircled{1}}{(1)}$$

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(Total for Question 21 is 1 marks)

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

$$(n - 3)(n - 4)$$

2

$$(n - 3)(n - 4)$$

(2)

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(Total for Question 22 is 2 marks)

23 (b) (i) Factorise  $y^2 - 2y - 35$

$$(y - 7)(y + 5) \quad (2)$$

$$\frac{(y - 7)(y + 5)}{(2)}$$

(ii) Hence, solve  $y^2 - 2y - 35 = 0$

$$\frac{7, -5 \quad (1)}{(1)}$$

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(Total for Question 23 is 3 marks)

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

$$5(3b^5c - 7b^3c^9)$$

$$5b^3(3b^2c - 7c^9)$$

$$5b^3c(3b^2 - 7c^8)$$

$$\begin{array}{r} \textcircled{2} \\ 5b^3c(3b^2 - 7c^8) \\ \hline (2) \end{array}$$

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(Total for Question 24 is 2 marks)

25 (a) Factorise fully  $18c^3d^2 - 21c^2$

$$3(6c^3d^2 - 7c^2)$$

$$3c^2(6cd^2 - 7)$$

$$\frac{3c^2(6cd^2 - 7)}{(2)}$$

(b) (i) Factorise  $y^2 - 3y - 18$

$$(y - 6)(y + 3)$$

$$\frac{(y - 6)(y + 3)}{(2)}$$

(ii) Hence, solve  $y^2 - 3y - 18 = 0$

$$\frac{6, -3}{(1)}$$

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(Total for Question 25 is 5 marks)

26 (b) Factorise  $6y + 27$

$$\frac{3(2y+9)}{(1) \quad \textcircled{1}}$$

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(Total for Question 26 is 1 marks)

27 (a) Factorise  $y^2 - 2y - 48$

$$(y+6)(y-8)$$

$$\frac{(y+6)(y-8)}{(2)}$$

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(Total for Question 27 is 2 marks)

28 (e) Factorise  $g^2 + 7g$

$$g(g+7)$$

$$g(g+7) \text{ (1)}$$

(1)

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(Total for Question 28 is 1 marks)



29 (c) Factorise fully  $14x^2y^4 + 21x^3y^2$

$$7(2x^2y^4 + 3x^3y^2)$$

$$7x^2(2y^4 + 3xy^2) \quad (1)$$

$$7x^2y^2(2y^2 + 3x) \quad (1)$$

$$7x^2y^2(2y^2 + 3x)$$

(2)

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(Total for Question 29 is 2 marks)

30 (b) Factorise  $y^2 - 9y + 20$

$$(y - 5)(y - 4) \quad \textcircled{2}$$

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(2)

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(Total for Question 30 is 2 marks)

**31** (a) Factorise  $6y - 27$

$$\frac{3(2y - 9) \text{ (1)}}{(1)}$$

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(Total for Question 31 is 1 marks)

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

$$4(4a^2b^3 + 5a^3b)$$

$$4a^2(4b^3 + 5ab)$$

$$4a^2b(4b^2 + 5a) \quad (2)$$

$$4a^2b(4b^2 + 5a)$$

(2)

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

$$(x \pm 11)(x \pm 2) \quad (1)$$

$$= (x+11)(x-2) \quad (1)$$

$$(x+11)(x-2)$$

(2)

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

$$-11, 2 \quad (1)$$

(1)

(Total for Question 32 is 5 marks)

33 (b) Factorise fully  $12a - 18b$

$$6(2a - 3b) \quad (2)$$

$$6(2a - 3b)$$

.....  
(2)

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(Total for Question 33 is 2 marks)