Mark schemes

Q1.

Alternative method 1

$yx = 3x + 5$

> *Cross multiplying*
> *Allow y × x = 3 × x + 5*

M1

$yx - 3x = 5$ or $3x - yx = -5$

> *oe*

M1dep

$$x = \frac{5}{y-3} \text{ or } x = \frac{-5}{3-y}$$

> *Must have x = as part of answer*
> *ft on one rearrangement error*

A1ft

Alternative method 2

$$y = 3 + \frac{5}{x}$$

M1

$$y - 3 = \frac{5}{x}$$

> *oe*

M1dep

$$x = \frac{5}{y-3} \text{ or } x = \frac{-5}{3-y}$$

> *Must have x = as part of answer*
> *ft on one rearrangement error*

A1ft

Additional Guidance

$yx = 3x + 5$

M1

$yx + 3x = 5$

M0dep

$$x = \frac{5}{y+3}$$

A1ft

$yx = 3x + 5$

AQA GCSE Maths - Quadratics, Rearranging Formulae and Identities (F)

$$3x - yx = 5$$

M1

M0dep

$$x = \frac{5}{3 - y}$$

A1ft

$$y = 3 + \frac{5}{x}$$

M1

$$y + 3 = \frac{5}{x}$$

M0dep

$$x = \frac{5}{y + 3}$$

A1ft

[3]

Q2.
$$3y - p = 2h + hy$$

M1

$$3y - hy = 2h + p$$

$$-2h - p = hy - 3y$$

This mark is for correct rearranging from an incorrect 4 term expansion in the first step

M1

$$y(3 - h) = 2h + p$$

$$-2h - p = y(h - 3) \text{ Dependent on first M mark}$$

M1 dep

$$y = \frac{2h + p}{3 - h}$$

$$\frac{-2h - p}{h - 3} = y$$

A1

[4]

Q3.
$$2h - 2y = 5y + 3$$

$$2h - y = 5y + 3 \text{ is M0}$$

M1

$$2h = 5y + 2y + 3 \text{ or } 2h = 7y + 3$$

for correct rearranging after attempt at expansion seen

AQA GCSE Maths - Quadratics, Rearranging Formulae and Identities (F)

2h = 5y + y + 3 is M1
2h = 5y + 2y + 3 is M0

M1

$$h = \frac{7y+3}{2}$$ or $$h = \frac{5y+2y+3}{2}$$

Must see h = …
ft if M1 M0 or M0 M1 awarded

A1 ft

Alternative method

$$h - y = \frac{5y+3}{2}$$

$$h - y = 2.5y + 1.5$$

M2

$$h = \frac{5y+3}{2} + y$$ or $$h = \frac{5y+2y+3}{2}$$

$h = 2.5y + y + 1.5$ or $h = 3.5y + 1.5$
Must see h = …

A1 ft

[3]

Q4.
$r = p - 3$

B1

[1]

Q5.
$y (4x + 9)$ or $4xy + 9y$
oe

M1

$4xy + 9y = 8 - 3x$
oe

M1dep

$4xy + 3x = 8 - 9y$
or $x(4y + 3) = 8 - 9y$
oe

M1dep

$$x = \frac{8-9y}{4y+3}$$

SC3 $$\frac{8-9y}{4y+3}$$

A1

AQA GCSE Maths - Quadratics, Rearranging Formulae and Identities (F)

$y \times (4x + 9)$

M1

$x = \dfrac{8-9y}{4y+3}$ seen with answer $\dfrac{8-9y}{4y+3}$

M1M1M1A1

[4]

Q6.

(a) $y11$

B1

(b) w^8

B1

(c) $y - 2 = 3x$ or $\dfrac{y}{3} = x + \dfrac{2}{3}$ or $-3x = 2 - y$

M1

$\dfrac{y-2}{3} = x$ or $x = \dfrac{2-y}{-3}$

oe

SC1 for $x = \dfrac{2-y}{3}$ *or* $x = \dfrac{y+2}{3}$

A1

[4]

Q7.

$a = 3$

B1

$(2x + 1)(ax + b) = 2ax^2 + ax + 2bx + b$

or

$(2x + 1)(3x + b) = 6x^2 + 3x + 2bx + b$

M1

$3x + 2bx = -5x$ or $3 + 2b = -5$

or $3x - 8x = -5x$

M1dep

$b = -4$ and $c = -4$

A1

[4]

Q8.

$8x^2 - 12xy - 10xy + 15y^2$

     Allow one term error

AQA GCSE Maths - Quadratics, Rearranging Formulae and Identities (F)

$8x^2 − 12xy − 10xy + 15y^2$

$8x^2 − 22xy + 15y^2$

ft their four terms if M1 awarded
Do not ignore fw for final mark

Q9.

(a)　　$6x^2 + 4x + 15x + 10$

Allow one sign or arithmetic error. Must see 4 terms
including term in x2, 2 terms in x and a constant term

$6x^2 + 19x + 10$

NB Answer only
6x2 + 19x + b implies M1
ax2 + 19x + 10 implies M1
Do not award if incorrect further work

(b)　　$9x^4y8$

B1 for two of 9, x4 or y8
B1 maximum for any use of × signs
B0 for any addition eg 9 + x4 + y8
Deduct one mark for incorrect further work

Q10.

$c^2 = 16$ or $c = 4$ or $c = −4$

$3x2 + 3x + cx + c^2 (= 3x2 − dx + 16)$

3x² + 12x + 4x + 16 or 3x² − 12x − 4x + 16 oe

$c = 4$ and $c = −4$ or $c = 4 − d$
or $16 = −d$ or $−16 = d$

oe

$c = 4$ and $d = −16$
or
$c = −4$ and $d = 16$

One pair of answers or
all four answers seen but not paired

AQA GCSE Maths - Quadratics, Rearranging Formulae and Identities (F)

$c = 4$ and $d = -16$
and
$c = -4$ and $d = 16$

Both pairs of answers must be correctly paired
SC3 for one correct pair or both correct pairs or all four
answers seen but not paired from no working

A1

[5]

Q11.

$6x^2$ (+) $3x$ (+) $8x$ (+) 4

4 terms, including one in x, with at least 3 correct

M1

$6x^2 + 3x + 8x + 4$

A1

$6x^2 + 11x + 4$

ft correct simplification of their four terms, including one in x
SC1 $6x^2 + ax + 4$, $a \neq 0$, M1 not awarded

A1ft

[3]

Q12.

$c(d + 3) = 4 - d$

M1

$cd + 3c = 4 - d$

M1dep

$cd + d = 4 - 3c$
or $d(c + 1) = 4 - 3c$

M1dep

$d = \dfrac{4 - 3c}{c + 1}$

oe $d = \dfrac{-4 + 3c}{-c - 1}$

A1

[4]

Q13.

$w = \dfrac{y}{2x}$

B1

[1]

Q14.

$y - 9 = \dfrac{x}{3}$

or $3y = x + 27$
or $3y - 27$
or $3(y - 9)$

     correct first step in rearranging
     or the correct rearrangement without x

                                     M1

$x = 3y - 27$
or $x = 3(y - 9)$

     Accept $3y - 27 = x$
     or 3(y - 9) = x

                                       A1

Additional Guidance

Accept $-27 + 3y$ for $3y - 27$ throughout

$x = 3y - 27$ in working with answer $3y - 27$

                                     M1A1

$x = (y - 9)3$ (unless recovers)

                                     M1A0

$x = y3 - 27$ (unless recovers)

                                     M1A0

Multiplication signs are acceptable for M1 but not A1

$x = 3 \times y - 27$

                                     M1A0

$3 \times y = x + 3 \times 9$

                                     M1

                                        [2]

Q15.

$6x^2 - 16xy + 15xy - 40y^2$

     Allow one error

                                     M1

$6x^2 - 16xy + 15xy - 40y^2$

     Fully correct

                                     A1

$6x^2 - xy - 40y^2$

     ft their four terms

                                     A1ft

Q16.

$6x^2 - 15xy + 2xy - 5y^2$

AQA GCSE Maths - Quadratics, Rearranging Formulae and Identities (F)

3 terms correct

M1

$6x^2 - 15xy + 2xy - 5y^2$

A1

$6x^2 - 13xy - 5y^2$

ft from four terms

A1 ft

[3]

Q17.

$y^2 - 4y + 5y - 20$

Allow 1 error

M1

$y^2 + y - 20$

A1

[2]

AQA GCSE Maths - Quadratics, Rearranging Formulae and Identities (F)