

Mark schemes

Q1.

(a) 20

Allow P = 20

B1

(b) 53 – 11 or 42
or 33×3 or 99
or 11×2
or $33 - 11$
or 22

M1

their $42 \div 3$ or 14
or their $99 - 53 - \text{their } 22$
or (their 22×3) – their 42
or 24

oe e.g. build up - allow one error

M1dep

$33 - 11 - \text{their } 14$
or their $24 \div 3$

Dep on M1M1

M1dep

8

A1

Additional Guidance

$$3 \times 14 + 11 = 53$$

M2

[5]

Q2.

$$\frac{1}{2} \times 11^2 \times 6 \text{ or } 726 \text{ or } 60.5$$

oe

M1

363

A1

[2]

Q3.

Alternative method 1

16 or -9 or 7

M1

28

A1

Alternative method 2

$8x + 12y$
or 64 or -36

M1

28

A1

[2]

Q4.

$4x = 5 + 17$ or $4x = 22$

M1

5.5

oe
SC1 3

A1

[2]

Q5.

$x = 3$

B1

[1]

Q6.

(a) 17

B1

(b) 9

B1

(c) -2

B1

[3]

Q7.

(a) $(5x + 3 =) 3x + 6$

B1

$5x - \text{their } 3x = \text{their } 6 - 3$ or $2x = 3$

oe

M1

1.5

oe
ft for linear equation if B0 scored

A1 ft

(b) $2x + 32$ or $4x - 20$

Accept $ax + ab$ for M1

M1

$$6x + 12 \text{ or } 6(x + 2)$$

A1

$$a = 6 \text{ and } b = 2$$

ft from their $6x + 12$ if M1 earned

$$\text{SC2 } a = 6 \text{ and } b = 12$$

$$\text{SC1 } a = 6$$

A1 ft

[6]

Q8.

$$x = \frac{1}{4}$$

B1

[1]

Q9.

$$4x = 14 + 3 \text{ or } 4x = 17$$

$$\text{or } (14 + 3) \div 4 \text{ or } 17 \div 4$$

$$\text{or } x - \frac{3}{4} = \frac{14}{4}$$

M1

$$4.25 \text{ or } \frac{17}{4} \text{ or } 4\frac{1}{4}$$

A1

Additional Guidance

Embedded answer of 4.25 with 4.25 not selected on answer line
e.g. $4 \times 4.25 - 3 = 14$ with no answer given or answer of 14 or 17

M1A0

14 + 3 and answer 4.25

M1A1

14 + 3 only

M0A0

Trial and improvement with answer 4.25

M1A1

Trial and improvement with no answer or answer other than 4.25

M0A0

4.25 or $\frac{17}{4}$ or $4\frac{1}{4}$ seen and then answer 4 given

M1A1

Answer of $\times 4.25$

M1A0

$17 \div 4$ (and no further)

M1A0

[2]

Q10.

(a) $(x - y)(x + y)$

B1

(b) $\frac{2x}{5} = 13 - 1$ or $\frac{2x}{5} = 12$
(13 - 1) × 5 scores M1

M1

$2x = \text{their } 12 \times 5$

or

$2x = \text{their } 65 - \text{their } 5$ or $2x = 60$

oe

(13 - 1) × 5 ÷ 2 scores M1M1

M1

30

A1

Additional Guidance

Embedded answer

eg $\frac{2 \times 30}{5} + 1 = 13$

M1M1A0

eg $\frac{60}{5} + 1 = 13$

M1M0A0

[4]**Q11.**

(a) 6, 15, 24, 60 in any order

*B1 for 6, 15, 24, 60 with no more than one additional value**or three correct values with no more than one incorrect value*

B2

Additional Guidance

Ignore repeated values for B2 and B1

6, 10, 15, 24, 60

B1

6, 10, 15, 24

B1

6, 10, 15, 24, 36

B0

$2 \times 3, 5 \times 3, 2 \times 12, 5 \times 12$

B0

$6xy, 15xy, 24xy, 60xy$

B0

(b) $\frac{2-12}{2}$

or one correctly evaluated trial with correct substitutions for $x = 2$ or 5 and $y = 3$ or 12

or two correct values from $-\frac{10}{2}, -\frac{1}{2}, -\frac{7}{5}, \frac{2}{5}$ oe

or two correct values from $-5, -0.5, -1.4, 0.4$ oe

$$\frac{2-3}{2} = -\frac{1}{2} \text{ oe}$$
$$\text{or } \frac{5-12}{5} = -\frac{7}{5} \text{ oe}$$
$$\text{or } \frac{5-3}{5} = \frac{2}{5} \text{ oe}$$

M1

$$-\frac{10}{2} \text{ or } -5$$

A1

Additional Guidance

Two separate correct values can be in either fraction or decimal form

$$2 - 12 \div 2 = -5 \text{ (recovered)}$$

M1A1

$$2 - 12 \div 2$$

M0A0

An example of an incorrect substitution with different values of x

$$\text{eg } \frac{5-12}{2} = -\frac{7}{2}$$

[4]

Q12.

$$5 \times 7 (+) 9 \times -2$$

or 35 or 18

$$17$$

M1

A1

[2]

Q13.

$$x - 3 = \frac{x}{2}$$

B1

[1]

Q14.

$$36$$

B1

[1]

Q15.**Alternative method 1**

$12x - 8$

*May be seen in a grid***M1**

their $12x - 2x = -5 +$ their 8

or $10x = 3$

or their $-8 + 5 = 2x -$ their $12x$

or $-3 = -10x$

Collecting two terms in x and two constant terms correctly

oe e.g. $10x - 3 = 0$

M1

0.3 or $\frac{3}{10}$

*ft M1M0 or M0M1 with exactly one error***A1ft****Alternative method 2**

$\frac{x}{2} - \frac{5}{4}$

M1

$3x -$ their $\frac{x}{2} =$ their $\frac{5}{4} + 2$

or $\frac{5}{2}x = \frac{3}{4}$

or $-2 +$ their $\frac{5}{4} =$ their $\frac{x}{2} - 3x$

or $-\frac{3}{4} = -\frac{5}{2}x$

Collecting two terms in x and two constant terms correctly

oe e.g. $\frac{5}{2}x - \frac{3}{4} = 0$

M1

0.3 or $\frac{3}{10}$

*ft M1M0 or M0M1 with exactly one error***A1ft****Additional Guidance**

$12x - 2 = 2x - 5$

M0

$10x = -3$	M1
$x = -0.3$	A1ft
$12x - 8 = 2x - 5$	M1
$10x = -5$	M0
$x = \frac{-5}{10}$	A1ft
$12x - 8 = 2x - 5$	M1
$14x = 3$	M0
$x = \frac{3}{14}$	A1ft
$12x - 8 = 2x - 5$	M1
$14x = -13$	M0
$x = -\frac{13}{14}$ (two errors)	A0ft
$12x - 8 = 8x - 20$	M1M0A0
Any ft answer must be exact or rounded or truncated to at least 2 dp	
The last two marks can be implied without the collection of terms seen e.g. $12x - 6 = 2x - 5$ and answer 0.1	M0M1A1ft
Collecting terms before the bracket has been expanded	Zero

[3]