Q1.

Look at these equations.

$$a = 2b$$

$$b = 3c$$

Which equation below is also true?

Put a ring round the correct one.

$$b = 2a \qquad a = 2b + 3c \qquad a = 5c$$

$$a = 6c \qquad a + b = 5$$

<div align="right">1 mark</div>

Q2.

Here are three equations.

$$a \ + \ b \ + \ c \ = \ 30$$

$$a \ + \ b \qquad = \ 24$$

$$b \ + \ c \ = \ 14$$

What are the values of a, b and c ?

$a =$ [   ] $b =$ [   ] $c =$ [   ]

<div align="right">2 marks</div>

Q3.

Here is an equation.

$$m - 2n = 10$$

When $n = 20$ what is the value of m?

$m =$ _____

1 mark

When $m = 20$ what is the value of n?

$n =$ _____

1 mark

Q4.

j and k stand for two numbers.

Double j equals half of k.

Write numbers to complete the sentence below.

When **j** is [   ]   then **k** is [   ]

1 mark

Q5.

x stands for an **odd** number.

y stands for an **even** number.

Look at the expressions below.

For each expression, tick to show if it is odd or even.

The first one is done for you.

	odd	even
$x + y$	✓	
$x + 2y$	☐	☐
$2(x + y)$	☐	☐
xy	☐	☐
$x^2 + y$	☐	☐

2 marks

Q6.

Solve this equation to find the value of y.

$$8(y + 12) = 100$$

Show your method

$y =$

2 marks

Q7.

n stands for a whole number.

2n is greater than 30
5n is less than 100

Write **all** the numbers that *n* stands for.

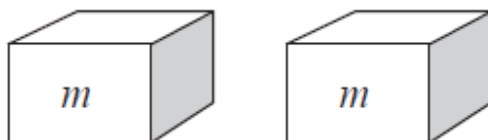_____

Q8.

(a)   There are *n* counters in Alfie's bag.

Alfie puts **3** more counters in the bag.

Write an expression for the number of counters that are in the bag now.

```
┌─────────────────────┐
│                     │
│                     │
└─────────────────────┘
```

1 mark

(b)   Megan has two boxes.

There are *m* counters in each box.

She puts all her counters together in a pile, then removes **5** of them.

Write an expression for the number of counters that are in the pile now.

```
┌─────────────────────┐
│                     │
│                     │
└─────────────────────┘
```

1 mark

Q9.

Write the missing numbers so that $2a + 5b = 30$

One is done for you.

$2a + 5b = 30$ when $a = 0$ and $b = \underline{6}$

$2a + 5b = 30$ when $a = 5$ and $b = \underline{}$

1 mark

$2a + 5b = 30$ when $a = 15$ and $b = \underline{}$

1 mark

Q10.

$n = 22$

What is $2n + 9$?

$$\boxed{}$$

1 mark

$2q + 4 = 100$

Work out the value of q.

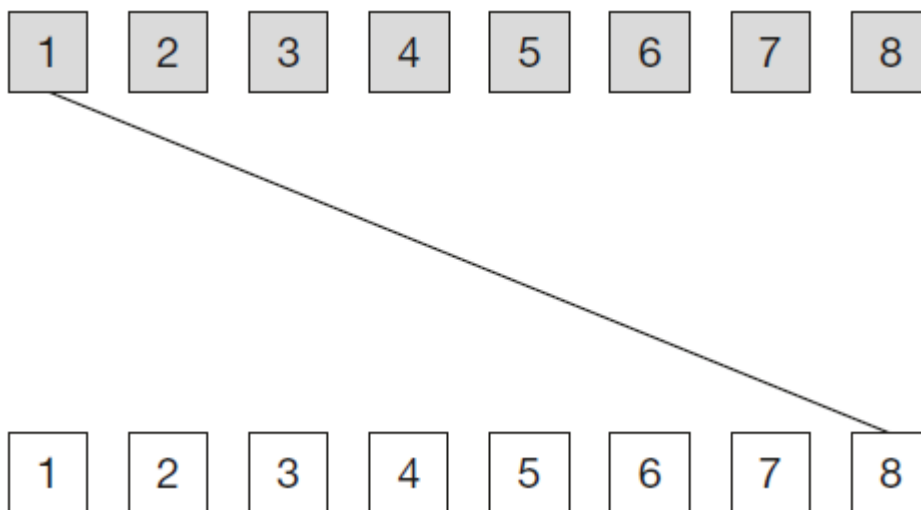$q = \boxed{}$

1 mark

Q11.

g stands for a number on a grey card.

w stands for a number on a white card.

Join all pairs of numbers that match this rule:

$$2g + w = 10$$

One is done for you.

2 marks

Q12.

Here is an equation.

$$k = 100 - 4n$$

(a)   Find the value of k when $n = 60$

1 mark

(b)   Find the value of n when $k = 99$

$n = $ ☐

1 mark

M1.   Equation circled as shown:

$b = 2a$ $a = 2b + 3c$ $a = 5c$

$$\boxed{a = 6c}$$

$a + b = 5$

Accept unambiguous indication

[1]

M2.   Gives all three correct values, ie

$a = 16, b = 8, c = 6$

2

Gives at least one correct value

or

Gives three values that satisfy the second and third equations

eg

- $a = 18, b = 6, c = 8$ (satisfies $a + b = 24$ and $b + c = 14$: note that $a - c = 10$)

1

[2]

M3.(a)   50

1

(b)   5

1

[2]

M4.   Two numbers where the value of k is four times the value of j, eg

| When j is | **5** | When k is | **20** |

OR

When **j** is	**11**	
	When **k** is	**44**

[1]

M5. Makes all four correct decisions, ie:

•   odd   even

Accept unambiguous indications, eg:
•   *'y' or 'x' for ticked in each row*

2

or

Makes three correct decisions

1

[2]

M6. $\frac{1}{2}$ or equivalent

! Algebra
Accept equivalent fractions or decimals

2

or

Shows or implies a correct first step of algebraic manipulation that either reduces the number of terms **or** collects variables on one side of the equation and numbers on the other **or** correctly

removes the brackets, eg:

- $8y + 96 = 100$

- $y + 12 = 100 \div 8$

- $8y = 4$

OR

Shows or implies a complete correct method, eg:

- $100 \div 8 = 12$ *(error)*
  $12 - 12 = 0$

- $25 \times 4 = 100$
  $12.5 \times 8 = 100$
  $12.5 - 12$

1

> ***Do not accept*** *a first step of algebraic manipulation which has a conceptual error, eg:*
> - $y + 12 = 100$
> - $y + 96 = 100$
> - $8y + 12 = 100$
>
> *! Correct embedded solutions*
>
> *Award 1m for a response which shows* $\frac{1}{2}$ *, or equivalent, as the embedded solution to their working*

[2]

M7. Award **TWO** marks for four numbers correct as shown:

16 **AND** 17 **AND** 18 **AND** 19

If the answer is incorrect, award **ONE** mark for:

■   three numbers correct and none incorrect

OR

■   all four numbers correct and one incorrect
> *Numbers may be given in any order.*

Up to 2m
U1

[2]

M8.(a) $n + 3$ **or** $3 + n$

> *!   Algebra*
> *!   Alternative letter used, eg, for part (a),
> accept m used instead of n, if the expression
> is otherwise correct:*
>
> - *$m + 3$*

1

(b) $2m - 5$

> *!   Condone unsimplified or unconventional algebra,
> eg, for part (b):*
>
> - *$m + m - 5$*
> - *$m2 - 5$*

1

[2]

M9.(a)   4

> *!   Algebra*

1

(b)   0
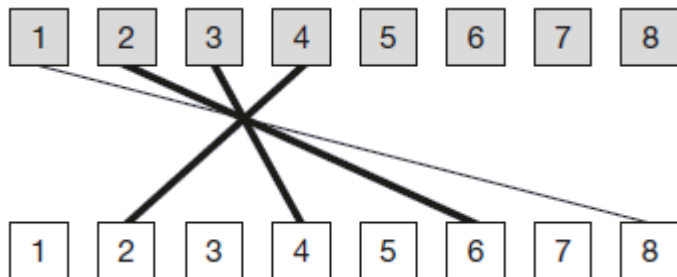
1

[2]

M10.

(a)   53

1

(b)   48

1

[2]

M11. Draws the three correct lines and no incorrect lines, ie:

> *! Lines do not touch the shapes*
> *Accept provided the intention is clear*

2

or

Draws two correct lines and no incorrect lines

OR

Draws the three correct lines and one incorrect line

1

[2]

M12.(a)   −140

1

(b)   0.25 **or** $\dfrac{1}{4}$

> *Accept equivalent fractions or decimals*
> ***Do not accept** embedded solutions*

1

[2]