Q1. $P = 3n$

$n = 6$

(a)   Work out the value of P.

$P = $ ....

(1)

$Q = 2c + d$

$c = 3$

$d = 2$

(b)   Work out the value of Q.

$Q = $ ....

(2)

(Total 3 marks)

Q2.   The diagram shows a mathematical rule.

input ▶ ×3 ▶ −3 ▶ output

It multiplies a number by 3 and then subtracts 3

(a)   Complete the diagram.

$$10 \rightarrow \boxed{\times 3} \rightarrow \boxed{-3} \rightarrow \boxed{\dots\dots}$$
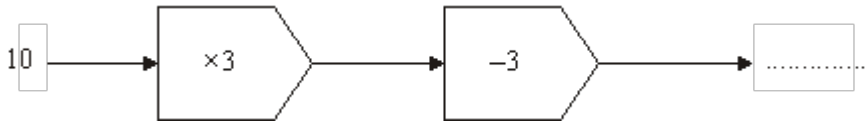
(1)

(b)   Complete the diagram.

$$\boxed{\dots\dots} \rightarrow \boxed{\times 3} \rightarrow \boxed{-3} \rightarrow 9$$
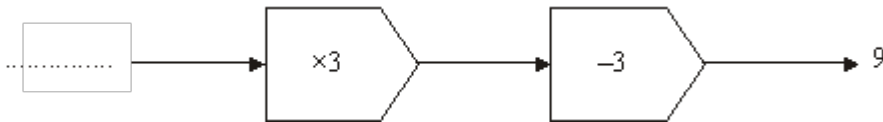
(1)

(c)   Complete the diagram.

$$\boxed{\dots\dots} \rightarrow \boxed{\times 3} \rightarrow \boxed{-3} \rightarrow 117$$
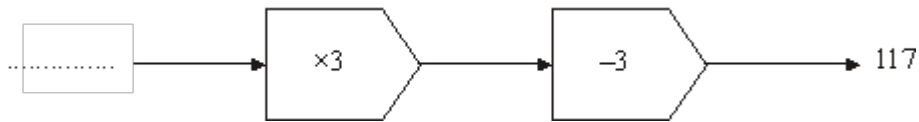
(1)
(Total 3 marks)

Q3. $p = 5$
$r = 2$

(a)   Work out the value of $4p + 3r$

....

(2)

n is an even number.

(b)   What type of number is $n + 1$?

....

(1)
(Total 3 marks)

Q4.   This formula is used to predict the adult height of a baby girl.

$$H = \frac{F + M - 12.5}{2}$$

H = adult height of girl (cm)
F = height of father (cm)
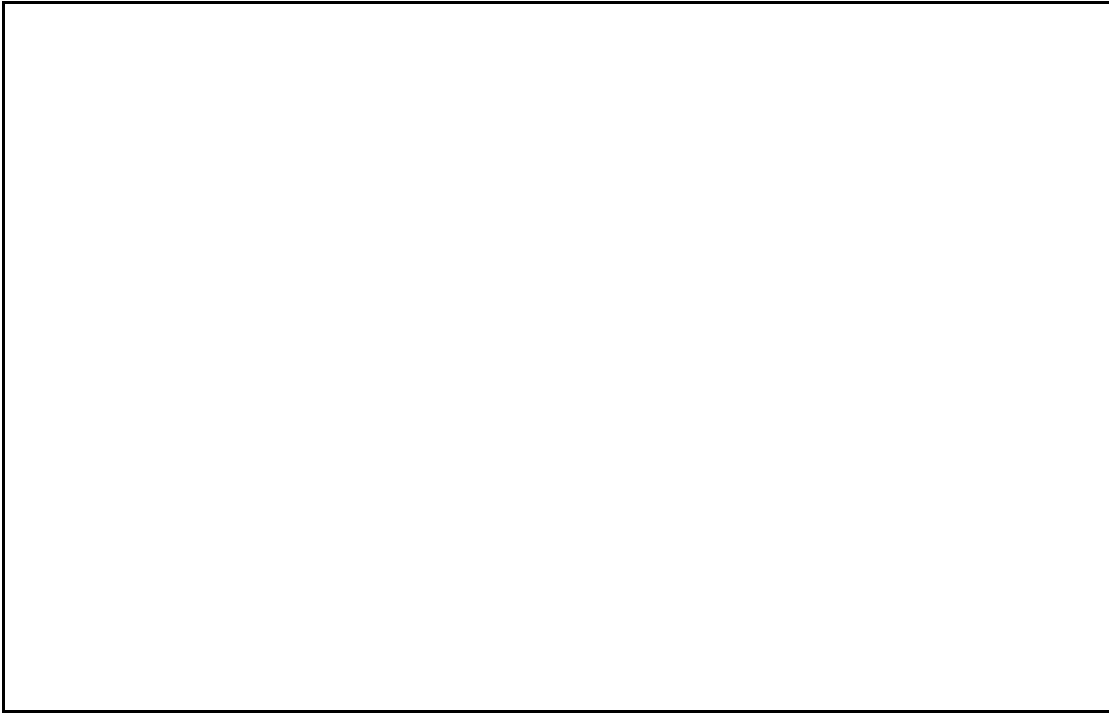M = height of mother (cm)

Karen and Keith have a baby girl.

They are interested in finding out how tall their baby girl is likely to grow.

Karen has a height of 156 cm.
Keith has a height of 172 cm.

(a)   Use the formula to predict the adult height of their baby girl.
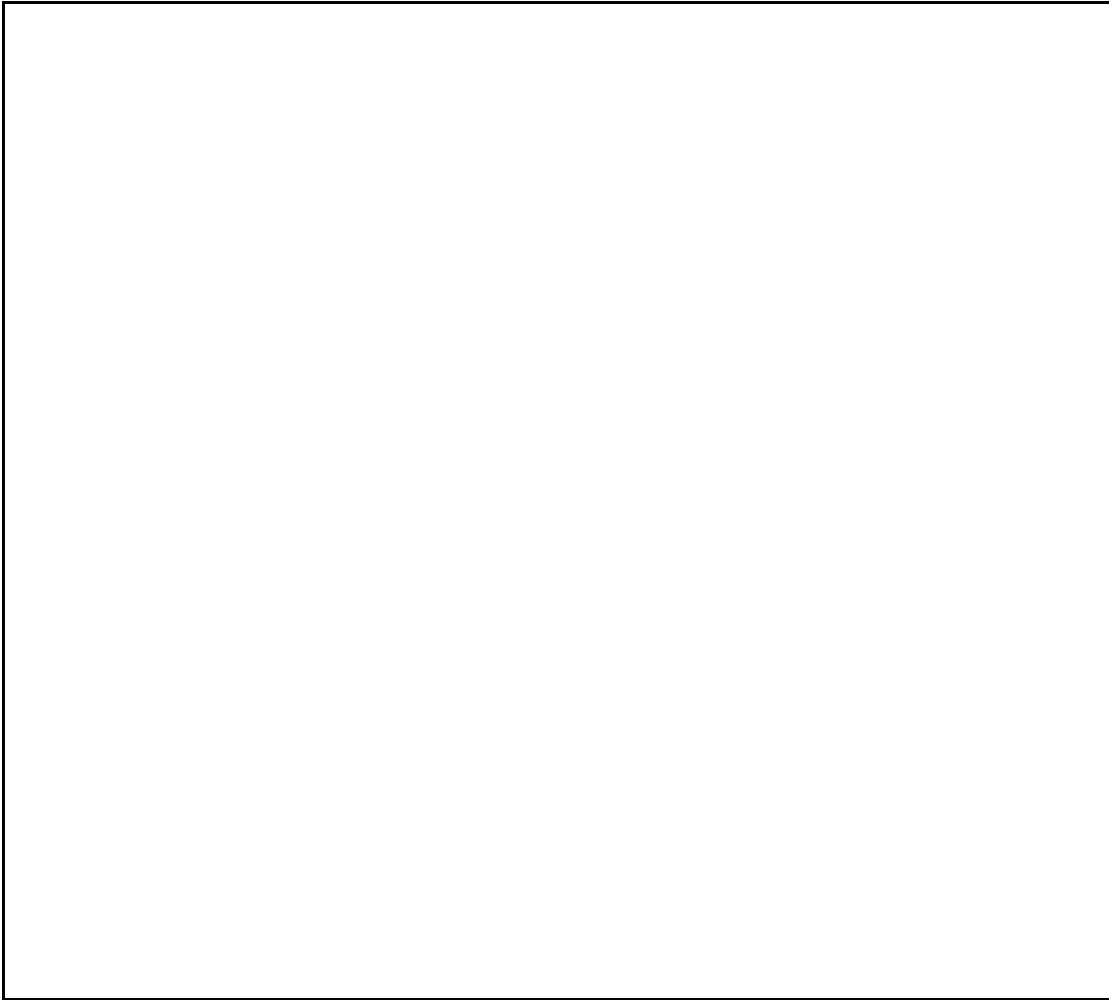   Show clearly how you get your answer.

Height .... cm

(2)

John and Jenny also have a baby girl.
John and Jenny are the same height.

When they use the formula to predict the adult height of their baby girl they get an answer of 162 cm.

(b)   Find an estimate of Jenny's height.
         Give your answer to the nearest centimetre.

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Height .... cm

(3)
(Total 5 marks)

M1.

	Working	**Answer**	**Mark**	**Additional Guidance**
(a)	3 × 6	18	1	**B1** for 18 cao
(b)	2 × 3 + 2	8	2	**M1** for 2 × 3 + 2 **A1** for 8 cao
				Total for Question: 3 marks

M2.

	Answer	**Mark**	**Additional Guidance**
(a)	27	1	**B1** cao
(b)	4	1	**B1** cao
(c)	40	1	**B1** cao
			Total for Question: 3 marks

M3.

	Answer	**Mark**	**Additional Guidance**

(a)	26	2	**M1** for 4 × 5 + 3 × 2 **A1** cao
(b)	Odd	1	**B1** cao
			Total for Question: 3 marks

M4.

	Working	**Answer**	**Mark**	**Additional Guidance**
(a)	$\dfrac{156 + 174 - 12.5}{2}$	157.75	2	**M1** substitute correctly **A1** 157.75 or 158

(b) $\dfrac{j+j-12.5}{2}=162$ 168   3

$2j \times 12.5 = 324$

$\dfrac{324+12.5}{2}$

$\dfrac{j+j-12.5}{2}=162$

$2j \times 12.5 = 324$

Total for Question: 5 marks

E1. About 60% of candidates were able to carry out the simple substitution in part (a) correctly. Common incorrect answers were 36, 9, 3 and 3n. Some did not attempt this question. A similar proportion of candidates were successful in part (b). Those who were not frequently assumed that 2c = 23 when c = 3, leading to an answer of 25. Another common incorrect answer was 7. Sometimes it could be seen that this resulted from candidates working out 2 × 3 as 5 and then adding 2 to make 7 and a method mark could be awarded. All too often, though, no working was shown and the mark could not be awarded.

E2. Again, the success rate on this question was extremely high although a few were unfamiliar with this type of question, giving inappropriate responses such as 'output' in (a) and 'input' in parts (b) and (c).

E3. Both parts of this question were quite well done with about two thirds of candidates scoring 2 marks in each of the two parts. It was surprising, in part (a), to see a significant number of final answers in the form 20 + 6. This could only be awarded 1 mark. Sometimes candidates showed a correct substitution into the expression to gain the method mark but then recorded 26pr as their answer. Candidates who had little understanding of substitution gave 77 as their answer. There was no one common incorrect answer seen in part (b).