

1. You can use this rule to work out the total charge for hiring a cement mixer.

Total charge = £30 plus £7 for each hour of hire
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On Monday, Sally hired a cement mixer for 4 hours.

- (a) Work out Sally's total charge.

£ .....

(2)

On Tuesday, Tom hired a cement mixer.  
Tom's total charge was £51

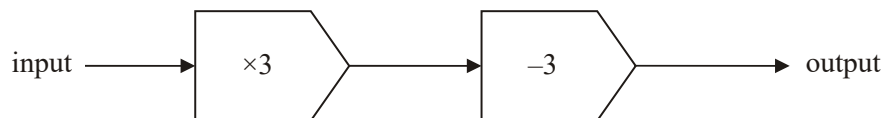
- (b) Work out for how many hours Tom hired the cement mixer.

..... hours

(3)

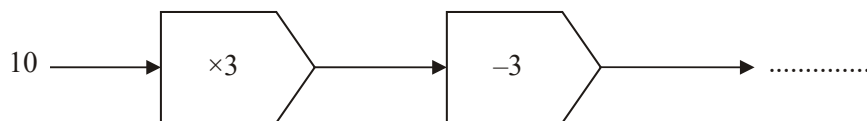
(Total 5 marks)

2. The diagram shows a mathematical rule.



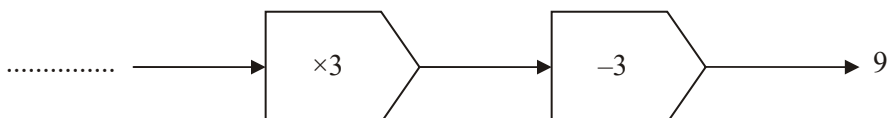
It multiplies a number by 3 and then subtracts 3

(a) Complete the diagram.



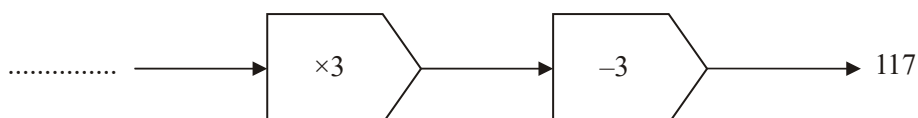
(1)

(b) Complete the diagram.



(1)

(c) Complete the diagram.



(1)

(Total 3 marks)

3. You can use this rule to work out the cost, in pounds, of hiring a carpet cleaner.

Multiply the number of days hire by 6  
Add 4 to your answer

Jill hires the carpet cleaner for 3 days.

- (a) Work out the cost.

£ ..... (2)

Carlos hires the carpet cleaner.  
The cost is £52

- (b) Work out for how many days Carlos hires the carpet cleaner.

..... days (3)  
(Total 5 marks)

4. (a) Work out  $60 \times \frac{2}{3}$

..... (2)

(b) Work out the value of  $5t^2 - 7$  when  $t = 3$

..... (2)

(c) Simplify  $4p \times 2q$

..... (1)  
**(Total 5 marks)**

5. You can use this rule to work out the total charge for hiring a cement mixer.

Total charge = £30 plus £7 for each hour of hire
--------------------------------------------------

On Monday, Sally hired a cement mixer for 4 hours.

(a) Work out Sally's total charge.

£ ..... (2)

On Tuesday, Tom hired a cement mixer.  
Tom's total charge was £51

(b) Work out for how many hours Tom hired the cement mixer.

..... hours

(3)

(Total 5 marks)

6. You can use this rule to work out the number of minutes it takes to cook a chicken.

Multiply the chicken's weight, in kg, by 45 Then add 30
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A chicken's weight is 2 kg.

Use the rule to work out the number of minutes it will take to cook this chicken.

..... minutes

(Total 2 marks)

1. (a)  $30 + (7 \times 4)$   
£58 2  
*MI*  $30 + 7 \times 4$  or  $30 + 28$   
*AI* *cao*
- (b)  $51 - 30 = 21$   
 $21 \div 7 = 3$   
3 3  
*MI*  $51 - 30$  or *sight of 21*  
*MI (dep)* “21”  $\div 7$   
*AI* *cao*  
*NB: a correct answer which is embedded gets B2*
- [5]**
2. (a) 27 1  
*B1* *cao*
- (b) 4 1  
*B1* *cao*
- (c) 40 1  
*B1* *cao*
- [3]**
3. (a)  $6 \times 3 + 4$   
22 2  
*MI* for  $6 \times 3$  or for ‘ $6 \times 3$ ’ + 4 or 18 seen  
*AI* for 22, accept 22.00 or 22.0
- (b)  $52 - 4 = 48$   
 $48 \div 6 = 8$  3  
*MI* for  $52 - 4$  or 48 seen  
*MI (dep)* for ‘ $52 - 4$ ’  $\div 6$  or  $48 \div 6$   
*AI* for 8 *cao*  
**Alternative method:**  
*M2* for a systematic attempt using  $6 \times d + 4$  at least twice with  
at least one  $d$  greater than 5 with correct answers  
*AI* for 8 *cao*
- [5]**

4. (a) 40 2

$$60 \times \frac{2}{3}$$

*MI for  $60 \times 2$  or 120 seen or  $60 \div 3$  or 20 seen*  
*AI cao*

(b) 38 2

$$5 \times 9 - 7 = 45 - 7$$

*MI for  $3 \times 3 (= 9)$  or 45 seen*  
*AI cao*

(c) 8pq 1

*B1 accept in any order but must not include  $\times$*

**[5]**

5. (a)  $30 + (7 \times 4)$   
58 2

*MI for  $30 + 7 \times 4$  or  $30 + 28$*   
*AI cao*

(b)  $51 - 30 = 21$   
 $21 \div 7 = 3$  3

*MI for  $51 - 30$  or sight of 21*  
*MI (dep) for " $21$ "  $\div 7$*   
*AI cao*

**[5]**

6.  $2 \times 45 + 30$   
120 minutes 2

*MI for  $2 \times 45 + 30$*   
*AI for 120 minutes or 2 hours*

**[2]**

1. This was a well answered question, with many candidates gaining full marks in both parts. The most common error in both parts was to perform the calculation in the wrong order. In part (b) a further error was to fail to account for the need to remove the fixed charge of £30 before dividing. Candidates who gave the answer embedded within an expression, but failed to extract the answer and put it on the answer line, were given some credit. It was clear in this question where a candidate did not have a calculator, usually evidence by computational errors.

2. 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).

### 3. Foundation

Those candidates who showed their method in part (a) usually wrote  $6 \times 3 + 4$ ; too many incorrectly calculated  $6 \times 3$ . In part (b) the most common error was to divide 52 by 6 and then subtract 4, but many failed to show any working.

### Higher

The first part of this question just needed a straightforward arithmetical approach and there was evidence that many were working on the correct lines with  $\frac{3}{4}$  of the candidates scoring all 5 available marks for this question. Seeing  $(6 \times 3)$  and then  $+ 4$  produced the total cost. Part (b), involving calculating the number of days, was less obvious, but again there were some well set out solutions leading to the correct answer. Realising that  $52 - 4$  was the first step in the calculation was essential to arriving at the final correct value.

4. (a) Candidates at this level have very little understanding of even the most straightforward question involving fractions and this was borne out by the multitude of incorrect methods in a desperate attempt to work out  $60 \times \frac{2}{3}$  with  $\frac{120}{180}$  or even 300 being the most popular incorrect answers. Only 3% of the candidates were able to reach the correct answer of 40.  
 (b) There was a very muddled response here, which showed a clear lack of understanding of substitution involving squaring by the vast majority of candidates. The key to working out the correct answer was to realise that  $t^2 = 3 \times 3 = 9$ . Most wanted to multiply 5 by 3 first before squaring whilst 3% of the candidates who did reach 9 then went on to write  $59 - 7 = 48$  or some other grossly incorrect calculation.
5. This question was answered well with fully correct answers for part (a) and (b) having a 75% success rate overall. In part (a) the most common error was to add the hourly rate of £7 to the standing charge of £30 and then multiplying by 4 giving an incorrect answer of £148; this scored no marks. In part (b) the most common wrong answer was 7 hours obtained by dividing £51 by 7, the hourly charge. Candidates were awarded a mark if they realised they had to take £30 away from £51 leaving £21 and a further mark for showing they had to divide by 7.



6. This was a well answered question.