1. Work out.

    $4 \times 2 - 1$

    _____ [1]

2. Leo is using these numbers to make a new number.

    | 11 | | 1 | | 3 | | 6 |

    - He can use brackets, +, −, × and ÷ as often as he wishes.
    - He cannot use any number more than once.
    - He cannot use powers.
    - He cannot put numbers together, e.g. he can't use 136.

    What is the biggest number he can make?
    Show how he can make this number.

    --[4]

3.   Calculate.

(i) $(11 - 7) ÷ 2 + 25$

(i)_____

[1]

(ii) $16^3 - \sqrt{324}$

(ii)_____

[2]

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4. Calculate.

$$\sqrt{\dfrac{18.62}{2.78 + 6.72}}$$

_____

[2]

5. Work out.

(i) $9.5^2 - 3 \times 2.4$

(i) _____

[1]

(ii) $\dfrac{3}{8} \times \dfrac{2}{9}$

Give your answer as a fraction in its simplest form.

(ii) _____

[1]

(iii) $\dfrac{5.2}{2.4 - 0.47}$

Give your answer correct to one decimal place.

(iii) _____

[2]

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6. Work out.

(i) $28^2 - 25 \times 30$

(i) _____ [1]

(ii) $1 - \sqrt{25}$

(ii) _____ [1]

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7. Work out.

(i) 8 ÷ 100

(i) _____ [1]

(ii) $\dfrac{8+9}{-2}$

(ii) _____ [1]

(iii) 4 + 8 × 3

(iii) _____ [1]

8.   Calculate.

(i) $3.7 + 2.5^2$

(i) _____ [1]

(ii) $\dfrac{7.6 - 0.35}{0.25}$

(ii) _____ [1]

9(a). Write down the reciprocal of 7.

_____ [1]

(b). Wayne did this calculation and got the answer wrong.

$$6 + 4^2 - (7 \times 2) = 86$$

(i) Work out the correct answer.

(i) _____ [1]

(ii) Show how Wayne could have got the answer 86.

[1]

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10(a) Work out.

    (i) 3 + 4 × 6

(i) _____ **[1]**

    (ii) 30 − 5 × (3 + 1)

(ii) _____ **[2]**

(b). Put brackets into these sums so that the answer is correct.

    (i) 15 − 6 − 4 = 13

[1]

    (ii) 2 + 2 × 3 + 8 = 24

[1]

11.

Work out.

$$(9 - 3 \times 2)^2$$

_____ **[2]**

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END OF QUESTION PAPER

Question			Answer/Indicative content	Marks	Part marks and guidance	
1			7	1		
			Total	1		
2			Correct answer (264) with complete correct working, e.g. (3 + 1) × 6 × 11	4	**M3** for correct working but no final answer stated (3 + 1) × 6 × 11 or the working is poorly communicated but is clear, e.g. (3 + 1) × 6 × 11 = 264 or number greater than 200 with complete correct working Or **M2** for 264 with no (or incomplete) working or for acceptable number over 200 with poorly communicated working Or **M1** for number greater than 200 with no, or incomplete, working or for (3 × 6) × 11 [× 1] condoning error in calculation or for two trials leading to numbers below 200 (condone poor communication) or acceptable calculation with their answer minimum 200 but error in evaluation For 1 or 2 marks 'acceptable' implies number, minimum 200, that can be made	Working correctly communicated in stages is acceptable for 4 marks, e.g. 3 + 1 = 4, 4 × 6 = 24, 24 × 11 = 264 Full written explanation is also acceptable
			Total	4		
3		i	27	1		

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Question			Answer/Indicative content	Marks	Part marks and guidance	
		ii	4078	2	**M1** for 4096 or 18	**Examiner's Comments** Both parts were answered well with very few mistakes. A common error in the second calculation was to use 16^2 instead of 16^3 leading to an answer of 238. Those few who failed to get full marks often picked up the single mark available for 4096 (or less often 18).
			Total	3		
4			1.4 or $\dfrac{7}{5}$ or $1\dfrac{2}{5}$	2	**M1** for 1.96 or 9.5	**Examiner's Comments** Competent use of a calculator was evident in most cases and a correct answer was obtained by most candidates. Common mistakes were to divide 18.62 by 2.78 and then to add 6.72 before square rooting the result giving 3.663…or to only apply the square root to the numerator ($\sqrt{18.62} \div 9.5 = 0.4542…$). Candidates who failed to gain full marks often gained M1 for finding 1.96 or 9.5. Working out was often missing making it difficult to work out the derivation of incorrect answers.
			Total	2		

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Question			Answer/Indicative content	Marks	Part marks and guidance	
5		i	83.05	1		Accept 83.1 after 83.05 seen **Examiner's Comments** This involved use of a calculator and was well answered generally. The common errors were in following the correct order of operations in (i).
		ii	$\dfrac{1}{12}$ cao	1		Do not accept equivalents **Examiner's Comments** A common error was in using the fraction facility of the calculator in (ii).
		iii	2.7 cao	2	**B1** for 2.69[...] or 2.70 or $\dfrac{520}{193}$ After 0 scored **SC1** for answer 1.7	**Examiner's Comments** The common errors were in following the correct order of operations (iii).
			Total	4		
6		i	34	1		
		ii	–4	1	**0** for 6 but allow **1** for '–4 or 6' **Examiner's Comments** This was answered well but answers to part (ii) suggest that many candidates are not totally familiar with the correct order of operations.	
			Total	2		

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Question			Answer/Indicative content	Marks	Part marks and guidance	
7		i	0.08 or 2/25	1	**Examiner's Comments** This part was usually well answered.	
		ii	−8.5 or −8½	1	**Examiner's Comments** However, in this part quite a few candidates got the calculation wrong, with 15 (coming from 8 + 9 − 2) and 3.5 (from 8 + 9 ÷ −2) being common wrong answers.	
		iii	28	1	**Examiner's Comments** Similarly, 36 was a common error in this part.	
			Total	3		
8		i	9.95	1		
		ii	29	1	**Examiner's Comments** Usually answered very well but there were the occasional errors where the correct order of operations was not adhered to. $(3.7 + 2.5)^2$ was sometimes calculated in part (i) and 7.6 $-\dfrac{0.35}{0.25}$ in part (ii).	
			Total	2		

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Question			Answer/Indicative content	Marks	Part marks and guidance	
9	a		$\dfrac{1}{7}$	1	**Examiner's Comments** Better candidates seemed to understand the idea of reciprocal and applied it correctly to get 1/7 while a similar number gave an answer of 1 (presumably confusing the need for a number and its reciprocal to multiply and give a result of 1). Other responses included 0.7, 14 and 49.	Accept 0.142[8…] if calculation seen
	b	i	8	1	**Examiner's Comments** Part (i) showed that most candidates had been taught the principles of BIDMAS and were generally able to obtain the correct answer of 8.	
		ii	Added before squaring	1	**Examiner's Comments** There was a variety of unsuccessful numerical attempts and many simply stated that they had not used BIDMAS. Quite a few simply did not understand what they were being asked.	Can be shown numerically
			Total	3		

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Question			Answer/Indicative content	Marks	Part marks and guidance	
10	a	i	27	1		
		ii	10	2	**M1** for 5 × 4 or 20 seen following M0 **SC1** for answers of 100 or ⁻10 **Examiner's Comments** Many candidates were unsure of how to apply the order of operations in this question. A common incorrect answer in part (i) was a response of 42, where the candidate just performed the operations working from left to right. In part (ii), many appreciated that they needed to perform the calculation in the brackets first, but then went on to find 25 × 4 to get an incorrect answer of 100, for which they obtained one mark. Others found 20 – 30 rather than 30 – 20, which also obtained one mark.	
	b	i	15 – (6 – 4) = 13	1		ignore superfluous brackets
		ii	2 + 2 × (3 + 8) = 24	1	**Examiner's Comments** Most candidates attempted to insert brackets into the calculations. The more straightforward part (i) was inevitably answered better than part (ii).	
			Total	5		

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Question			Answer/Indicative content	Marks	Part marks and guidance		
11			9	2	**M1** for (9 – 6)^2 or better **Or** **SC1** for answer of 144		
			Total	2			

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