MATHEMATICS	**1112/01**
Paper 1	**October 2016**
MARK SCHEME	
Maximum Mark: 50	

IMPORTANT NOTICE

Mark Schemes have been issued on the basis of **one** copy per Assistant examiner and two copies per Team Leader.

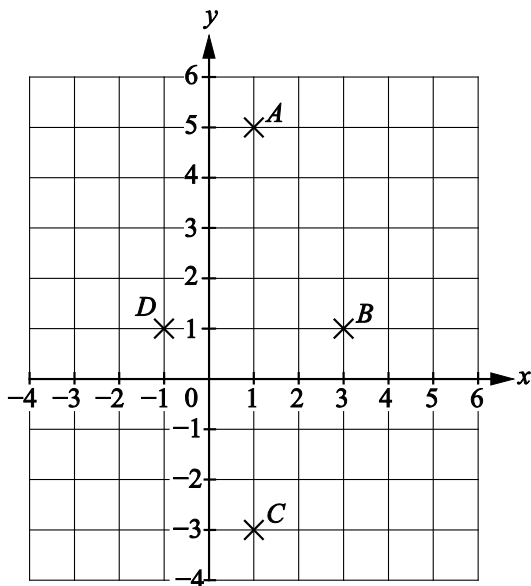This document consists of **11** printed pages and **1** blank page.

IB16 10_1112_01/4RP
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International Examinations

[Turn over

Question number	1		
Part	**Mark**	**Answer**	**Further Information**
(a)	1	($y =$) 240	
(b)	1	($x =$) 7	
Total	**2**		

Question number	2		
Part	**Mark**	**Answer**	**Further Information**
	1		
Total	**1**		

Question number	3		
Part	**Mark**	**Answer**	**Further Information**
	2		Award 1 mark for one side of the triangle adding up to 100 using the numbers provided.
Total	**2**		

Question number	4		
Part	**Mark**	**Answer**	**Further Information**
(a)	2	1000 100 0.064	Award 1 mark if 2 answers are correct.
(b)	1	(4) tenth(s) (4) thousandth(s)	
Total	3		

Question number	5		
Part	**Mark**	**Answer**	**Further Information**
(a)	1	(1, −3)	Do not accept ($x = 1$, $y = −3$)
(b)	1	 Plots *D* at (−1, 1)	
Total	2		

4

Question number	6		
Part	**Mark**	**Answer**	**Further Information**
(a)	1	21	
(b)	1	80	
Total	**2**		

Question number	7		
Part	**Mark**	**Answer**	**Further Information**
(a)	1	$m - 2$	
(b)	1	$3m$ (or equivalent)	
Total	**2**		

Question number	8		
Part	**Mark**	**Answer**	**Further Information**
(a)	1	1.5 (litres) or $1\frac{1}{2}$ (litres)	
(b)	1	18.9 (kilograms) or equivalent	
Total	**2**		

Question number	9		
Part	**Mark**	**Answer**	**Further Information**
	1	30	
Total	**1**		

Question number	10		
Part	**Mark**	**Answer**	**Further Information**
	3		Award 2 marks for either of these situations • all areas correct **and** at least 1 dimension correct • all dimensions correct Award 1 mark for either • all areas correct or • at least one dimension correct
Total	**3**		

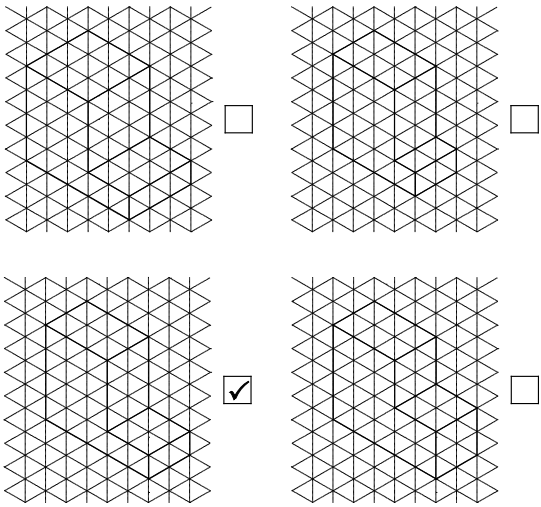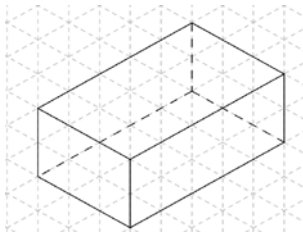| Question number	11		
Part	**Mark**	**Answer**	**Further Information**
(a)	1	Straight line drawn from (2.30 pm, 90) to (5.15 pm, 0). i.e. 	
(b)	1	50 (kilometres)	Accept 49 to 51 Follow through from *their* **(a)** (tolerance ±2) provided that *their* **(a)** has a negative gradient and intersects the given graph.
Total	**2**		

Question number	12		
Part	**Mark**	**Answer**	**Further Information**

	2	9.18	Award 1 mark for 9180 or 91.8 or 0.918 seen.
			
			Award 1 mark for a correct method e.g.
			
			  × 2 5 5
			         3 6
			  1 5 3 0
			  7 6 5 0
			  9 1 8 0
			
			but with at most 1 arithmetic error.

Total	**2**		

Question number	13		
Part	**Mark**	**Answer**	**Further Information**
	1	5	
Total	**1**		

Question number	14		
Part	**Mark**	**Answer**	**Further Information**
	1	$48 \div 20 = 48 \div 2 \div 10$ ☐ $48 \div 20 = 48 \times 5 \div 100$ ☐ $48 \div 20 = 20 \div 48$ ☒ $48 \div 20 = 48 \div (4 \times 5)$ ☐	
Total	**1**		

Question number	15		
Part	**Mark**	**Answer**	**Further Information**
	2	$\frac{2}{3}$ or equivalent	Award 1 mark for $\frac{7}{3}$ **and** $\frac{2}{7}$ seen **or** Correctly multiplying *their* $\frac{7}{3}$ and *their* $\frac{2}{7}$ (must see a correct answer) **or** Attempting to expand the brackets with three correct from $3, -\frac{15}{7}, -\frac{2}{3}, +\frac{10}{21}$ or equivalent.
Total	**2**		

Question number	16		
Part	**Mark**	**Answer**	**Further Information**
	2	<table><tr><td></td><td>Less than 1 litre</td><td>Equal to 1 litre</td><td>More than 1 litre</td></tr><tr><td>1400 millilitres</td><td></td><td></td><td>✓</td></tr><tr><td>1000 cm³</td><td></td><td>✓</td><td></td></tr><tr><td>100 000 mm³</td><td>✓</td><td></td><td></td></tr></table>	Award 1 mark for 2 correct rows.
Total	**2**		

Question number	17		
Part	Mark	Answer	Further Information
(a)	1		
(b)	1		Accept any orientation. Accept hidden lines if dotted.
Total	2		

Question number	18		
Part	Mark	Answer	Further Information
	1	2	
Total	1		

Question number	19		
Part	**Mark**	**Answer**	**Further Information**
(a)	2	38	Award 1 mark for (34 + 36) × 19 **or** 70 × 19 **or** 2 × 19 **or** sight of 1330 or 646 or 684
(b)	2	108	Award 1 mark for **either** 2 × 54 **or** 2 × 27 × 2 **or** 27 × 4 **or** sight of 2916 Award 0 marks for $\dfrac{54 \times 2}{27}$ seen.
Total	**4**		

Question number	20		
Part	**Mark**	**Answer**	**Further Information**
(a)	1	1.5 or equivalent	Do not allow $\frac{3}{2}x$ or 1.5x
(b)	2	A straight line connecting (0, 3.5) and (7, 0).	Award 1 mark for at least two correct points plotted (or seen in a table) but not necessarily connected, e.g. (0, 3.5), (1, 3), (2, 2.5), (3, 2), (4, 1.5), (5, 1), (6, 0.5), (7, 0). This could be implied by a correct line that does not reach the axes.
(c)	1	$x = 2$ $y = 2.5$ or equivalent	Follow through from *their* answer to **(b)** provided that *their* line crosses the given graph at a single point.
Total	4		

Question number	21		
Part	**Mark**	**Answer**	**Further Information**
(a)	2	17 21 24 32	Award 1 mark for each value.
(b)	1	Ticks 'In the evening' and gives a correct explanation, e.g. • The median is higher in the evening. • The median time is lower at lunchtime.	Follow through from *their* table for *their* 17 greater than 21
(c)	1	Ticks 'In the evening' and gives a correct explanation, e.g. • The range is larger in the evening.	Follow through from *their* table for *their* 32 less than 24
Total	4		

Question number	22		
Part	**Mark**	**Answer**	**Further Information**
	1	(0) < t ≤ 15 15 < t ≤ 30 30 < t ≤ 45 45 < t ≤ (60)	
Total	**1**		

Question number	23		
Part	**Mark**	**Answer**	**Further Information**
	2	$\frac{8}{9}$ or equivalent	Award 1 mark for $\frac{4}{6}$ or $\frac{2}{3}$ seen or $(\frac{1}{2}+\frac{1}{6}) \div \frac{3}{4}$ or $(\frac{1}{2}+\frac{1}{6}) \times \frac{4}{3}$
Total	**2**		

Question number	24		
Part	**Mark**	**Answer**	**Further Information**
	2		Award 1 mark **either** if two of the three vertices of the image are found correctly **or** if the image is the correct size, shape and orientation but is positioned incorrectly on the grid.
Total	**2**		

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