
MATHEMATICS

1112/02

Paper 2

April 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 **10** printed pages.

Question number	1		
Part	Mark	Answer	Further Information
(a)	1	7 (kg)	
(b)	1	55 (g)	
Total	2		

Question number	2		
Part	Mark	Answer	Further Information
	1	28 (cm) 30 (cm) 320 (mm) 0.35 (m)	
Total	1		

Question number	3		
Part	Mark	Answer	Further Information
	1	10 (minibuses)	
Total	1		

Question number	4		
Part	Mark	Answer	Further Information
	2	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Award 1 mark if 2 ticks are correctly placed.
Total	2		

Question number	5		
Part	Mark	Answer	Further Information
	1	18 (edges)	
Total	1		

Question number	6		
Part	Mark	Answer	Further Information
	2	(17 to) 24 25 to 32	Award 1 mark for 2 correct numbers or if second interval has gap of 7 with any integer starting point greater than 17.
Total	2		

Question number	7		
Part	Mark	Answer	Further Information
(a)	1	Kendra has 3 more birds than cats. <input type="checkbox"/> Kendra has 3 more cats than birds. <input checked="" type="checkbox"/> Kendra has 1 cat and 3 birds. <input type="checkbox"/> Kendra has 3 birds and 1 cat. <input type="checkbox"/>	
(b)	1	$r = 2b$ (or equivalent)	
Total	2		

Question number	8		
Part	Mark	Answer	Further Information
(a)	1	$\frac{1}{7}$	Accept decimal rounding to 0.14 (or percentage rounding to 14%). Do not accept ratio notation (e.g. 1 : 7) or an answer expressed in words (e.g. unlikely or 1 out of 7).
(b)	1	$\frac{3}{7}$	Accept decimal rounding to 0.43 (or percentage rounding to 43%). Do not accept ratio notation (e.g. 3 : 7) or an answer expressed in words.
(c)	1	$\frac{4}{7}$	Accept decimal rounding to 0.57 (or percentage rounding to 57%). Do not accept ratio notation (e.g. 4 : 7) or an answer expressed in words.
Total	3		

Question number	9		
Part	Mark	Answer	Further Information
(a)	1	(x =) 11	
(b)	2	(n =) 7	Award 1 mark for correct first step at simplifying equation, e.g. sight of any of: <ul style="list-style-type: none"> • $4n + 3 = 31$ • $6n = 2n + 28$ • $4n = 28$ • $3 = -4n + 31$ • $6n - 28 = 2n$
Total	3		

Question number	10		
Part	Mark	Answer	Further Information
	1	43(.3566...%)	
Total	1		

Question number	11		
Part	Mark	Answer	Further Information
	1	45 (minutes)	
Total	1		

Question number	12		
Part	Mark	Answer	Further Information
	2	$\frac{1}{4} = (0.) 25$ $\frac{4}{5} = 80 (\%)$	Award 1 mark for either statement correct or for sight of one of these statements: $\frac{2}{4} = 0.5(0)$ $\frac{1}{5} = 20\%$ $\frac{2}{5} = 40\%$
Total	2		

Question number	13																	
Part	Mark	Answer	Further Information															
	2	<table border="1"> <thead> <tr> <th>Property</th> <th>Name of quadrilateral</th> </tr> </thead> <tbody> <tr> <td>All sides equal</td> <td><i>Square</i></td> </tr> <tr> <td>Two sets of parallel sides</td> <td>Rhombus or Parallelogram or Rectangle</td> </tr> <tr> <td>Diagonals are equal in length</td> <td>Rectangle (or Isosceles trapezium)</td> </tr> <tr> <td>Rotational symmetry of order 2</td> <td>Parallelogram or Rhombus or Rectangle</td> </tr> </tbody> </table>	Property	Name of quadrilateral	All sides equal	<i>Square</i>	Two sets of parallel sides	Rhombus or Parallelogram or Rectangle	Diagonals are equal in length	Rectangle (or Isosceles trapezium)	Rotational symmetry of order 2	Parallelogram or Rhombus or Rectangle	<p>For 2 marks, there should be 1 quadrilateral in each cell and the names written should all be different.</p> <p>Do not allow square for two marks.</p> <table border="1"> <tr> <td>For 1 mark, 2 cells containing only correct quadrilaterals from the below</td> </tr> <tr> <td>Square</td> </tr> <tr> <td> <ul style="list-style-type: none"> • Rhombus • Parallelogram • Rectangle • Square </td> </tr> <tr> <td> <ul style="list-style-type: none"> • Rectangle • Isosceles trapezium • Square </td> </tr> <tr> <td> <ul style="list-style-type: none"> • Parallelogram • Rhombus • Rectangle • Square </td> </tr> </table>	For 1 mark, 2 cells containing only correct quadrilaterals from the below	Square	<ul style="list-style-type: none"> • Rhombus • Parallelogram • Rectangle • Square 	<ul style="list-style-type: none"> • Rectangle • Isosceles trapezium • Square 	<ul style="list-style-type: none"> • Parallelogram • Rhombus • Rectangle • Square
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Total	2																	

Question number	14		
Part	Mark	Answer	Further Information
(a)	1	$3a^2$	
(b)	1	$9 - 2a$ (or $-2a + 9$)	
Total	2		

Question number	15										
Part	Mark	Answer	Further Information								
(a)	2	<table border="1"> <tr> <td>x</td> <td></td> <td>4</td> <td></td> </tr> <tr> <td>y</td> <td></td> <td></td> <td>960</td> </tr> </table>	x		4		y			960	Award 1 mark for each correct answer.
x		4									
y			960								
(b)	1	$y = 32x$ or $x = \frac{y}{32}$ or equivalent									
Total	3										

Question number	16						
Part	Mark	Answer	Further Information				
	1	<table border="1"> <tr> <td>13.6</td> <td>136 000</td> </tr> <tr> <td>196.5</td> <td>1965 000</td> </tr> </table>	13.6	136 000	196.5	1965 000	
13.6	136 000						
196.5	1965 000						
Total	1						

Question number	17		
Part	Mark	Answer	Further Information
(a)	1	$3n + 4$	Do not accept $n = 3n + 4$
(b)	1	3004	Follow through from (a) for 1000 substituted for n and evaluated correctly.
Total	2		

Question number	18																																		
Part	Mark	Answer	Further Information																																
	2	<p style="text-align: center;">Second team</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td>1</td> <td>7</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>0</td> <td>0</td> <td>1</td> <td>3</td> <td>4</td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>5</td> <td>8</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>0</td> <td>1</td> <td>2</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	1	7							2	0	0	1	3	4			3	5	8						4	0	1	2					<p>Award 1 mark for unordered.</p> <p>or</p> <p>Award 1 mark for 1 error or omission.</p> <p>Unordered plus error or omission is no marks.</p>
1	7																																		
2	0	0	1	3	4																														
3	5	8																																	
4	0	1	2																																
Total	2																																		

Question number	19		
Part	Mark	Answer	Further Information
	1	$(x \rightarrow) 4x$	
Total	1		

Question number	20		
Part	Mark	Answer	Further Information
	2	0.54 (m ³)	Award 1 mark for 1.2 × 0.6 × 0.75 or 120 × 60 × 75 or 540 000 seen.
Total	2		

Question number	21		
Part	Mark	Answer	Further Information
	1	increase and 120	
Total	1		

Question number	22		
Part	Mark	Answer	Further Information
	2	$3^4 \times 3^6$ $9^2 \times 9^7 \times 9$ $9^{20} + 9^2$ $9^5 \times 9^2$ $9^{13} + 9^3$	Award 1 mark if one or two correct answers are ringed with at most one incorrect answer.
Total	2		

Question number	23		
Part	Mark	Answer	Further Information
(a)	1	$6(3 - 2e)$	
(b)	2	$-3c - 14d$ or $-14d - 3c$	Accept $-(3c + 14d)$ or $-(14d + 3c)$ Award 1 mark for $4c - 14d - 7c$ seen or follow through from an incorrect expansion to award 1 mark for correct simplification e.g. $4c - 14d + 7c$ leading to $11c - 14d$
Total	3		

Question number	24		
Part	Mark	Answer	Further Information
	2	80 (km/h)	Award 1 mark for $180 \div 2.25$ or equivalent. e.g. $180 \times \frac{4}{9}$ or $180 \times \frac{60}{135}$ Do not accept use of 2.15 instead of 2.25
Total	2		

Question number	25		
Part	Mark	Answer	Further Information
	1	(x =) 10 and (y =) 40	
Total	1		

Question number	26		
Part	Mark	Answer	Further Information
	3	Rotation 90(°) (or ¼ turn) anticlockwise Centre (3,9)	Award 1 mark for each. Do not accept 'turn right' or 'turn left' for the direction of turn.
Total	3		

Question number	27		
Part	Mark	Answer	Further Information
	2	Manuel and gives correct working. Correct working could involve finding how many litres of petrol Lotte buys (27.5 litres) or finding the cost of Manuel's petrol (\$41.32 or \$41.318).	Award 1 mark for sight of a correct method that could be used to make a comparison. This is likely to be $\frac{28.3}{18.5} \times 27.01$ (oe) (implied by 41.318 seen) or $\frac{40.15}{27.01} \times 18.5$ (oe) (implied by 27.5 seen) or Award 1 marks for 41.3 seen and Manuel ticked or for 'Lotte buys 28' or 'Lotte buys 27' and Manuel ticked
Total	2		