

11+ CEM Mathematics

Paper 1

Answers

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Section 1

Question	Answer																																								
1	<p>10 circuits</p> <p>30km to cycle in 30 days of September. This equals to 1km per day. 1km = 1000m $1000 \div 100 = 10$ circuits per day.</p>																																								
2	<p>40 seats</p> <p>Using ratios, occupied seats to empty seats = 4:1 5 total parts where 1 part is empty seats. $200 \div 5 = 40$ empty seats.</p>																																								
3	<p>21 sweets</p> <p>Add up all the sweets to form an equation, then solve for S. $S + (S + 4) + 3S = 39$ $5S + 4 = 39$ $5S = 35$ $S = 7$ Cindy = $3S = 3 \times 7 = 21$ sweets.</p>																																								
4	<p>34</p> <p>Using BIDMAS, multiplication comes first. $5 + (3 \times 12) - 7$ $5 + 36 - 7 = 34$</p>																																								
5	<p>11</p> <p>Square rooting both sides gives: $x - 3 = 8$ Solve for x: $x = 11$</p>																																								
6	<p>24 bags</p> <p>Using long division: $408 \div 17 = 24$ bags.</p> <div style="text-align: center;"> <table border="1" style="border-collapse: collapse; margin: auto;"> <tr><td></td><td></td><td>0</td><td>2</td><td>4</td></tr> <tr><td>1</td><td>7</td><td>4</td><td>0</td><td>8</td></tr> <tr><td></td><td></td><td>-</td><td>0</td><td></td></tr> <tr><td></td><td></td><td></td><td>4</td><td>0</td></tr> <tr><td></td><td></td><td>-</td><td>3</td><td>4</td></tr> <tr><td></td><td></td><td></td><td>6</td><td>8</td></tr> <tr><td></td><td></td><td>-</td><td>6</td><td>8</td></tr> <tr><td></td><td></td><td></td><td></td><td>0</td></tr> </table> </div>			0	2	4	1	7	4	0	8			-	0					4	0			-	3	4				6	8			-	6	8					0
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7	<p>135 degrees</p> <p>There are 360 degrees in a circle. The circle is split into 8 sectors. $360 \div 8 = 45$ degrees. The arrow turns through 3 sectors to reach E.</p>																																								

	$3 \times 45 = 135$ degrees.
8	16 times greater A square with sides x has an area of x^2 . Therefore, a square with sides $4x$ would have an area of: $4x \times 4x = 16x^2$.
9	48 percent $25 - 13 = 12$ boys $12/25 = 48/100 = 48\%$
10	06 pieces $1.44\text{m} = 144\text{cm}$ $144 \div 24 = 6$.
11	£150 Perimeter of the garden = $8 + 8 + 12 + 12 = 40\text{m}$ $40 \div 4 = 10$ parts of fencing. $10 \times 15 = \text{£}150$
12	98 10% of $280 = 28$ 5% of $280 = 14$ $3 \times 28 + 14 = 98$
<i>Section 1 Subtotal</i>	<i>/12</i>

Section 2

Question	Answer
1	C $7(a + 2b)$ $(7a + 14b)$ can be factorised (divide by 7) to give $7(a + 2b)$
2	B £2.03 $4 \times 1.40 = \text{£}5.60$ $3 \times 0.79 = \text{£}2.37$ $5.60 + 2.37 = \text{£}7.97$ Change from $\text{£}10$: $10 - 7.97 = \text{£}2.03$
3	E 1.2m Total length of chairs = $5 \times 0.8 = 4\text{m}$ Total length of tables = $7.6 - 4 = 3.6\text{m}$ Length of 1 table = $3.6 \div 3 = 1.2\text{m}$

4	<p>B 10% of 70</p> <p>25% of 30 = 7.5 10% of 70 = 7 = LOWEST 20% of 40 = 8 50% of 15 = 7.5 60% of 12 = 7.2</p>
5	<p>C 16:45</p> <p>Meetings: $5 \times 30 = 150$ mins Lunch break = 90 mins Other breaks = $3 \times 20 = 60$ mins Project = 3 hours = 180 mins Total time = $150 + 90 + 60 + 180 = 480$ mins or 8 hours. 8 hours after 8:45 is 16:45.</p>
6	<p>D 12</p> <p>Cut in half: 2 sections. Cut into thirds: $2 \times 3 = 6$ sections. Cut into half: $6 \times 2 = 12$ sections.</p>
7	<p>B 40cm</p> <p>Let x be the width (shorter side) of the rectangle. Form an equation, then solve for x. Perimeter = $2x + 2(x + 30) = 220$ $2x + 2x + 60 = 220$ $4x + 60 = 220$ $4x = 160$ $x = 40\text{cm}$</p>
8	<p>B -4</p> <p>Counting backwards in steps of 6: 26, 20, 14, 8, 2, -4.</p>
9	<p>C 90</p> <p>360 degrees in a circle which represents 12 hours. Each hour = $360 \div 12 = 30$ degrees. 3 hours = $3 \times 30 = 90$ degrees.</p>
10	<p>D 7.5 miles</p> <p>15 minutes is a quarter of an hour. If he can complete 30 miles in 1 hour, he will drive 7.5 miles in a quarter of that time. ($30 \div 4$)</p>
11	<p>D Box Z</p> <p>Writing out the 11 times table: 11, 22, 33, 44, 55, 66, 77, 88, 99 ... 91 is not a multiple of 11. Writing out the 13 times table: 13, 26, 39, 52, 65, 78, 91 91 is a multiple of 13 and is also odd. It belongs in Box Z.</p>

12	<p>A $3D + 4M$</p> <p>4 bars of milk chocolates: 4M Calculate the number of dark chocolate purchased: $45 \div 15 = 3$ bars of dark chocolates - 3D. Therefore, $3D + 4M$</p>
13	<p>C 10</p> <p>If one portion is $\frac{1}{20}$, then the whole jug serves 20 guests. If only 50% of the jug is used, it has served 10 guests.</p>
14	<p>B 4:3</p> <p>John now owns 8 guitars and 6 violins. The ratio of guitars to violins is 8:6 which is simplified to 4:3.</p>
15	<p>A $N + 12$</p> <p>The lowest common multiple of 2, 3 and 4, is 12. Therefore, $N + 12$ is divisible by all the factors listed.</p>
<i>Section 2 Subtotal</i>	<i>/15</i>
<i>Total</i>	<i>/27</i>

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