

# Key stage 2

## Mathematics

Papers 1, 2 and 3: Mark scheme

PiXL Spring 1 Assessment

Paper 1: arithmetic (out of 40 marks)

<b>Question</b> NC ref code	<b>Requirement</b>	<b>Mark</b>	<b>Additional guidance</b>
<b>1</b> 4N2b	9,099	<b>1m</b>	
<b>2</b> 4C2	448	<b>1m</b>	
<b>3</b> 4F10a	<b>120</b>	<b>1m</b>	
<b>4</b> 4C6b	609	<b>1m</b>	
<b>5</b> 4F4	$1\frac{11}{20}$	<b>1m</b>	Also accept $\frac{62}{40}$ or $\frac{31}{20}$
<b>6</b> 5F10	4.132	<b>1m</b>	
<b>7</b> 4N2b	1,021	<b>1m</b>	
<b>8</b> 3C2	1,557	<b>1m</b>	
<b>9</b> 4C6a	12	<b>1m</b>	
<b>10</b> 4C7	3,384	<b>1m</b>	
<b>11</b> 4C6b	0	<b>1m</b>	
<b>12</b> 4 F9	0.08	<b>1m</b>	
<b>13</b> 3N2b	921	<b>1m</b>	
<b>14</b> 6C9	210	<b>1m</b>	
<b>15</b> 6F5b	$1\frac{1}{9}$	<b>1m</b>	
<b>16</b> 5C5d	169	<b>1m</b>	
<b>17</b> 5C7b	93	<b>1m</b>	

<p><b>18</b> 6F5a</p>	<p><math>\frac{1}{8}</math></p>	<p><b>1m</b></p>	
<p><b>19</b> 5C2</p>	<p>52,908</p>	<p><b>1m</b></p>	
<p><b>20</b> 6C7b</p>	<p>Award <b>TWO</b> marks for the correct answer of 52</p> <p>If the answer is incorrect, award <b>ONE</b> mark for a formal method of division with no more than <b>ONE</b> arithmetic error, i.e.</p> <ul style="list-style-type: none"> <li>long division algorithm, e.g.</li> </ul> $  \begin{array}{r}  \phantom{19} \overline{) 988} \\  \underline{519} \phantom{0} \\  288 \\  \underline{190} \\  98  \end{array}  $ <p>(50 x 19) (error) (1 x 19)</p> <p><b>OR</b></p> $  \begin{array}{r}  \phantom{19} \overline{) 988} \\  \underline{950} \\  38 \\  \underline{38} \\  0  \end{array}  $ <p>(error) (50 x 19) (2 x 19)</p> <ul style="list-style-type: none"> <li>short division algorithm, e.g.</li> </ul> $  \begin{array}{r}  \phantom{19} \overline{) 988} \\  \underline{519} \\  38  \end{array}  $ <p>(error in carrying digit)</p>	<p><b>Up to 2m</b></p>	
<p><b>21</b> 4F10a</p>	<p>150</p>	<p><b>1m</b></p>	

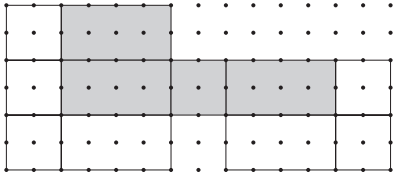
<p><b>22</b> 6C7a</p>	<p>Award <b>TWO</b> marks for the correct answer of 275,687.</p> <p>If the answer is incorrect, award <b>ONE</b> mark for a formal method of long multiplication with no more than <b>ONE</b> arithmetic error, e.g.</p> $\begin{array}{r} 7451 \\ \times \quad 37 \\ \hline 52157 \\ 223530 \\ \hline 276687 \end{array} \text{ (error)}$ <p><b>OR</b></p> $\begin{array}{r} 7451 \\ \times \quad 37 \\ \hline 52157 \\ 223550 \\ \hline 275707 \end{array} \text{ (error)}$ <p>Working must be carried through to reach a final answer for the award of <b>ONE</b> mark.</p> <p><b>Do not</b> award any marks if the error is in the place value, e.g. the omission of the zero when multiplying the tens:</p> $\begin{array}{r} 7451 \\ \times \quad 37 \\ \hline 52157 \\ 22355 \\ \hline 74512 \end{array} \text{ (place value error)}$	<p><b>Up to 2m</b></p>	
<p><b>23</b> 6F4</p>	<p><math>\frac{11}{35}</math></p>	<p><b>1m</b></p>	

<p><b>24</b> 6C7a</p>	<p>Award <b>TWO</b> marks for the correct answer of 577,152.</p> <p>If the answer is incorrect, award <b>ONE</b> mark for a formal method of long multiplication with no more than <b>ONE</b> arithmetic error, e.g.</p> $\begin{array}{r} 9018 \\ \times \quad 64 \\ \hline 36072 \\ 541080 \\ \hline 577252 \text{ (error)} \end{array}$ <p><b>OR</b></p> $\begin{array}{r} 9018 \\ \times \quad 64 \\ \hline 36072 \\ 531080 \text{ (error)} \\ \hline 567152 \end{array}$ <p>Working must be carried through to reach a final answer for the award of <b>ONE</b> mark.</p> <p><b>Do not</b> award any marks if the error is in the place value, e.g. the omission of the zero when multiplying the tens:</p> $\begin{array}{r} 9018 \\ \times \quad 64 \\ \hline 36072 \\ 53108 \text{ (place value error)} \\ \hline 89180 \end{array}$	<p><b>Up to 2m</b></p>	
<p><b>25</b> 5F10</p>	<p>6.147</p>	<p><b>1m</b></p>	
<p><b>26</b> 6F4</p>	<p><math>\frac{29}{20}</math></p>	<p><b>1m</b></p>	<p>Also accept <math>1\frac{9}{20}</math></p>
<p><b>27</b> 6F5a</p>	<p><math>\frac{1}{3}</math></p>	<p><b>1m</b></p>	<p>Also accept <math>\frac{8}{24}</math></p>
<p><b>28</b> 6C9</p>	<p>5.982</p>	<p><b>1m</b></p>	
<p><b>29</b> 6R2</p>	<p>210</p>	<p><b>1m</b></p>	
<p><b>30</b> 6F9b</p>	<p>480</p>	<p><b>1m</b></p>	



Paper 2 : reasoning (out of 35 marks)

Question NC ref code	Requirement	Mark	Additional guidance								
<b>1</b> 4M1	52p £1.05	<b>1m</b>									
<b>2</b> 4C2	1,143	<b>1m</b>									
<b>3</b> 5M8	25 litres	<b>1m</b>	Accept alternative unambiguous positive indications e.g. cross								
<b>4</b> 4F10b	Award <b>TWO</b> marks for the correct answer of 175 km  If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, e.g. <ul style="list-style-type: none"> <li>• <math>140 \div 4 = 35</math></li> <li>• <math>140 + 35 = 175</math></li> <li>• Or <math>35 \times 5 = 175</math></li> </ul>	<b>2m</b>	Answer need not be obtained for the award of <b>ONE</b> mark								
<b>5a</b> 4S1	10 km	<b>1m</b>									
<b>5b</b> 4S1	15 minutes	<b>1m</b>									
<b>6</b> 5F12	Award <b>TWO</b> marks for the correct answer of 32%  If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, e.g.  $9 + 8 = 17$ $25 - 17 = 8$  $\frac{8}{25} \times 100$	<b>Up to 2m</b>	Answer need not be obtained for the award of <b>ONE</b> mark								
<b>7</b> 5F2a	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Improper fraction</th> <th style="width: 50%;">Mixed number</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;"><math>\frac{5}{3}</math></td> <td style="text-align: center;"><math>1 \frac{2}{3}</math></td> </tr> <tr> <td style="text-align: center;"><math>\frac{\boxed{10}}{4}</math></td> <td style="text-align: center;"><math>2 \frac{2}{4}</math></td> </tr> <tr> <td style="text-align: center;"><math>\frac{35}{10}</math></td> <td style="text-align: center;"><math>3 \frac{\boxed{5}}{10}</math></td> </tr> </tbody> </table>	Improper fraction	Mixed number	$\frac{5}{3}$	$1 \frac{2}{3}$	$\frac{\boxed{10}}{4}$	$2 \frac{2}{4}$	$\frac{35}{10}$	$3 \frac{\boxed{5}}{10}$	<b>Up to 2m</b>	For <b>ONE</b> mark, accept one correct missing number.
Improper fraction	Mixed number										
$\frac{5}{3}$	$1 \frac{2}{3}$										
$\frac{\boxed{10}}{4}$	$2 \frac{2}{4}$										
$\frac{35}{10}$	$3 \frac{\boxed{5}}{10}$										

<p><b>8</b> 5G3b</p>	<p>Rectangle (oblong) drawn in one of the correct positions as shown in diagram below:</p> <p>Square drawn in one of the correct positions as shown in the diagram below:</p>  <p>Only accept a square that is joined to the side of an adjacent rectangle (oblong).</p>	<p><b>1m</b></p>	
<p><b>9</b> 5C7a</p>	<p>3,240</p>	<p><b>2m</b></p>	
<p><b>10a</b> 4N3b</p>	<p>C</p>	<p><b>1m</b></p>	<p>Accept alternative unambiguous positive indications e.g. cross</p>
<p><b>10b</b> 4N3b</p>	<p>40</p>	<p><b>1m</b></p>	
<p><b>11</b> 5C5c / 5C5d</p>	<p>10011</p>	<p><b>1m</b></p>	
<p><b>12</b> 4N3a</p>	<p>An explanation which illustrates that because each child has a 4-digit number card, the value of the thousands digit determines who has the larger number:</p> <ul style="list-style-type: none"> <li>'2 thousand is larger than 1 thousand.'</li> </ul>	<p><b>1m</b></p>	
<p><b>13</b> 6C9</p>	<p><math>10 \times (10 \times 10 - 10) = 900</math></p>	<p><b>1m</b></p>	



<p><b>14</b> 6R2</p>	<p>Award <b>THREE</b> marks for the correct answer of £135</p> <p>If the answer is incorrect, award <b>TWO</b> marks for sight of £15 as evidence of the correct calculation of the percentage. For example:</p> $\text{£}120 \div 10 = \text{£}12 \text{ (10\%)}$ $\text{£}12 \div 2 = \text{£}6 \text{ (5\%)}$ $\text{£}6 \div 2 = \text{£}3 \text{ (2.5\%)}$ $12.5\% \text{ of } \text{£}120 = \text{£}12 \text{ (10\%)} + \text{£}3 \text{ (2.5\%)} = \text{£}15$ $\text{£}120 + \text{£}15 = \text{ = Incorrect answer}$ <p><b>Or</b></p> <p>evidence of an appropriate method with no more than one arithmetic error.</p> <p>Award <b>ONE</b> mark for evidence of an appropriate method.</p>	<p><b>Up to 3m</b></p>	<p>A misread may affect the award of marks. No marks are awarded if there is more than one misread.</p> <p><b>TWO</b> marks will be awarded for an appropriate complete method with the misread number followed through correctly.</p> <p><b>ONE</b> mark will be awarded for evidence of an appropriate complete method with the misread number followed through correctly with one arithmetic error.</p> <p>Answer need not be obtained for the award of <b>ONE</b> mark.</p>
<p><b>15</b> 6C8</p>	$  \begin{array}{r}  4 \quad \boxed{1} \\  \times \quad \boxed{2} \quad 6 \\  \hline  2 \quad 4 \quad 6 \\  8 \quad 2 \quad 0 \\  \hline  1 \quad 0 \quad 6 \quad 6  \end{array}  $	<p><b>Up to 2m</b></p>	<p>Accept for <b>ONE</b> mark one correct missing number</p>
<p><b>16</b> 6N2 / 6C8</p>	<p>26,305</p>	<p><b>1m</b></p>	
<p><b>17a</b> 6G4a</p>	<p>168°</p>	<p><b>1m</b></p>	
<p><b>17b</b> 6G4a</p>	<p>12°</p>	<p><b>1m</b></p>	
<p><b>18a</b> 6A3</p>	<p>58</p>	<p><b>1m</b></p>	
<p><b>18b</b> 6A3</p>	<p>7n + 2</p>	<p><b>1m</b></p>	
<p><b>19</b> 6R2</p>	<p>200</p>	<p><b>1m</b></p>	

<p><b>20</b> 6C8</p>	<p>Award <b>TWO</b> marks for the correct answer of 190</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, e.g.</p> <p>7,000 divided by 37 = 189 r 7</p>	<p><b>Up to 2m</b></p>	
<p><b>21</b> 6S3</p>	<p>20</p>	<p><b>1m</b></p>	
<p><b>22</b> 5M9a / 5M9c</p>	<p>Award <b>TWO</b> marks for the correct answer of £17.50.</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method,</p> <p>e.g. 75 divided by 5 = 15.</p> <p>15 x 4.50 = £67.50.</p> <p>£67.50 - £50 = incorrect answer</p>	<p><b>Up to 2m</b></p>	<p>Answer need not be obtained for the award of <b>ONE</b> mark</p>

Paper 3: reasoning (out of 35 marks)

Question NC ref code	Requirement	Mark	Additional guidance								
<b>1</b> 4F6a	<table border="1"> <tr> <td><math>\frac{1}{4}</math> is equivalent to 0.14</td> <td></td> </tr> <tr> <td><math>\frac{1}{2}</math> is equivalent to 0.02</td> <td></td> </tr> <tr> <td><math>\frac{1}{4}</math> is equivalent to 0.25</td> <td><input type="checkbox"/></td> </tr> <tr> <td><math>\frac{3}{4}</math> is equivalent to 0.75</td> <td><input type="checkbox"/></td> </tr> </table>	$\frac{1}{4}$ is equivalent to 0.14		$\frac{1}{2}$ is equivalent to 0.02		$\frac{1}{4}$ is equivalent to 0.25	<input type="checkbox"/>	$\frac{3}{4}$ is equivalent to 0.75	<input type="checkbox"/>	<b>1m</b>	Accept alternative unambiguous positive indications e.g. crosses
$\frac{1}{4}$ is equivalent to 0.14											
$\frac{1}{2}$ is equivalent to 0.02											
$\frac{1}{4}$ is equivalent to 0.25	<input type="checkbox"/>										
$\frac{3}{4}$ is equivalent to 0.75	<input type="checkbox"/>										
<b>2a</b> 4M7b	C	<b>1m</b>	Accept alternative unambiguous positive indications of shape C								
<b>2b</b> 4M7b	A and E or B and D	<b>1m</b>									
<b>3</b> 4C2	<p>Award <b>TWO</b> marks for the correct answer of 363</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, e.g.</p> $175 \times 2 = 350$ $1076 - 350 = 726$ $726 \div 2 = \text{error}$	<b>Up to 2m</b>	Answer need not be obtained for the award of <b>ONE</b> mark								
<b>4</b> 4C3	$2,415 \div 7 = 345$	<b>1m</b>	Accept $2,415 \div 345 = 7$								
<b>5</b> 5C2	14,687	<b>1m</b>									
<b>6</b> 3N1b	550 and 750	<b>1m</b>									
<b>7</b> 5M9a	<p>Award <b>TWO</b> marks for the correct answer of 90p</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, e.g.</p> $90p \div 2 = 45p$ $75p - 45p = 30p$ $30p \times 3 = \text{error}$	<b>Up to 2m</b>	Answer need not be obtained for the award of <b>ONE</b> mark								

<b>8</b> 4N4b	31,090 31,100 31,000	<b>Up to 2m</b>	For <b>ONE</b> mark, accept two correct answers.
<b>9a</b> 6C7b	6 degrees	<b>1m</b>	
<b>9b</b> 6C7b	-2°C	<b>1m</b>	
<b>10</b> 3F10	An explanation which gives a counter-example to illustrate that 4 marbles out of 15 marbles is not equal to a third:  <ul style="list-style-type: none"> <li>• '<math>\frac{4}{15}</math> is not equivalent to one third. 5 out of 15 marbles is the same as one third'</li> </ul> No mark is awarded for circling 'No' alone.  Do not accept vague or incomplete explanations, eg:  <ul style="list-style-type: none"> <li>• 4 is not a third</li> </ul> If 'Yes' is circled but a correct, unambiguous explanation is given, then award the mark	<b>1m</b>	
<b>11</b> 5C7b	49	<b>1m</b>	
<b>12</b> 6M8a	Award <b>TWO</b> marks for the correct answer of 48,125 cm <sup>3</sup> .  If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, e.g.  55 x 35 x 25 = error	<b>Up to 2m</b>	Answer need not be obtained for the award of <b>ONE</b> mark
<b>13</b> 6P2	A: (15, 14) B: (21, 5)	<b>Up to 2m</b>	For <b>ONE</b> mark, accept one correct co-ordinate.
<b>14</b> 5F8	0.125, 0.007, 0.1	<b>1m</b>	

<b>15a</b> 6A2	35 minutes + 20 minutes x 3kg = 95 minutes.  Accept 1 hour 35 minutes	<b>1m</b>	
<b>15b</b> 6A2	2.25kg. i.e. $(80 - 35) / 20 =$ 2.25	<b>1m</b>	
<b>16</b> 5M9a	Award <b>TWO</b> marks for the correct answer of 90 (£) / pounds.  If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, e.g.  30 divided by 20 = 1.5  90 + 45 = 135  135 divided by 1.5 = incorrect answer	<b>Up to 2m</b>	Answer need not be obtained for the award of <b>ONE</b> mark
<b>17</b> 6A5	n can be 9, 10, 11, or 12	<b>Up to 2m</b>	
<b>18a</b> 6S1	95 boys	<b>1m</b>	
<b>18b</b> 6S1	35 boys	<b>1m</b>	
<b>19</b> 5F10	Award <b>TWO</b> marks for the correct answer of 56.901.  If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, e.g.  $100 - (24.45 + 1.643 + 17.006)$	<b>Up to 2m</b>	Answer need not be obtained for the award of <b>ONE</b> mark
<b>20</b> 6M6	41.6km (approximately)	<b>1m</b>	
<b>21</b> 6R4	Award <b>TWO</b> marks for the correct answer of 1,600g.  If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, e.g.  Pie crust = $\frac{3}{5} = \frac{6}{10}$  Pie decoration = $1 - \frac{8}{10} = \frac{2}{10}$  $2,000g \div 10 = 200g$  $200g \times 8$	<b>Up to 2m</b>	Answer need not be obtained for the award of <b>ONE</b> mark
<b>22</b> 6C6	$(\boxed{20} \div \boxed{2}) + 90 = 100$	<b>1m</b>	Accept alternative answers that make statement correct.