National curriculum tests

Key Stage 2

PiXL Paper

Year 6 Mathematics

Mark scheme

PiXL PRIMARY partners in excellence

Paper 1: arithmetic (out of 40 marks)

Question NC ref code	**Requirement**	**Mark**	**Additional guidance**
1 3N2b	527	**1m**	
2 3C2	986	**1m**	
3 4C2	6,182	**1m**	
4 4N2b	6,876	**1m**	
5 4C7	2,205	**1m**	
6 3N2b	4,866	**1m**	
7 3F4	$\frac{5}{8}$	**1m**	
8 4F9	0.07	**1m**	
9 5C8a	80	**1m**	
10 5C6b	9,290	**1m**	
11 4C6a	144	**1m**	
12 4F4	$\frac{13}{8}$ or $1\frac{5}{8}$	**1m**	Answers should be given as a single value.
13 4C7	736	**1m**	
14 5C7b	428	**1m**	
15 5F10	11.785	**1m**	
16 6F4	$2\frac{1}{6}$	**1m**	

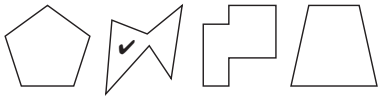
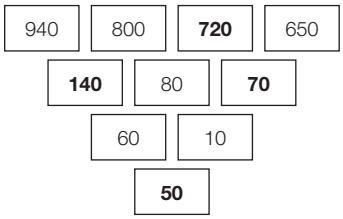
17 6C7b	Award **TWO** marks for the correct answer of 89 If the answer is incorrect, award **ONE** mark for a formal method of division with no more than **ONE** arithmetic error, i.e. • long division algorithm, e.g. 8 8 r 68 7 7 | 6 8 5 3 – 6 1 6 (8 x 77) 6 8 4 (error) – 6 1 6 (8 x 77) 6 8 **OR** 8 7 (error) 7 7 | 6 8 5 3 – 6 1 6 (8 x 77) 6 9 3 – 6 9 3 (9 x 77) 0 • short division algorithm, e.g. 8 8 r 67 7 7 | 6 8 5 ^{68}3 (error in carrying digit)	**Up to 2m**	Working must be carried through to reach a final answer for the award of **ONE** mark. Short division methods **must** be supported by evidence of appropriate carrying figures to show the use of a division algorithm, and be a complete method. The carrying figure **must** be less than the divisor.
18 6F4	$\frac{17}{40}$	**1m**	
19 6F9b	29.82	**1m**	
20 5C2	58,611	**1m**	
21 5C2	50,769	**1m**	
22 4C2	9,514	**1m**	
23 5F10	2.65	**1m**	
24 5C7b	2,189	**1m**	
25 5F10	650.316	**1m**	

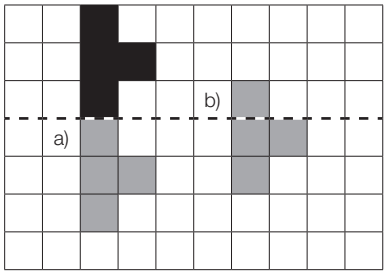
26 6C7a	Award **TWO** marks for the correct answer of 87,768 If the answer is incorrect, award **ONE** mark for a formal method of long multiplication with no more than **ONE** arithmetic error, e.g. 3 6 5 7 x 2 4 1 4 6 2 8 7 3 1 4 0 8 8 7 5 9 (error) **OR** 3 6 5 7 x 2 4 1 4 6 2 8 7 3 2 4 0 (error) 8 7 8 6 8	**Up to 2m**	Working must be carried through to reach a final answer for the award of **ONE** mark. **Do not** award any marks if the error is in the place value, e.g. the omission of the zero when multiplying the tens: 3 6 5 7 x 2 4 1 4 6 2 8 7 3 1 4 (place value error) 2 1 9 4 2
27 5F5	$\frac{24}{9}$ or $2\frac{2}{3}$	**1m**	Accept equivalent fractions e.g. $\frac{8}{3}$
28 6R2	63	**1m**	
29 6C9	128	**1m**	
30 6F5b	$\frac{7}{45}$	**1m**	
31 6F5a	$\frac{35}{48}$	**1m**	
32 6R2	132	**1m**	

33 6C7a	Award **TWO** marks for the correct answer of 308,208 If the answer is incorrect, award **ONE** mark for a formal method of long multiplication with no more than **ONE** arithmetic error, e.g. 6421 x 48 51368 256840 208208 (error) **OR** 6421 x 48 51368 256830 (error) 308198	**Up to 2m**	Working must be carried through to reach a final answer for the award of **ONE** mark. **Do not** award any marks if the error is in the place value, e.g. the omission of the zero when multiplying the tens: 6421 x 48 51368 25684 (place value error) 77052
34 5C5d	64	**1m**	

35 6C7b	Award **TWO** marks for the correct answer of 99 If the answer is incorrect, award **ONE** mark for a formal method of division with no more than **ONE** arithmetic error, i.e. • long division algorithm, e.g. 9 9 r 3 5 5 | 5 4 4 5 – 4 9 5 (9 x 55) 4 9 8 (error) – 4 9 5 (9 x 55) 3 **OR** 9 7 (error) 5 5 | 5 4 4 5 – 4 9 5 (9 x 55) 4 9 5 – 4 9 5 (9 x 55) 0 • short division algorithm, e.g. 9 8 r 45 5 5 | 5 4 4 ^{48}5 (error in carrying digit)	**Up to 2m**	Working must be carried through to reach a final answer for the award of **ONE** mark. Short division methods **must** be supported by evidence of appropriate carrying figures to show the use of a division algorithm, and be a complete method. The carrying figure **must** be less than the divisor.
36 6F9b	192.92	**1m**	

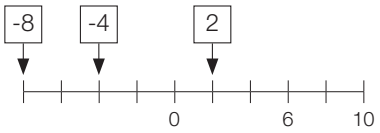
Paper 2: reasoning (out of 35 marks)

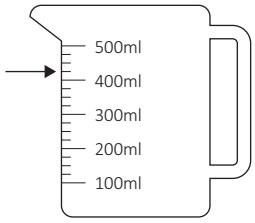
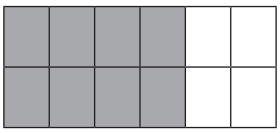
Question NC ref code	**Requirement**	**Mark**	**Additional guidance**
1 5G2b		**1m**	Accept any indication for correct answer.
2 4N4a	3,245	**1m**	
3 3S2	450	**1m**	
4 4F8	4.5m, 4.58m, 4.85m, 5.48m	**1m**	
5 5S1 4M4b 5M4	a) 2	**1m**	
	b) 5:25 p.m.	**1m**	Accept 5:25pm
	c) 16:00	**1m**	Accept 4pm or 4 o'clock
6 3C4		**Up to 2m**	Award **ONE** mark for two correct answers.
7 3N2a	Eight hundred and seven.	**1m**	
8 4N1 6C5	a) 75 or 100	**1m**	
	b) 84	**1m**	
9 6C8	Award **TWO** marks for the correct answer of £104,814. If the answer is incorrect, award **ONE** mark for evidence of appropriate complete method with no more than one arithmetic error e.g. 647 x 18 = 11,646 11,646 x 9 = error Or 647 x 9 = 5,813 (error) 5,813 x 18 =	**Up to 2m**	Award **ONE** mark for sight of £11,646 (£18 x 647).

10 5P2		**1m** **1m**	
11 5F12	$\frac{1}{10}$ 0.04 $\frac{1}{5}$ 0.2 $\frac{1}{25}$ 0.1 $\frac{1}{2}$ 0.5	**Up to 2m**	Award **ONE** mark for three correct answers.
12 5M9b	Award **TWO** marks for the correct answer of 11. If the answer is incorrect, award **ONE** mark for evidence of appropriate complete method with no more than one arithmetic error e.g. 400 ÷ 35 = error Or 400 ÷ 35 = 11 r15 12 chicks (rounded incorrectly)	**Up to 2m**	If answer is incorrect, award **ONE** mark for evidence of an appropriate method which contains no more than **ONE** mathematical error.
13 6R2	10% of 340 is [>] 25 25% of 100 is [=] 25 15% of 500 is [>] 25 5% of 200 is [<] 25 Award **TWO** marks for all four correct answers.	**Up to 2m**	Award **ONE** mark for three correct answers.
14 6C8	10	**Up to 2m**	
15a 6F3	$\frac{1}{5}$ $\frac{3}{10}$ $\frac{1}{3}$ $\frac{2}{3}$ $\frac{4}{5}$	**1m**	Award **ONE** mark for fractions ordered correctly, using a common denominator, but not listed in their original format.
15b 6F11	20%	**1m**	

16 6R4	Award **TWO** marks for the correct answers of: red = 45 litres yellow = 36 litres white = 27 litres	**Up to 2m**	Award **ONE** mark for two of the three correct answers or if there is only one arithmetic error.
17 5M7b	Award **TWO** marks for the correct answer of 5,208m^2 If the answer is incorrect, award **ONE** mark for evidence of appropriate complete method with no more than one arithmetic error e.g. 115 x 89 = 10,235 10,235 – 5,027 = error Or 115 x 89 = 10,234 (error) 10,234 – 5,027 =	**Up to 2m**	If answer is incorrect, award **ONE** mark for evidence of an appropriate method which contains no more than **ONE** mathematical error.
18 4F10a / 6C8	Award **THREE** marks for the correct answer of 6,250 If the answer is incorrect, award **TWO** marks for the correct answer of: $\frac{1}{4}$ of 15,000 = 3,750 $\frac{1}{3}$ of 15,000 = 5,000 3,750 + 5,000 = 8,750 15,000 – 8,750 = Incorrect answer If the answer is incorrect, award **ONE** mark for the correct answer of: $\frac{1}{4}$ of 15,000 = 3,750 $\frac{1}{3}$ of 15,000 = 5,000 3,750 + 5,000 = Incorrect answer	**Up to 3m**	
19 5F4	$\frac{\boxed{4}}{6} + \frac{2}{\boxed{12}} = \frac{10}{\boxed{12}}$	**Up to 2m**	Award **ONE** mark for evidence of correct addition of fractions or equivalence with no more than one error.
20 6R3	600cm	**1m**	

Paper 3: reasoning (out of 35 marks)

Question NC ref code	**Requirement**	**Mark**	**Additional guidance**
1 4M1	No. Jen is not correct because £2 is equal to 200p, which is larger than 50p.	**1m**	Do not accept 'no' without an explanation to show understanding that £2 = 200p
2 4N5		**1m**	
3 4G2a	An equilateral triangle has three equal angles. ✔ An isosceles triangle has three different sized angles. ✘ Angles in a scalene triangle add up to 180°. ✔ Angles in a right-angled triangle are 90° each. ✘	**1m**	
4 5C7b	Award **TWO** marks for the correct answer of 546 boxes. If the answer is incorrect, award **ONE** mark for evidence of appropriate complete method with no more than one arithmetic error e.g. 3,278 ÷ 6 = error Or 3,278 ÷ 6 = 546 r2 547 boxes (incorrectly rounded)	**2m**	Award **ONE** mark for 546 r2
5 5C6b 5C8b	a) 12p	**1m**	
	b) 2p	**1m**	
	c) £41.30	**Up to 2m**	Award **ONE** mark for sight of 78p x 10 + 35p x 10

6 6M5 4F10a	a)  	**1m**	
	b) 	**1m**	Any 8 boxes shaded
7a 6A3	a) 17km and 26km	**1m**	
	b) The difference between each number in the sequence increases by 2 each time, so the next difference would be 7. If you add 7 to the last number in the sequence (10) you get 17km and so on.	**1m**	
	c) a + b – 2c ☐ 2c + a + b ✔ c + a + b - c ☐ c + a – c + b ☐	**1m**	
8 5C5d	<table><tr><th></th><th>even</th><th>**not** even</th></tr><tr><td>a square number</td><td>144 ; 196</td><td>121 ; 169</td></tr><tr><td>**not** a square number</td><td>102 ; 104 ... ...198</td><td>103 ; 105 ... ...197</td></tr></table>	**Up to 2m**	Award **ONE** mark for three correct answers
9 6F4	$1\frac{2}{8} + \frac{3}{4} = 2$	**1m**	Accept $1\frac{3}{4} + \frac{2}{8}$
10a 5M7a	112m	**1m**	

10b 5M7b	Award **TWO** marks for the correct answer of 370m². If the answer is incorrect, award **ONE** mark for evidence of appropriate complete method with no more than one arithmetic error e.g. 16 x 10 = 160m² 30 x 7 = 210m² 160 + 210 = 380m² (error) Or 40 x 16 = 640 640 – (30 x 9) = error	**Up to 2m**	If answer is incorrect, award **ONE** mark for evidence of an appropriate method which contains no more than **ONE** mathematical error
11 6S3	9	**1m**	
12 6F11 6F2	a) 60%	**1m**	
	b) $\frac{3}{5}$	**1m**	Do NOT accept $\frac{12}{20}$
13 6G4a	Award **TWO** marks for the correct answer of 104°. If the answer is incorrect, award **ONE** mark for evidence of appropriate complete method with no more than one arithmetic error e.g. 36 x 2 = 76 180 – 76 = error Or 38 x 2 = 74 (error) 180 – 74 =	**Up to 2m**	
14 5C7a	648 gold coins	**1m**	
15 6S1	a) 15 mm	**1m**	
	b) August	**1m**	
16 6A2	a) 17.5°C	**1m**	
	b) 10°C	**1m**	
17 6A5	<table><tr><th>Always true</th><th>Sometimes true</th><th>Never true</th></tr><tr><td></td><td>✔</td><td></td></tr><tr><td>✔</td><td></td><td></td></tr></table>	**1m**	

18 6M8a	5cm	**1m**	
19 6R1	150 black tiles 250 white tiles	**1m**	
20 6P3	a) (90,48)	**1m**	
	b) Yes (followed by an appropriate explanation) e.g. Because the x-coordinates are multiples of 30 and 120 is a multiple of 30, so it would be on the line. The y-coordinates are multiples of 16, so 48 would also be on the line.	**1m**	