Answers: SATs Made Simple: Multiplication and Division workbook

1 REPEATED ADDITION AND SUBRTRACTION

Page 7: Practice

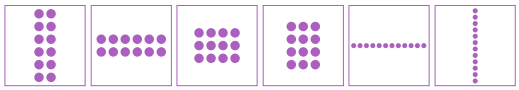
1. **a.** 5 × 2 = 10 **b.** 6 × 5 = 30 **c.** 3 × 11 = 33 **d.** 4 × 9 = 36
2. **a.** 15 ÷ 5 = 3 **b.** 10 ÷ 2 = 5 **c.** 30 ÷ 10 = 3 **d.** 24 ÷ 12 = 2
3. **a.** 4 + 4 + 4 + 4 + 4 + 4 = 20 **b.** 8 + 8 + 8 = 24
   c. 7 + 7 + 7 + 7 = 28 **d.** 19 + 19 = 38
4. **a.** 8 – 4 – 4 = 0 **b.** 20 – 5 – 5 – 5 – 5 = 0
   c. 44 – 11 – 11 – 11 – 11 = 0 **d.** 45 – 9 – 9 – 9 – 9 – 9 = 0
5. **a.** 5 × 8 = 40, 8 × 5 = 40, 40 ÷ 8 = 5, 40 ÷ 5 = 8
   b. 4 × 12 = 48, 12 × 4 = 48, 48 ÷ 12 = 4, 48 ÷ 4 = 12
   c. 3 × 15 = 45, 15 × 3 = 45, 45 ÷ 15 = 3, 45 ÷ 3 = 15

Page 8: Solve problems

1. 20 + 20 + 20 + 20 + 20 + 20 = 120 pens
2. 30 – 5 – 5 – 5 – 5 – 5 – 5 = 0, so there are 6 pieces of popcorn per person
3. 13 paper clips
4. 80 minutes
5. 24 children
6. 256 × 4 = 1024, 1024 ÷ 4 = 256,
   1024 ÷ 256 = 4, 4 × 256 = 1024

2 ARRAYS AND INVERSES

Page 10: Practice

1. 
2. 3 by 2 counters and 2 by 3 counters, or 6 by 1 counters and 1 by 6 counters
3. Six of: 12 × 2, 2 × 12, 6 × 4, 4 × 6, 8 × 3, 3 × 8, 24 × 1 or 1 × 24 cubes
4. **a.** 120 **b.** 12 × 10 = 120, 120 ÷ 10 = 12,
   120 ÷ 12 = 10, 10 × 12 = 120
5. 12 × 7 = 84 matches 84 ÷ 7 = 12
   8 × 9 = 72 matches 72 ÷ 9 = 8
   4 × 12 = 48 matches 48 ÷ 4 = 12
   7 × 8 = 56 matches 56 ÷ 7 = 8

Page 11: Solve problems

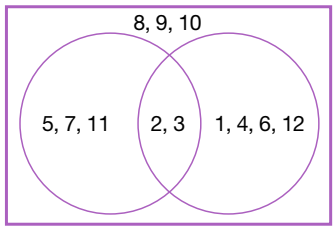
1. 5 boxes
2. Two of: 1 x 1, 2 x 2, 3 x 3 or 4 x 4
3. 126 cabbages
4. 7 × 8 = 56, 24 × 2 = 48, 56 – 48 = 8 pieces
5. 480 eggs
6. 48 × 5 = 240 is the correct answer

3 FACTORS AND MULTIPLES

Page 13: Practice

1. **a.** 1 and 6, 2 and 3 **b.** 1 and 10, 2 and 5 **c.** 1 and 13
   d. 1 and 24, 2 and 12, 3 and 8, 4 and 6 **e.** 1 and 35, 5 and 7
   f. 1 and 27, 3 and 9
2. **a.** 4 **b.** 3 **c.** 12 **d.** 25 **e.** 6 **f.** 7
3. **a.** 2 **b.** 2, 3 **c.** 2, 7 **d.** 3, 5 **e.** 2, 11 **f.** 5
4. **a.** 2 **b.** 2, 3, 5, 7, 11, 13, 17, 19
5. **a.** 25 **b.** 4 **c.** 100 **d.** 9 **e.** 49 **f.** 16 **g.** 1 **h.** 36 **i.** 121
6. **a.** 8 **b.** 27 **c.** 1000 **d.** 1 **e.** 0 **f.** 64 **g.** 125 **h.** 216
   i. 1331

Page 14: Solve problems

1. a, c and d should be ticked.
2. 

3. Explanations may vary, but the calculations should all be correct. Ten squared is 10 × 10 = 100 and six squared is 6 × 6 = 36; 100 – 36 = 64; eight squared is 8 × 8 = 64; Josh is correct.
4. To make one larger cube Tina needs 3^3 small cubes, which equals 27. 27 + 27 + 27 = 81 (and 81 + 27 = 108), so Tia can build three large cubes, with 19 small cubes left over.

4 TIMES TABLES FACTS

Page 16: Practice

1. **a.** 24 **b.** 54 **c.** 35 **d.** 96 **e.** 6 **f.** 11 **g.** 3 **h.** 7 × 7
   i. 11 × 7 or 7 x 11
2. **a.** 6 **b.** 8 **c.** 9 **d.** 5 **e.** 2 **f** 5 **g.** 110 **h.** 12 **i.** 99
3. 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144
4. 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97.
5. Check against the times tables grid. The three answers should all be on it. e.g. multiples of 5 could be 35, 50 and 60.
6. **a.** 4, 5 **b.** 8, 12 **c.** 4, 12 **d.** 5 **e.** 7, 10
7. **a.** 15, 30 **b.** 14 **c.** 45

Page 17: Solve problems

1. 7 × 5 = 35, 5 × 7 = 35, 35 ÷ 5 = 7, 35 ÷ 7 = 5
2. Because 11 is the highest prime in the 1-times table. No other times tables can contain prime numbers because they all have factors other than 1 and themselves.
3. **a.** 24 **b.** 1, 2, 3, 4, 6, 8, 12, 24
4. 9 TVs
5. 12 × 3 = 36, 6 × 5 = 30, 9 × 10 = 90, 36 + 30 + 90 = £156

5 MULTIPLYING AND DIVIDING BY POWERS OF TEN: WHOLE NUMBERS

Page 19: Practice

1. **a.** 3075 **b.** 48,290 **c.** 100,000 **d.** 615,107
2. **a.** 120 **b.** 240 **c.** 3600 **d.** 4370 **e.** 3100 **f.** 250,000
   g. 12,000 **h.** 40,000 **i.** 720,000
3. **a.** 8 **b.** 12 **c.** 20 **d.** 8 **e.** 90 **f.** 230 **g.** 10 **h.** 6 **i.** 60
4. **a.** 4200 **b.** 200,000 **c.** 4 **d.** 144,000 **e.** 9 **f.** 9
   g. 770,000 **h.** 90 **i.** 132,000

Page 20: Solve problems

1. **a.**

700 × 600	42,000
420 × 100	4200
60 × 70	420,000
70 × 6	420

b.

2400 ÷ 30	8
800,000 ÷ 100	80
240,000 ÷ 300	800
24,000 ÷ 3000	8000

2. 48,000 miles
3. 200 chocolate counters
4. 5,000,000 springs
5. 30 players

6 MENTAL METHODS

Page 22: Practice

1. **a.** 24 **b.** 40 **c.** 70 **d.** 210 **e.** 742 **f.** 583 **g.** 144 **h.** 700 **i.** 726
2. **a.** 12 **b.** 50 **c.** 110 **d.** 80 **e.** 100 **f.** 93 **g.** 310 **h.** 16 **i.** 20
3. **a.** 74 **b.** 208 **c.** 22 **d.** 451 **e.** 110 **f.** 275 **g.** 340 **h.** 31 **i.** 783 **j.** 2012 **k.** 310 **l.** 7095
4. Estimates may vary; these are examples. **a.** E: 2000, A: 2003 **b.** E: 4500, A: 4200 **c.** E: 120, A: 120 **d.** 30,000, A: 31,500 **e.** E: 430,000, A: 429,140

Page 23: Solve problems

1. 450 sheep
2. 31 children
3. £815
4. 3200 metres
5. 11 minutes
6. 4050kg
7. 3280cl
8. 36,000 eggs
9. £6000

7 WRITTEN METHODS: SHORT MULTIPLICATION

Page 25: Practice

1. **a.** 96 **b.** 112 **c.** 432 **d.** 1630
2. **a.** 540 **b.** 1280 **c.** 2721 **d.** 1736
3. Estimates may vary. These are examples: **a.** 550 **b.** 5000 **c.** 2500 **d.** 11,500
4. **a.** 555 **b.** 5092 **c.** 2536 **d.** 11,520

Page 26: Solve problems

1. **a.**

	1	3	4
×			4
	5	3	6

b.

		5	3	2
×				7
	3	7	2	4

c.

		5	4	3
×				5
	2	7	1	5

d.

	2	3	7
×			3
	7	1	1

2. £4380
3. The estimate is £8 too high.
4. Altogether they will spend £9765 on roof tiles.

8 WRITTEN METHODS: SHORT DIVISION

Page 28: Practice

1. **a.** 157 **b.** 145 **c.** 144 **d.** 163
2. **a.** 153 **b.** 268 r1 **c.** 135 r3 **d.** 123
3. Estimates may vary. These are examples. **a.** 1300 **b.** 400 **c.** 500 **d.** 210
4. **a.** 1269 **b.** 442 r3 **c.** 524 **d.** 213 r1

Page 29: Solve problems

1. **a.**

	2	6	7
2	5	1 3	1 4

b.

	1	8	2	r1
3	5	2 4	7	

c.

		7	9
5	3	3 9	4 5

d.

			5	2	r 1
1	1	5	5 7	2 3	

2. 1 more
3. The answer is 8 people. Because the first number in the amount each person receives is 1, we know the number must be greater than 7. The amount is high so a good move is to do the first division using 8.
4. 55 boxes of tennis balls

9 MULTIPLYING AND DIVIDING BY POWERS OF TEN: DECIMALS

Page 31: Practice

1. **a.** 0.46 **b.** 5.703 **c.** 25.6 **d.** 0.08 **e.** 0.29
2. **a.** 34 **b.** 6 **c.** 0.03 **d.** 24 **e.** 20.3 **f.** 1600 **g.** 20 **h.** 0.04 **i.** 3700
3. **a.** 0.3 **b.** 0.12 **c.** 0.315 **d.** 8.62 **e.** 0.94 **f.** 0.236 **g.** 0.8 **h.** 0.318 **i.** 0.006
4. **a.** 6 **b.** 0.05 **c.** 200 **d.** 0.002 **e.** 0.005 **f.** 0.005

Page 32: Solve problems

1. Thimble 0.009 litres, egg cup 0.025 litres, mug 0.3 litres, bottle 1.75 litres
2. 5.8 kg
3. 4.25 grams
4. Divide the 24 first by 6, which equals 4, then divide 4 by 1000, which gives 0.004.
5. 1.63 × 100 = 163, then 163 × 4 = 652kg (written methods may be needed)

10 SCALING AND RATES, RATIO AND PROPORTION

Page 34: Practice

1. **a.** 4.3cm long, 3cm wide **b.** 12.5cm long, 1.4cm wide **c.** 8cm long, 4.75cm wide **d.** 4m long, 6m wide **e.** 2m long, 3m wide **f.** 7m long, 8m wide
2. **a.** £2 **b.** £10 **c.** £40 **d.** £112 **e.** £170 **f.** £4800
3. **a.** 30 people **b.** 360 people
4. **a.** 6:1 **b.** 1:2 **c.** 1:3
5. 20
6. **a.** 20% **b.** 25% **c.** 70%
7. **a.** 50 **b.** 9 **c.** 56

Page 35: Solve problems

1. 750 cars
2. 250 – 130 = 120, 120 × 60 = 120 × 6 × 10 = 720 × 10 = 7200 litres per hour. Written methods may be needed.
3. 340 bluebells
4. 4cm
5. 10 children
6. 3 chickens

11 ORDER OF OPERATIONS

Page 37: Practice

1. **a.** 15 **b.** 8 **c.** 15 **d.** 7 **e.** 5 **f.** 41 **g.** 2 **h.** 6
2. **a.** 18 **b.** 6 **c.** 4 **d.** 13 **e.** 22 **f.** 119 **g.** 22 **h.** 10
3. **a.** 12 **b.** 40 **c.** 18 **d.** 63 **e.** 0 **f.** 75 **g.** 18 **h.** 0

Page 38: Solve problems

1. $(4 + 16) \div 5 - 4 = 0$
2. $6 + 7 \times 4 - 1$ matches 33
   $(6 + 7) \times 4 - 1$ matches 51
   $6 + 7 \times (4 - 1)$ matches 27
   $(6 + 7) \times (4 - 1)$ matches 39
3. Explanations may vary but should mention or imply the use of BIDMAS. For example, Jim needs to use BIDMAS. There are no brackets, indices or division, so the multiplication must come first: $4 \times 3 = 12$. Jim can then work out $52 - 20 + 12$, working from left to right ($52 - 20 = 32$ and $32 + 12 = 44$). The answer is 44.
4. **a.** 7 **b.** 5 **c.** 4 **d.** 9
5. $11 \times 3 - (2 + 1) \times 3 = 24$

12 WRITTEN METHODS: LONG MULTIPLICATION

Page 40: Practice

1. **a.** 350 **b.** 1288 **c.** 2142
2. **a.** 400 **b.** 1568 **c.** 3465 **d.** 4515
3. Estimates may vary. **a.** 3000 **b.** 7500 **c.** 28,000 **d.** 40,000
4. **a.** 2912 **b.** 7462 **c.** 29,455 **d.** 40,672

Page 41: Solve problems

1. The estimate was 12 too high.
2. £14,130
3. 27,950 cars
4. 44,940 people

13 WRITTEN METHODS: LONG DIVISION

Page 43: Practice

1. **a.** 21 **b.** 23 **c.** 33 r3
2. **a.** 22.1 **b.** 123.2 **c.** 32.4
3. **a.** 44 r4 **b.** 41 r4 **c.** 120 r5

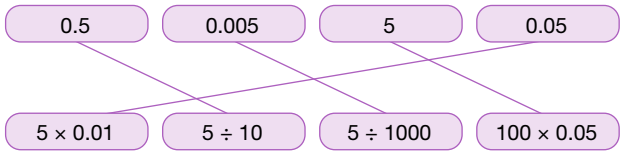
Page 44: Solve problems

1. 9 marbles left over
2. 55 loaves in each batch
3. 18 onions
4. Explanations may vary. Find $32 \times 10 = 320$ and add another 32 to make 352. We cannot add another 32, so $360 - 352 = 8$ pencils left over.

PRACTICE TEST 1 – ARITHMETIC (PAGES 45–46)

1. $4 \times 9 = 36$
2. $\frac{1}{2}$ of $30 = 15$
3. $100 \times 27 = 2700$
4. $5^2 = 25$
5. $72 \div 8 = 9$
6. $50 \times 60 = 3000$
7. 40% of $300 = 120$
8. $312 \times 3 = 936$
9. $4 + 5 \times 4 = 24$
10. $132 \div 6 = 22$
11. $2 \times 5 \times 17 = 170$
12. $1800 \div 9 = 200$
13. $435 \times 5 = 2175$
14. $465 \div 1000 = 0.465$
15. $184 \times 32 = 5888$
16. $11 \times 415 = 4565$
17. $0.7 \times 12 = 8.4$
18. $\frac{3}{5}$ of $100 = 60$
19. $12 \times (32 - 3 \times 7) = 132$
20. $578 \div 25 = 23.12$ or 23 r3

PRACTICE TEST 2 – REASONING (PAGES 47–48)

1. 

2. 500 grams of flour
3. 7500 Explanations may vary. For example, split 500 into 5×100, then multiply 15 by 5, equals 75, then multiply this by 100 = 7500. Or, split 15 into 10 + 5, then $10 \times 500 = 5000$, and 5 is half of 10, so $5 \times 500 = 2500$, adding the two, $2500 + 5000 = 7500$.
4. **a.** 9 **b.** 20
5. 120 girls
6. 12,000 potatoes
7.

		2	5	1
×			3	4
	1	0	0	4
	7	5	3	0
	8	5	3	4

8. 250,000 should be circled.
9. The crates containing cereal should be loaded first. (Note – in SATs tests, marks are given for correctly worked methods. Crates of tinned food: $9 \times 150 = 1350$kg. Crates of cereal: $20 \times 75 = 1500$kg)
10. $\frac{1}{4}$ of £5000 should be circled
11. 15 rows, 5 people standing
12. 1