Mathletics

Series F Teacher

Multiplication and Division

Series F – Multiplication and Division

Contents

Series Authors:

Rachel Flenley
Nicola Herringer

Series F – Multiplication and Division

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1a 18

1	18	2	9	3	6		

b 25

1	25	5					

c 14

1	14	2	7				

d 9

1	9	3					

e 16

1	16	2	8	4			

f 15

1	15	5	3				

g 30

1	30	2	15	3	10	5	6

h 42

1	42	2	21	3	14	6	7

2b 1 or 20 or 2 or 10 or 4 or 5

c 1 or 24 or 2 or 12 or 3 or 8 or 4 or 6

d 1 or 30 or 2 or 15 or 3 or 10 or 5 or 6

e 1 or 5

3 48 – 10 factors

1, 2, 3, 4, 6, 8, 12, 16, 24, 48

4a

4
8
12
16
20
24
28

b

5
10
15
20
25
30
35

c

9
18
27
36
45
54
63

d

7
14
21
28
35
42
49

5 Answers will vary.
Sample answers:

b 2 × 5 = 10 | 10 × 5 = 50 | 50 × 5 = 250

c 4 × 2 = 8 | 8 × 3 = 24 | 24 × 3 = 72

d 5 × 4 = 20 | 20 × 4 = 80 | 80 × 4 = 320

Pages 3–4

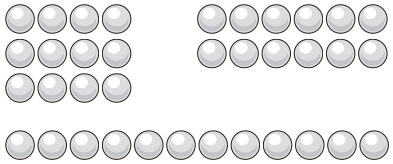
1a 4 × 6 = 24

b 3 × 8 = 24

c 2 × 12 = 24

d 1 × 24 = 24

2



3a–e Teacher check.

f 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

4a 3

b 3, 5

c 2, 3

d 2, 7

Page 5

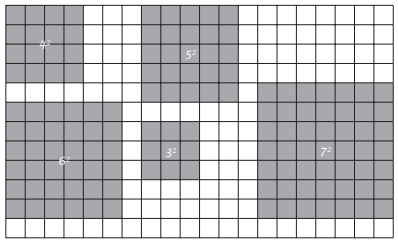
1a 16

b 36

c 25

d 9

e 49



2

×	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

Page 6

1a 1^3 = 1 × 1 × 1 = 1

b 4^3 = 4 × 4 × 4 = 64

c 2^3 = 2 × 2 × 2 = 8

d 5^3 = 5 × 5 × 5 = 125

e 0^3 = 0 × 0 × 0 = 0

2a true

b true

c false

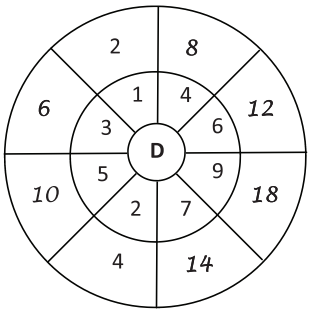
d true

e false

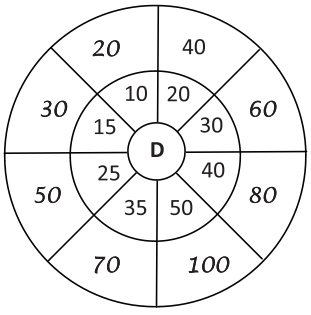
f true

Pages 7–8

1a



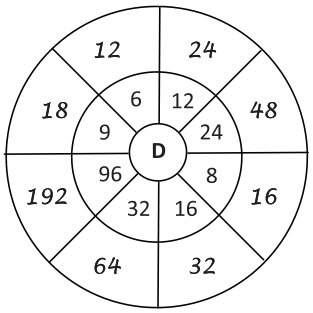
b



Series F – Multiplication and Division

Pages 7–8

c



2a 32; 128

b 6; 12; 24; 48

c 10; 20; 80; 160

d 100; 200; 400; 800

e 14; 56; 112

f 150; 600; 1,200; 2,400

3 Answers will vary.

4 4 × 12 = 48

5b 32; 64

c 48; 96

d 50; 100

e 64; 128

f 42; 84

g 70; 140

6a 48

b 28; 56

c 50; 100; 200

d 42; 168

e 26; 52; 104

f 64; 128

7a 72

b 64

c 104

d 192

e 120

f 176

8 Method 1 = £120 24 × 5 = 120

Method 2 = £248 8+16+32+64+128 = 248

Pages 9–10

1a

T Th	Th	H	T	O	
			1	7	
		1	7	0	× 10
	1	7	0	0	× 100
1	7	0	0	0	× 1,000

b

T Th	Th	H	T	O	
			4	3	
		4	3	0	× 10
	4	3	0	0	× 100
4	3	0	0	0	× 1,000

c

T Th	Th	H	T	O	
			8	5	
		8	5	0	× 10
	8	5	0	0	× 100
8	5	0	0	0	× 1,000

d

T Th	Th	H	T	O	
			9	9	
		9	9	0	× 10
	9	9	0	0	× 100
9	9	0	0	0	× 1,000

2a 140

b 1,400

c 14,000

d 920

e 92,000

f 9,200

g 100

h 10

i 1

3 Answers will vary.

4a 10; 100; 1,000

b 18; 180; 1,800

c £24; £240; £2,400

d 2.4; 24; 240

e £21; £210; £2,100

f 0.16; 1.6; 16

g 27; 270; 2,700

5a 75 km

b £80

c 20, 8

6a 40; 50

b 60; 100; 120

c 90; 120; 180

d 120; 160

e 200; 250; 300

f 300; 500; 600

g 600; 800; 1,000

Pages 11–12

1a 46 × 4

(40 × 4) + (6 × 4)

160 + 24

= 184

b 74 × 5

(70 × 5) + (4 × 5)

350 + 20

= 370

c 48 × 4

(40 × 4) + (8 × 4)

160 + 32

= 192

d 37 × 7

(30 × 7) + (7 × 7)

210 + 49

= 259

e 62 × 8

(60 × 8) + (2 × 8)

480 + 16

= 496

f 91 × 5

(90 × 5) + (1 × 5)

450 + 5

= 455

Series F – Multiplication and Division

Pages 11–12

2a 320 + 64 = 384

b 350 + 14 = 364

c 360 + 27 = 387

d 160 + 72 = 232

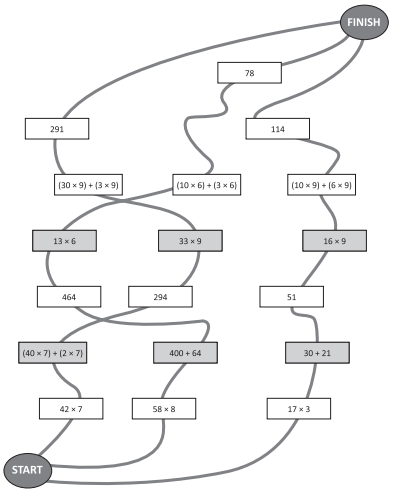
e 560 + 42 = 602

3a (13)

b (70)

c (27)

4 The middle path is correct.



Pages 13–14

1b 8 × 30 – 8 = 232

c 20 × 6 – 12 = 108

d 7 × 40 – 7 = 273

e 30 × 5 – 10 = 140

2b 80 × 4 + 4 = 324

c 20 × 9 + 18 = 198

d 30 × 9 + 18 = 288

e 7 × 60 + 14 = 434

3 Check individual answers.

Pages 15–16

1a 8

b 11; 11

c 9; 9

d 7; 7

e 4; 4

1f 8; 8

g 9; 9

2a 9

b 8

c 7

d 9

e 6

f 7

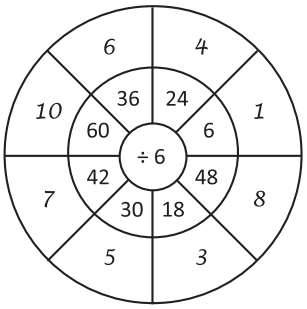
g 9

h 5

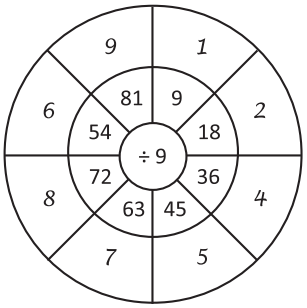
i 13

j 4

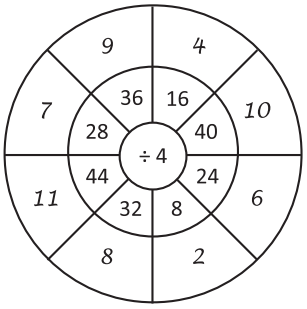
3a



b



c



4a 7 × 8 = 56

8 × 7 = [56]

56 ÷ [7] = 8

[56] ÷ 7 = 8

4b 8 × 9 = 72

9 × 8 = [72]

72 ÷ [8] = 9

[72] ÷ 9 = 8

c 7 × 9 = 63

9 × 7 = [63]

63 ÷ [7] = 9

[63] ÷ 9 = 7

5a 7 × 6 = 42
42 ÷ 6 = 7
42 ÷ 7 = 6

b 9 × 5 = 45
45 ÷ 9 = 5
45 ÷ 5 = 9

c 6 × 9 = 54
54 ÷ 6 = 9
54 ÷ 9 = 6

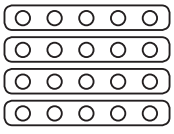
d 8 × 17 = 136
136 ÷ 8 = 17
136 ÷ 17 = 8

e 8 × 12 = 96
96 ÷ 8 = 12
96 ÷ 12 = 8

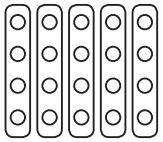
f 21 × 11 = 231
231 ÷ 21 = 11
231 ÷ 11 = 21

6 Answers will vary.
Sample answers:

20 ÷ 5 = 4



20 ÷ 4 = 5



Series F – Multiplication and Division

Page 17

1a

T Th	Th	H	T	O	
4	5	0	0	0	
	4	5	0	0	÷ 10
		4	5	0	÷ 100
			4	5	÷ 1,000

b

T Th	Th	H	T	O	
4	3	0	0	0	
	4	3	0	0	÷ 10
		4	3	0	÷ 100
			4	3	÷ 1,000

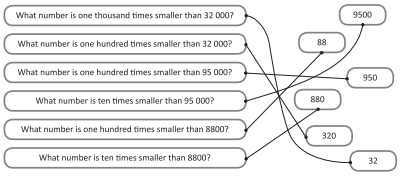
c

T Th	Th	H	T	O	
8	5	0	0	0	
	8	5	0	0	÷ 10
		8	5	0	÷ 100
			8	5	÷ 1,000

d

T Th	Th	H	T	O	
8	8	0	0	0	
	8	8	0	0	÷ 10
		8	8	0	÷ 100
			8	8	÷ 1,000

2



Pages 18–19

1a 28; 18; 42; 48

b 12; 24; 36; 72; 96

c 25; 250; 500; 125; 50

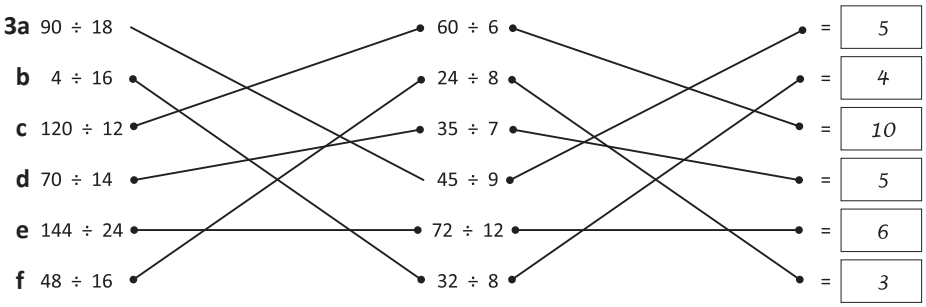
2b 72 ÷ 8 = 9

c 48 ÷ 6 = 8

d 110 ÷ 2 = 55

e 81 ÷ 9 = 9

3a



4a 108 ÷ 18 = 54 ÷ 9 = 6

b 98 ÷ 14 = 49 ÷ 7 = 7

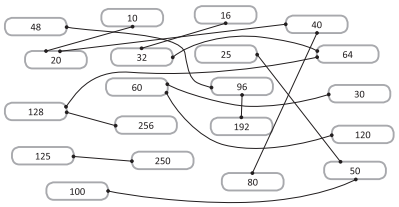
c 112 ÷ 16 = 56 ÷ 8 = 7

d 84 ÷ 12 = 42 ÷ 6 = 7

e 72 ÷ 18 = 36 ÷ 9 = 4

f 144 ÷ 36 = 72 ÷ 18 = 4

5



6 288 ÷ 48
144 ÷ 24
72 ÷ 12
36 ÷ 6 = 6

Pages 20–21

1a 112 ÷ 8

80 32

÷ 8 ÷ 8

10 + 4 = 14

b 85 ÷ 5

50 35

÷ 5 ÷ 5

10 + 7 = 17

1c 78 ÷ 6

60 18

÷ 6 ÷ 6

10 + 3 = 13

d 64 ÷ 4

24 40

÷ 4 ÷ 4

6 + 10 = 16

e 91 ÷ 7

21 70

÷ 7 ÷ 7

3 + 10 = 13

f 144 ÷ 8

80 64

÷ 8 ÷ 8

10 + 8 = 18

2a 90 ÷ 6 → 60 ÷ 6, 30 ÷ 6 = 15

b 105 ÷ 7 → 70 ÷ 7, 35 ÷ 7 = 15

c 72 ÷ 4 → 48 ÷ 4, 24 ÷ 4 = 18

d 144 ÷ 8 → 48 ÷ 8, 96 ÷ 8 = 18

3 Observe students.

Pages 22–23

1 Yes, because 12 is divisible by 4.;
Yes, because 5 is in the ones place.;
Yes, because 160 ÷ 8 = 20;
6 + 3 + 4 + 5 = 18
Yes, because the digits add to 18 and that is divisible by 9. 18 ÷ 9 = 2;
Yes, because there is a zero in the ones place.

Series F – Multiplication and Division

Pages 22–23

2

÷ 4	÷ 9	÷ 5	÷ 3
36	36	50	36
456	90	120	90
888	99	330	72
120	981	1,025	330
548	72	9,050	981
1,256	6,993	90	3,486
10,072			6,993
72		÷ 8	456
84		456	120
		888	99
		120	84
		1,256	888
		10,072	
		72	

Pages 24–25

1a e: 990

	H	T	O
	3	2	7
×			3
	9	8	1
	□	□	

b e: 1,000

	H	T	O
	2	4	7
×			4
	9	8	8
	1	2	

c e: 750

	H	T	O
	1	5	4
×			5
	7	7	0
	2	2	

d e: 900

	H	T	O
	3	1	5
×			3
	9	4	5
	□	1	

e e: 560

	H	T	O
	2	8	6
×			2
	5	7	2
	1	1	

f e: 1,000

	H	T	O
	1	9	4
×			5
	9	7	0
	4	2	

2a

$$\begin{array}{r} 27 \\ \times\ 3 \\ \hline 81 \\ \hline 2 \end{array}$$

£81

b

$$\begin{array}{r} 33 \\ \times\ 4 \\ \hline 132 \\ \hline 1 \end{array}$$

£132

3

Jess	Harry
387 × 2 = 774 ✓	387 × 2 = 774 ✓
119 × 7 = 773 ✗	119 × 7 = 833 ✓
2203 × 3 = 6609 ✓	3203 × 3 = 9609 ✗
436 × 3 = 1208 ✗	436 × 3 = 1308 ✓
401 × 7 = 2807 ✓	1401 × 7 = 7287 ✗
Forgot to carry.	Did not multiply the zero.

Pages 26–27

1a 4 | 84 → 21

b 5 | 55 → 11

c 3 | 93 → 31

d 9 | 990 → 110

e 4 | 484 → 121

f 6 | 666 → 111

g 3 | 999 → 333

h 2 | 462 → 231

i 3 | 693 → 231

2a 5 | 515 → 103

b 3 | 669 → 223

c 9 | 927 → 103

Series F – Multiplication and Division

Pages 26–27

2d 4 | 8 0 4 → 2 0 1

e 4 | 8 1 2 → 2 0 3

3a 6 | 7 3 8 → 1 2 3 (1, 1)

b 5 | 8 6 5 → 1 7 3 (3, 1)

c 3 | 7 0 2 → 2 3 4 (1, 1)

d 4 | 9 4 4 → 2 3 6 (1, 2)

e 8 | 7 4 4 → 9 3 (7, 2)

f 9 | 9 5 4 → 1 0 6 (□, 1)

g 7 | 4 7 8 8 → 6 8 4 (4, 5, 2)

h 4 | 9 4 6 8 → 2 3 6 7 (1, 2, 2)

i 3 | 2 6 0 7 → 8 6 9 (2, 2, 2)

3j 6 | 6 2 1 6 → 1 0 3 6 (□, 2, 3)

k 8 | 9 8 7 2 → 1 2 3 4 (1, 2, 3)

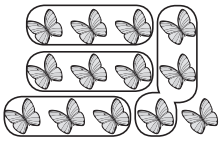
l 5 | 2 9 4 5 → 5 8 9 (2, 4, 4)

4a £234

b 313 mm

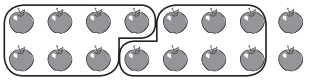
Pages 28–33

1a



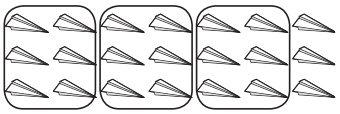
4; 1

b



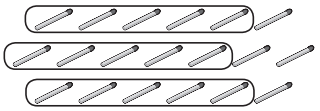
2; 2

c



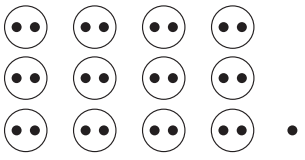
3; 3

d



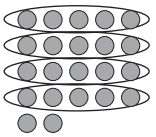
3; 4

2



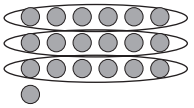
25

3a



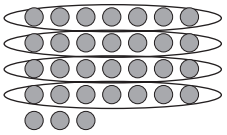
4, 2

b



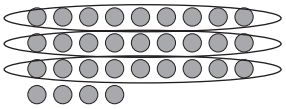
3, 1

c



4, 3

d



3, 4

4a Think 3 × 10 = 30 + 2 is 32

So, 32 ÷ 10 = 3 remainder 2

b Think 4 × 7 = 28 + 2 is 30

So, 30 ÷ 4 = 7 remainder 2

c Think 4 × 9 = 36 + 1 is 37

So, 37 ÷ 9 = 4 remainder 1

5a 39 ÷ 6 = 6 remainder 3

b 43 ÷ 6 = 7 remainder 1

c 17 ÷ 5 = 3 remainder 2

6 50

7a 3, 3;

8 × 3 = 24 + 3

b 4, 2

9 × 4 = 36 + 2

c 7, 3

6 × 7 = 42 + 3

d 9, 3

5 × 9 = 45 + 3

Series F – Multiplication and Division

Pages 28–33

8 5 | 3 3 → 6 r 3

9a 9 | 7 5 → 8 r 3

b 4 | 4 7 → 1 1 r 3

c 6 | 3 8 → 0 6 r 2 (3)

d 5 | 6 3 → 1 2 r 3 (1)

e 4 | 4 9 → 1 2 r 1

f 6 | 6 2 → 1 0 r 2

10a 5 | 5 5 7 → 1 1 1 r 2

b 3 | 6 6 1 → 2 2 0 r 1

c 4 | 4 8 1 → 1 2 0 r 1

d 9 | 9 9 4 → 1 1 0 r 4

e 6 | 6 9 4 5 → 1 1 5 7 r 3 (3) (4)

10f 4 | 8 9 6 3 → 2 2 4 0 r 3 (1) (4)

11a 15; Answers will vary.

b 11 r4;

5 | 5 9 → 1 1 r 4

12a 4 | 1 2 6 → 3 1 r 2

b 7 | 2 1 5 → 3 0 r 5

13a 4 | 1 3 → 3 remainder $\frac{1}{4}$

b 3 | 5 0 → 1 6 remainder $\frac{2}{3}$

14a 4 | 1 2 • 0 0 → 3 • 0 0

b 2 | 2 7 • 0 0 → 1 3 • 5 0

Pages 34–35

1a

$$\begin{array}{r} 1 \bullet 9\ 5 \\ \times\quad\ 3 \\ \hline 5 \bullet 8\ 5 \\ {\scriptstyle 2\ \ 1} \end{array}$$

or

$$3\overline{)\,5\ {}^{2}4\ 3}\ \ 1\ 8\ 1$$

£5.43 for 300 g

b

$$\begin{array}{r} 3 \bullet 9\ 5 \\ \times\quad\ 2 \\ \hline 7 \bullet 9\ 0 \\ {\scriptstyle 1\ \ 1} \end{array}$$

or

$$2\overline{)\,8 \bullet 5\ 0}\ \ 4 \bullet 2\ 5$$

£3.95 for 500 g

c £22.90 ÷ 10 = £2.29

or

£2.75 × 10 = £27.50

10 pack CD

1d

$$\begin{array}{r} 1 \bullet 4\ 0 \\ \times\quad\ 4 \\ \hline 5 \bullet 6\ 0 \\ {\scriptstyle 1\ \ 1} \end{array}$$

or

$$4\overline{)\,2 \bullet 8\ 0}\ \ 0 \bullet 7\ 0$$

2 litres

2

$$3\overline{)\,4 \bullet {}^{1}5\ 0}\ \ 1 \bullet 5\ 0$$

or

$$\begin{array}{r} 1 \bullet 7\ 5 \\ \times\quad\ 3 \\ \hline 5 \bullet 2\ 5 \\ {\scriptstyle 2\ \ 1} \end{array}$$

Best deal is 3 bars for £4.50 – £1.50 each.

Cheaper than £1.75 each.

3a £12

b £8

c 2

d £10

e £4.20

f £3.50

g Answers will vary.

Pages 36–37

1a 81; 243; 729

b 8; 4; 2

c 64; 256; 1,024

2a 1, 5, [25], 125, 625, [3,125]

Rule: *multiply by 5*

b 2,187, 729, 243, [81], 27, [9]

Rule: *divide by 3*

c 4,096, [1,024], 256, 64, [16], 4

Rule: *divide by 4*

d 3, [9], 27, 81, [243], 729

Rule: *multiply by 3*

3a

↓ ×2 \ → ×3			
5	15	45	135
10	30	90	270
20	60	180	540
40	120	360	1,080

Series F – Multiplication and Division

Pages 36–37

3b

× 4 ↓ \ × 10 →			
1	10	100	1,000
4	40	400	4,000
16	160	1,600	16,000
64	640	6,400	64,000

4a 

The rule is × 2 + 2

b 

The rule is × 3 + 1

5a No errors.

b 320 640 1,280

6a ⬡; ◯

b △; □

Pages 38–39

1a × 6, × 6, × 6, × 6, × 6, × 6; 120

b × 4, × 4, × 4, × 4, × 4, × 4; 80

c × 8, × 8, × 8, × 8, × 8, × 8; 160

d + 3, × 4 + 3, × 4 + 3, × 4 + 3, × 4 + 3, × 4 + 3; 83

2a 4; 4, 4, 4, 4, 4; 4

b 2; 2, 2, 2, 2, 2; 2

c 8, 3; 8 + 3, 16 + 3, 24 + 3, 32 + 3, 40 + 3; Multiply by 8 then add 3

3a 4 + 2, 6; 8 + 2, 10; 12 + 2, 14; 16 + 2, 18; 20 + 2, 22; Multiply by 4 then add 2

b 4 × 20 + 2 = 82

Pages 40–41

1a 16, 20, 80; 4

b 24, 30, 120; 6

c 28, 35, 140; 7

2a 13, 16, 61; 3, 1

b 6, 11, 16, 21, 26, 101; 5, 1

c 4, 7, 10, 13, 16, 61; 3, 1

Pages 42–43

1a RULE: ÷ 10

b RULE: × 5

2a OUT: 12; 66; 54

b OUT: 3; 6; 9

3a IN: 77; 110; 55

b OUT: 54; 27; 72

4a RULE: × 4 + 2

b RULE: × 5 + 1

c RULE: × 6 + 2

d RULE: × 9 + 5

5

MATHS x÷ BINGO +−

37	16	45	12	17
42	32	22	18	23
47	68	FREE SPACE	18	29
15	20	37	15	32
14	30	43	16	35

OUT: 14; 16; 18; 20; 22
This one does.

OUT: 27; 32; 37; 42; 47

Page 44

1a £8, £10, £12, £14, £16; Number of shirts × £2; £24

b 12, 16, 20, 24, 28, 32; Number of litres × 4 = Number of cups; 48 cups

c £1.50, £2, £2.50, £3, £3.50, £4; Number of scoops × 50p = Cost of ice cream; 20 scoops

Pages 45–46

1a 4

b 3

2a 6

b 18

2c 30

d 10

e 9

f 11

3a 8 × 7 [>] 12 + 13

b 3 × 8 [<] 12 × 4

4a 4 × 12 [>] 17 + [(0 – 30)]

b 7 × 7 [<] 100 – [(0 – 50)]

c 9 × 9 [>] 120 – [(40 – 120)]

d 8 × 6 [<] 9 × [6 or more]

Pages 47–48

1a 4; 4; 4

b 12; 12; 12

c 15; 15; 15

2a 3

b 6

c 7

3a 9; 4

b 5; 12

4a 9; 7

b 6; 18

5a 4; 96; 92

b 30; 5; 25

c 9; 11; 8

Pages 49–50

1a I will take away [2] from each side. This leaves me with:

3 × ☐ = [9]

☐ = [3]

3 × [3] + 2 = 11

Series F – Multiplication and Division

Pages 49–50

1b I will take away [3] from each side. This leaves me with:

2 × □ = [12]

□ = [6]

2 × [6] + [3] = [15]

c I will take away [4] from each side. This leaves me with:

[2] × □ = [10]

□ = [5]

2 × [5] + [4] = [14]

2a 6; 3

b 7; 7

c 4; 15

d 6; 6

3 Answers will vary.
10 or 4 or 2;
3 or 6 or 7;
2 or 8 or 10

Pages 51–52

1a △ − 70 m = 38 m

△ = 38 m + 70 m

△ = 108 m

b £50 + △ = £130

△ = £130 − £50

△ = £80

c £83 + £100 + △ = £300

△ = £300 − £83 − £100

△ = £117

2a 3 × ▲ + 12 = 84

3 × ▲ = 84 − [12]

▲ = [72] ÷ [3]

▲ = [24]

There were [24] cookies in each batch.

2b [8] × ▲ − 11 = 213

[8] × ▲ = 213 + 11

▲ = [224] ÷ [8]

▲ = [28]

There were [28] students in each class.

c 3 × [10] + ▲ = 73

▲ = 73 − 30

▲ = 43

Trin collected [43] postcards over the last 5 days.

Pages 53–54

1a ♡ ÷ 7 + 6 = 13

♡ ÷ 7 = 13 − 6

♡ ÷ 7 = [7]

♡ = [7] × [7]

♡ = [49]

b ♡ × 6 + 7 = 55

♡ × 6 = 55 − 7

♡ × 6 = [48]

♡ = [48] ÷ [6]

♡ = [8]

c ♡ [×] [4] [−] [12] = [20]

♡ [×] [4] = [20] [+] [12]

♡ [×] [4] = [32]

♡ = [32] [÷] [4]

♡ = [8]

d ♡ ÷ 8 + 11 = 19

♡ ÷ 8 = 19 − 11

♡ ÷ 8 = 8

♡ = 8 × 8

♡ = 64

2 Answers will vary.

2	6	8
4	12	16
44	52	56
22	26	28
2	6	8

You end up with the same number you thought of.

3 Answers will vary.

2	6	7
6	10	11
12	20	22
4	12	14
2	6	7

You end up with the same number you thought of.

Page 55

What to do

Answers will vary.
Sample answers:

3

3 + 2

3 + 3 + 2

3 + 1

3

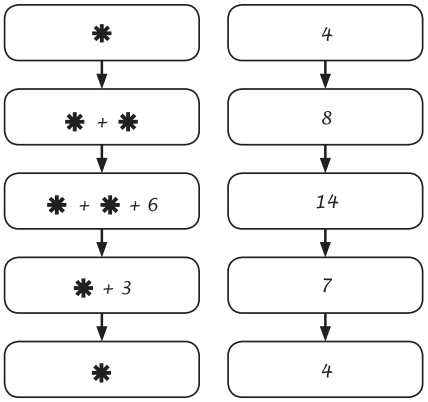
You end up with the same number you thought of.

Series F – Multiplication and Division

Page 55

What to do next

Answers will vary.
Sample answers:

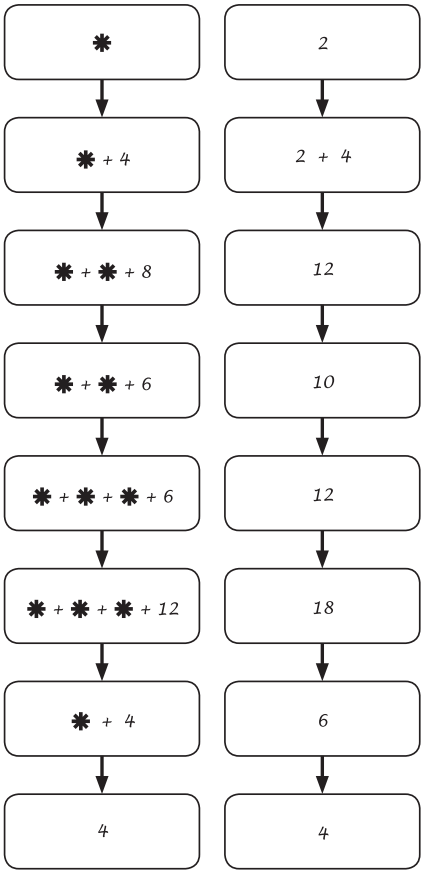


The operations in the last 2 steps reverse the operations in the first 3 steps, which means you always end up with the number you started with.

Page 56

What to do

Answers will vary.
Sample answers:



You would be left with 4.

Page 57

What to do

M	A	T	H	L	E	T	I	C	S
2	1	3	6	4	5	3	8	7	9

I	S	F	U	N
8	9	10	12	11

A × A = A	**A is** 1	F = H + L	**F is** 10
M × M = M + M	**M is** 2	E = F ÷ 2	**E is** 5
T − M = A	**T is** 3	2 × L = I	**I is** 8
T + T = H	**H is** 6	(2 × L) − A = C	**C is** 7
H − M = L	**L is** 4	F + A = N	**N is** 11
3 × L = U	**U is** 12	3 × T = S	**S is** 9

What to do

A	S	T	R	O	N	A	U	T	S	A	R	E
2	9	4	12	13	8	2	7	4	9	2	12	3

T	A	L	L	E	R	I	N	S	P	A	C	E
4	2	6	6	3	12	0	8	9	1	2	5	3

A × A = A + A	**A is** 2	L + E = S	**S is** 9
A + A = T	**T is** 4	N − N = I	**I is** 0
T × 2 = N	**N is** 8	U − A = C	**C is** 5
AT ÷ N = E	**E is** 3	S − N = P	**P is** 1
2 × E = L	**L is** 6	2 × U − P = O	**O is** 13
E + T = U	**U is** 7	S + E = R	**R is** 12

Page 58

What to do

Observe students.

What to do next

Answers will vary.

What to do

3 girl bugs.

4 boy bugs.

What to do next

Answers will vary.

Page 59

What to do

a

	2	8
×		3
	8	4

Series F – Multiplication and Division

Page 59

b

		7	2
×			4
	2	8	8

c

		4	7
×			5
	2	3	5

d

		8	1
×			9
	7	2	9

e

		6	8
×			3
	2	0	4

f

		8	2	3
×				8
	6	5	8	4

g

		2	6	1
×				4
	1	0	4	4

h

			4	2
×			4	3
		1	2	6
	1	6	8	0
	1	8	0	6

i

			5	6
×			2	7
		3	9	2
	1	1	2	0
	1	5	1	2

What to do next

×	10	8	7	6
2	20	16	14	12
5	50	40	35	30
6	60	48	42	36
3	30	24	21	18

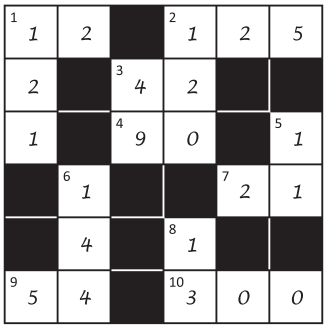
×	2	8	9	4
12	24	96	108	48
3	6	24	27	12
7	14	56	63	28
6	12	48	54	24

×	5	2	3	8
4	20	8	12	32
7	35	14	21	56
9	45	18	27	72
12	60	24	36	96

×	3	4	9	8
2	6	8	18	16
11	33	44	99	88
7	21	28	63	56
8	24	32	72	64

Page 60

What to do



What to do next

÷ 8	
56	7
16	2
64	8
80	10
32	4
72	9
24	3
8	1

÷ 3	
9	3
6	2
18	6
12	4
24	8
30	10
27	9
33	11

÷ 7	
21	3
7	1
14	2
70	10
49	7
28	4
42	6
35	5

What to do next

1 lolly snake = 30p
1 sherbet = 25p

Multiplication facts

Name _____

1 **Using a lead pencil complete the grid facts. Once the grid has been checked, colour all your correct facts. How many do you know? How many do you still need to learn?**

×	4	2	3	7	6	12	5	10	11	1	9	8
2												
4												
8												

2 **Try these sets:**

×	4	2	3	7	6	12	5	10	11	1	9	8
7												
5												
10												

Skills	Not yet	Kind of	Got it
• 2 ×			
• 4 ×			
• 8 ×			
• 7 ×			
• 5 ×			
• 10 ×			

Multiplication facts

Name _____

3 **Using a lead pencil complete the grid facts. Once the grid has been checked, colour all your correct facts. How many do you know? How many do you still need to learn?**

×	4	2	3	7	6	12	5	10	11	1	9	8
3												
6												
9												

4 **Try these sets:**

×	4	2	3	7	6	12	5	10	11	1	9	8
11												
12												
0												
1												

Skills	Not yet	Kind of	Got it
• 3 ×			
• 6 ×			
• 9 ×			
• 11 ×			
• 12 ×			
• 0 ×			
• 1 ×			

Multiplication facts

Name _____

5 **List the factors of these numbers:**

a 18 | | | | | | | | |

b 24 | | | | | | | | |

c 15 | | | | | | | | |

d 9 | | | | | | | | |

e 8 | | | | | | | | |

f 16 | | | | | | | | |

g 42 | | | | | | | | |

h 30 | | | | | | | | |

6 **Fill in the gaps on these multiple boards:**

a

4
8
16

b

6
12

c

7
14
35

d

9
18
63

7 **List the prime factors of these numbers:**

a 6 _____

b 12 _____

c 21 _____

d 22 _____

Skills	Not yet	Kind of	Got it
• Identifies multiples			
• Identifies factors, including prime factors			

Multiplication facts

Name _____

8 **What is a prime number?**

_____

9 **If a whole number is not 1 and not a prime, what is it know as?**

_____

10 **List all the prime numbers below 20:**

_____

11 **Write out these square numbers in full and find their totals:**

a 3^2 = ☐ × ☐ = ☐

b 2^2 = ☐ × ☐ = ☐

c 5^2 = ☐ × ☐ = ☐

d 6^2 = ☐ × ☐ = ☐

e 1^2 = ☐ × ☐ = ☐

f 8^2 = ☐ × ☐ = ☐

g 4^2 = ☐ × ☐ = ☐

h 9^2 = ☐ × ☐ = ☐

12 **Write out these square numbers in full and find their totals:**

a 2^3 = ☐ × ☐ × ☐ = ☐

b 4^3 = ☐ × ☐ × ☐ = ☐

c 5^3 = ☐ × ☐ × ☐ = ☐

d 3^3 = ☐ × ☐ × ☐ = ☐

Skills	Not yet	Kind of	Got it
• Understands prime and composite numbers and identifies primes up to 19			
• Recognises and uses square and cube numbers			

Mental multiplication strategies

Name _____

1 **Show how you would solve 18 × 4 using:**

a

the doubling strategy

b

the split strategy

c

the compensation strategy

2 **Use a strategy of your choice to solve the following problems. Show how you arrived at your answer.**

a 28 × 4

b In 2000, a new world record was set when 18 people crammed into a mini. How many people would fit into 9 minis?

3 **You can choose from the payment methods below for your new after school job as chief taster at an ice cream shop. You work Monday to Friday, 4 pm to 6 pm. Which method would earn you the most money in 4 weeks and why?**

a Daily payments of £9.

b Weekly payments of £42.

c Fortnightly payments of £75.

Mental multiplication strategies Name _____

4 **Multiply these numbers:**

a 10 × 43 = ☐ **b** 10 × £92 = ☐

c 100 × 43 = ☐ **d** 100 × £92 = ☐

e 1,000 × 43 = ☐ **f** 1,000 × £92 = ☐

5 **Use patterns to help solve these:**

a 5 × 2 _____ 5 × 20 _____ 5 × 200 _____

b 2 × 9 _____ 2 × 90 _____ 2 × 900 _____

c 6 × £4 _____ 6 × £40 _____ 6 × £400 _____

6 **What number is:**

a 100 times larger than 42? ☐ **b** 1,000 times larger than 135? ☐

c 30 times larger than 8? ☐ **d** 200 times larger than 7? ☐

e 100 times larger than 8.7? ☐ **f** 1,000 times larger than 3.56? ☐

g 20 times larger than 0.3? ☐ **h** 2,000 times larger than 0.44? ☐

Skills	Not yet	Kind of	Got it
• Recognises and uses a range of mental multiplication strategies doubling ☐ split ☐ compensation ☐			
• Solves mental multiplication problems using strategy of choice			
• Applies strategies to real life word problems			
• Multiplies by numbers ending in zeros			

Mental division strategies

Name _____

1 **Solve these division problems:**

a 40 ÷ 5 = ☐ **b** 36 ÷ 6 = ☐ **c** 21 ÷ 3 = ☐

d 54 ÷ 6 = ☐ **e** 49 ÷ 7 = ☐ **f** 48 ÷ 8 = ☐

g 500 ÷ 10 = ☐ **h** 6,000 ÷ 100 = ☐ **i** 55,000 ÷ 1,000 = ☐

2 **Show how you would use the halving strategy to solve 96 ÷ 24:**

Finish this split strategy problem to solve 98 ÷ 7:

3 **Use a strategy of your choice to solve these division problems. Show how you arrived at your answer.**

a The 4 Herringer kids want to buy a Karaoke machine costing £192 for their mother's birthday. Show how they could mentally work out each kid's share of the cost.

b 85 swimmers are divided into 5 equal teams. How many swimmers in each team?

Skills	Not yet	Kind of	Got it
• Uses knowledge of multiplication facts to solve division problems			
• Solves division problems using strategy of choice			
• Divides by tens, hundreds and thousands			
• Recognises and uses a range of mental division strategies halving ☐ split ☐ other ☐			
• Applies strategies to real life problems			

Written methods

Name _____

1 **Solve these written multiplication problems using a strategy of your choice:**

a 42 × 6 = □□

b 422 × 4 = □□□

c 501 × 5 = □□□

d 883 × 7 = □□□

e 2363 × 4 = □□□

f 3883 × 7 = □□□□

2 **Solve these written division problems:**

a 4 | 84

b 5 | 505

c 3 | 927

d 6 | 65

e 4 | 485

f 5 | 645

g 6 | 6216

h 3 | 7522

i 8 | 9257

3 **You buy 7 train tickets at £65 each. How much have you spent?**

Five DVDs cost £27. What is the cost of 1 DVD?

Skills	Not yet	Kind of	Got it
• Solves 2-, 3- and 4-digit × 1-digit multiplication problems			
• Solves written division problems with: no trading or remainders ☐ with remainders ☐ with trading and remainders ☐			
• Chooses and uses correct process for solving real life problems			

Patterns and algebra

Name _____

1 **Complete the number patterns and write the rule in words.**

a ☐ 4 8 ☐ 32 ☐

Rule _____

b 1,024 ☐ ☐ 16 4 ☐

Rule _____

c 243 81 ☐ 9 3 ☐

Rule _____

d 1 5 25 ☐ ☐ ☐

Rule _____

2 **Find the function rule:**

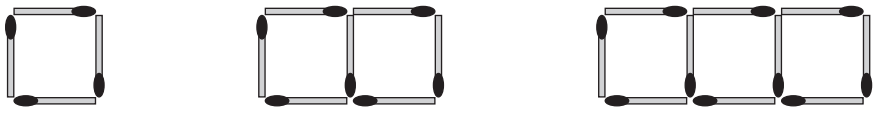
Position of number	1	2	3	4	5
Function rule					
Number pattern	6	12	18	24	30

What is the number in position 20? How do you know?

_____

3 **Complete the table for each sequence of matchstick shapes. Use the function rule for finding the number of matchsticks needed for the shape in the 20th position.**

Shape 1 Shape 2 Shape 3

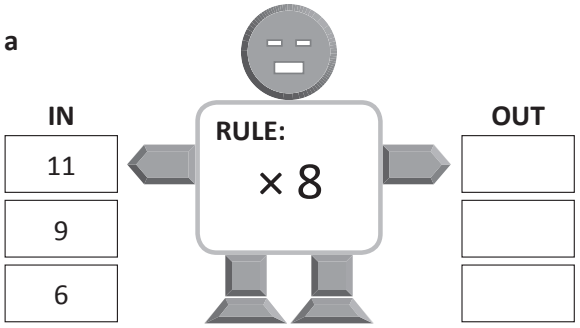


Shape number	1	2	3	4	5	20
Number of matchsticks	4	7	10			
Function rule	Number of matchsticks = Shape number × _____ + _____					

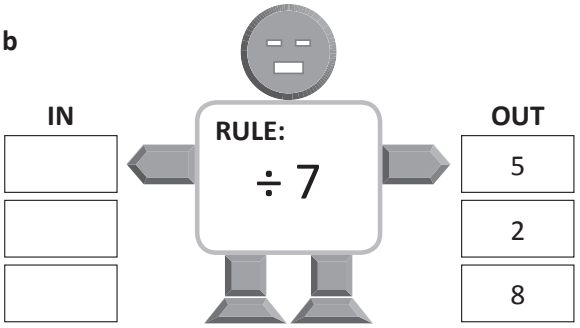
Skills	Not yet	Kind of	Got it
• Completes recursive number pattern and writes the rule			
• Completes function number pattern and works out 20th term			
• Completes function number pattern with more than one operation in the context of matchstick shapes			

4 **Look carefully at these function machines. Complete the missing boxes.**

a

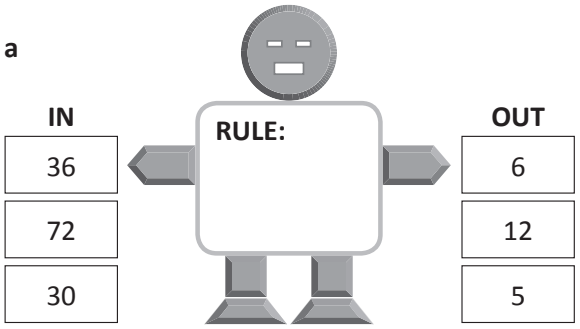


b

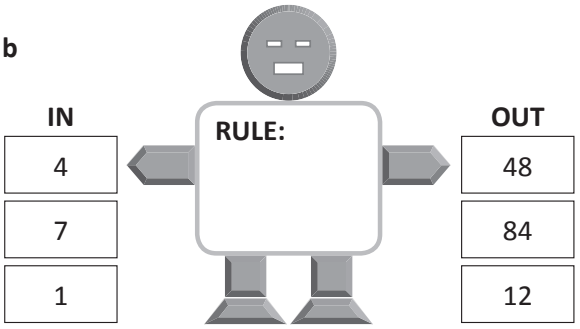


5 **Look carefully at these function machines. Identify the rule.**

a



b



6 **Complete this function table, write the rule and answer the question.**

Jaz is baking cookies. For every batch, which makes 10 cookies, he needs 2 packets of chocolate chips.

Cookies	10	20	30	40	50	60
Packets of chocolate chips	2	4				

Write the rule for finding out how many packets of chocolate chips are needed when you know how many cookies you want.

Bonus question:

How many batches of cookies did Jaz bake if he went through 16 packets of chocolate chips? _____

Skills	**Not yet**	**Kind of**	**Got it**
• Works with input and output relationships and rules			
• Can write a rule to describe input and output relationships			

Name _____

7 **Complete the equations on these balanced scales.**

a 

b 

8 **Find the value of the symbols.**

a ☆ × ☆ = 25

○ + ☆ = 20

○ – ☆ = △

☆ = ☐

○ = ☐

△ = ☐

b △ + △ = 20

△ ÷ ○ = 5

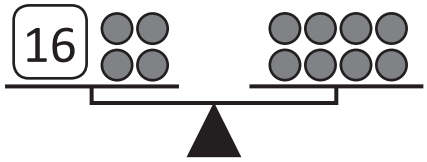
○ + △ = ☆

☆ = ☐

○ = ☐

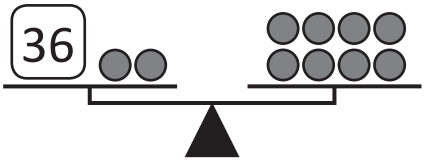
△ = ☐

9 **Find the value of the symbols.**

a 

16 = ● × ☐

● = ☐

b 

36 = ● × ☐

● = ☐

Skills	Not yet	Kind of	Got it
• Recognises that the equals sign means equivalence between number sets			
• Finds the value of an unknown represented by a symbol by recognising that indentical symbols stand for the same number			
• Finds the value of an unknown represented by a symbol by using the balance strategy			

10 **Read the story problems, choose the equation that matches and then solve it.**

$2 \times \triangle + 6 = 30$ $£25 + £100 + \triangle = £300$

a For my school fete, I baked 2 batches of cookies and then bought 6 more. How many were in one batch if I had 30 cookies altogether?

b Max saved £25 towards a trip to the snow and her parents gave her £100. How much more money does she need if the trip costs £300?

11 **Find out which numbers they are thinking of by matching and then solving the equation.**

$(\triangle + 3) \times 4 = 20$ $(\triangle \times 6) + 7 = 55$

Pablo says: *"I'm thinking of a number. I multiply it by 6 and then add 7. My answer is 55."*

Chris says: *"I'm thinking of a number. I add 3 and then multiply by 4. My answer is 20."*

Skills	Not yet	Kind of	Got it
• Matched an equation with an unknown to a story problem			
• Finds the value of an unknown using the balance strategy			

Series F – Multiplication and Division – Student Progress Record

Name_____ Class _____ Date _____

What went well: _____

_____

_____

_____

What I need to improve: _____

_____

_____

_____

Series F – Multiplication and Division – Student Progress Record

Name_____ Class _____ Date _____

What went well: _____

_____

_____

_____

What I need to improve: _____

_____

_____

_____

Series F – Multiplication and Division

ASSESSMENT ANSWERS

Pages 12–15

1

×	4	2	3	7	6	12	5	10	11	1	9	8
2	8	4	6	14	12	24	10	20	22	2	18	16
4	16	8	12	28	24	48	20	40	44	4	36	32
8	32	16	24	56	48	96	40	80	88	8	72	64

2

×	4	2	3	7	6	12	5	10	11	1	9	8
7	28	14	21	49	42	84	35	70	77	7	63	56
5	20	10	15	35	30	60	25	50	55	5	45	40
10	40	20	30	70	60	120	50	100	110	10	90	80

3

×	4	2	3	7	6	12	5	10	11	1	9	8
3	12	6	9	21	18	36	15	30	33	3	27	24
6	24	12	18	42	36	72	30	60	66	6	54	48
9	36	18	27	63	54	108	45	90	99	9	81	72

4

×	4	2	3	7	6	12	5	10	11	1	9	8
11	44	22	33	77	66	132	55	110	121	11	99	88
12	48	24	36	84	72	144	60	120	132	12	108	96
0	0	0	0	0	0	0	0	0	0	0	0	0
1	4	2	3	7	6	12	5	10	11	1	9	8

5a 18

1	18	2	9	3	6		

b 24

1	24	2	12				

c 15

1	15	5	3				

d 9

1	9	3					

e 8

1	8	2	4				

f 16

1	16	2	8	4			

g 42

1	42	2	21	3	14	6	7

h 30

1	42	2	21	3	14	6	7

6a

4
8
12
16
20
24
28

b

6
12
18
24
30
36
42

c

7
14
21
28
35
42
49

d

9
18
27
36
45
54
63

7a 2, 3

b 2, 3

c 3, 7

d 2, 11

Series F – Multiplication and Division

Pages 12–15

8 A whole number with only two factors – itself and 1.

9 A composite number

10 2, 3, 5, 7, 11, 13, 17, 19

11a $3^2 = \boxed{3} \times \boxed{3} = \boxed{9}$

b $2^2 = \boxed{2} \times \boxed{2} = \boxed{4}$

c $5^2 = \boxed{5} \times \boxed{5} = \boxed{25}$

d $6^2 = \boxed{6} \times \boxed{6} = \boxed{36}$

e $1^2 = \boxed{1} \times \boxed{1} = \boxed{1}$

f $8^2 = \boxed{8} \times \boxed{8} = \boxed{64}$

g $4^2 = \boxed{4} \times \boxed{4} = \boxed{16}$

h $9^2 = \boxed{9} \times \boxed{9} = \boxed{81}$

12a $2^3 = \boxed{2} \times \boxed{2} \times \boxed{2} = \boxed{8}$

b $4^3 = \boxed{4} \times \boxed{4} \times \boxed{4} = \boxed{64}$

c $5^3 = \boxed{5} \times \boxed{5} \times \boxed{5} = \boxed{125}$

d $3^3 = \boxed{3} \times \boxed{3} \times \boxed{3} = \boxed{27}$

Pages 16–17

1a 18 × 4
18 × 2 = 36
36 × 2 = 72

b 18 × 4
(10 × 4) + (8 × 4)
40 + 32
= 72

c 18 × 4
= 20 × 4 – 8
= 72

2a 28 × 4 = 112
Working out will vary.

2b 18 × 9 = 162
Working out will vary.

3a 9 × 5 = 45, 45 × 4 = £180

b 42 × 4 = £168

c 75 × 2 = £150
You would earn the most with daily payments of £9 because you multiply it by days and weeks.

4a 430

b £920

c 4,300

d £9,200

e 43,000

f £92,000

5a 10; 100; 1,000

b 18; 180; 1,800

c £24; £240; £2,400

6a 4,200

b 135,000

c 240

d 1,400

e 870

f 3,560

g 6

h 880

Page 18

1a 8

b 6

c 7

d 9

e 7

f 6

g 50

h 60

i 55

2 96 ÷ 24 = 48 ÷ 12
= 4

2 98 ÷ 7 → 35 ÷ 7 = 5
63 ÷ 7 = 9
= 14

3a £192 ÷ 4
192 ÷ 2 = 96
96 ÷ 2 = 48
Working out will vary.

b 85 ÷ 5 = 17
Working out will vary.

Page 19

1a

		4	2
×			6
	2	5	2
	□	1	

b

		4	2	2
×				4
	1	6	8	8
	□	□	□	

c

		5	0	1
×				5
	2	5	0	5
	□	□	□	

d

		8	8	3
×				7
	6	1	8	1
	□	5	2	

e

	2	3	6	3
×				4
	9	4	5	2
	1	2	1	

f

		3	8	8	3
×					7
	2	7	1	8	1
	□	6	5	2	

2a

	2	1
4	8	□4

Series F – Multiplication and Division

Page 19

2b 5 | 5 0 5 → 1 0 1

c 3 | 9 2 7 → 3 0 9

d 6 | 6 5 → 1 0 r 5

e 4 | 4 8 5 → 1 2 1 r 1

f 5 | 6 14 5 → 1 2 9

g 6 | 6 2 1 6 → 1 0 3 6

h 3 | 7 15 2 2 → 2 5 0 7 r 1

i 8 | 9 12 5 7 → 1 1 5 7 r 1

3

£ 6 5
× 7
£ 4 5 5
3

5 | 2 7 • 2 0 0 → £ 5 • 4 0

Pages 20–23

1a 1 4 8 16 32 64

Rule multiply by two

1b 1,024 256 64 16 4 1

Rule divide by four

c 243 81 27 9 3 1

Rule divide by three

d 1 5 25 125 625 3,125

Rule multiply by five

2 Function rule:
× 6; × 6; × 6; × 6; × 6;

120. Because 20 × 6 = 120

3 Number of matchsticks:
13; 16; 61;

3; 1

4a OUT: 88; 72; 48

b IN: 35; 14; 56

5a × 6

b × 12

6 Packets of chocolate chips:
6; 8; 10; 12;

Packets of chocolate chips
= Number of cookies ÷ 5;

8

7a 2

b 40

8a ☆ = 5

● = 15

△ = 10

b ☆ = 12

● = 2

△ = 10

9a 16 = ● × 4

● = 4

b 36 = ● × 6

● = 6

10 Student answers may have more steps.

a 2 × △ + 6 = 30
2 × △ = 24
△ = 12

b £25 + £100 + △ = £300
£125 + △ = £300
△ = £300 − £125
△ = £175

11a (△ × 6) + 7 = 55
△ × 6 = 48
△ = 8

b (△ + 3) × 4 = 20
△ + 3 = 5
△ = 2

Series F – Multiplication and Division

Topic	Reference	Strand	Substrand	Objective
Facts	5C5a	Number	Calculation	Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.
Facts	5C5b	Number	Calculation	Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.
Facts	5C5c	Number	Calculation	Establish whether a number up to 100 is prime and recall prime numbers up to 19.
Facts	5C5d	Number	Calculation	Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3}).
Mental methods	5C6a	Number	Calculation	Multiply and divide numbers mentally drawing upon known facts.
Mental methods	5C6b	Number	Calculation	Multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000.
Written methods	5C7a	Number	Calculation	Multiply numbers up to 4 digits by a 1- or 2-digit number using a formal written method, including long multiplication for 2-digit numbers.
Written methods	5C7b	Number	Calculation	Divide numbers up to 4 digits by a 1-digit number using the formal written method of short division and interpret remainders appropriately for the context.
Patterns and algebra	5C8b	Number	Calculation	Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.
Puzzles and investigations	5C8a	Number	Calculation	Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes.
Puzzles and investigations	5C8c	Number	Calculation	Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.