1 Fill in the table for the number 249 358.

Digit value	2	4	9	3	5	8
Place value	HTh	TTh	Th	H	T	u
Actual value	200 000	40 000	9 000	300	50	8
In sum form	200 000 + 40 000 + 9 000 + 300 + 50 + 8					

2 In your exercise book:

a) write these numbers as digits in a place-value table:

i) nine hundred and forty one thousand, two hundred and seventy six 941 276

ii) five hundred and four thousand, eight hundred and twenty five 504 825

iii) two hundred and ninety thousand and thirty eight 290 038

iv) one hundred and six thousand and twenty seven 106 027

b) write each number in sum form.

3 a) What are these numbers? Write them in decreasing order in your exercise book.

i) $2 \times 100\,000 + 3 \times 10\,000 + 8 \times 1000 + 1 \times 100 + 5 \times 10 + 6 \times 1$ = 238 561

ii) $7 \times 100\,000 + 0 \times 10\,000 + 9 \times 1000 + 4 \times 100 + 0 \times 10 + 0 \times 1$ = 709 400

iii) $7 \times 100\,000 + 8 \times 1000 + 8 \times 100 + 5 \times 1$ = 708 805

iv) $9 \times 10\,000 + 9 \times 100 + 9 \times 1$ = 90909

b) Write the numbers in words.

4 Fill in the table for the amount, £38 406.52.

Digit value	3	8	4	0	6	5	2
Place value	TTh	Th	H	T	u	t	h
Actual value	30 000	8 000	400	0	6	0.5	0.02
In sum form	30 000 + 8 000 + 400 + 6 + 0.5 + 0.02						

5 Write the quantities in the table.

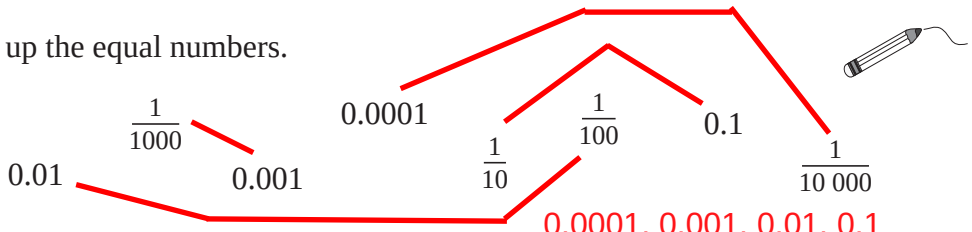
		Th	H	T	U	t	h	th	
a)	1002 m 20 cm	1	0	0	2	2			m
b)	47 litres 83 cl			4	7	8	3		litres
c)	50 kg 430 g			5	0	4	3		kg
d)	£602 75 p		6	0	2	7	5		£
e)	16 km 39 m			1	6	0	3	9	km

1 List these numbers as digits in increasing order.

one thousand, one, one hundred thousand, one hundred, ten thousand, ten, one million, ten million

1,10, 100, 1 000, 10 000, 100 000, 1 000 000, 10 000 000

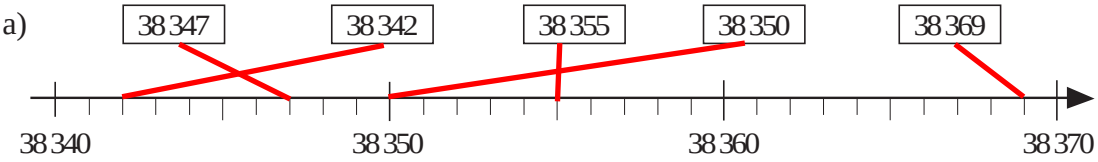
2 a) Join up the equal numbers.



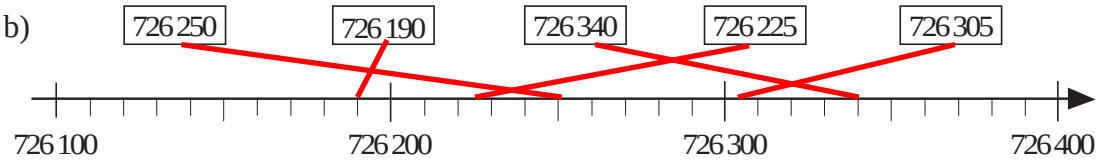
b) List the decimals in increasing order. 0.0001, 0.001, 0.01, 0.1

3 Join up each number to the corresponding point on the number line.

a)



b)



4 a) Follow the pattern and complete the table.

b) Write a ≈ sign beside the correct rounding to the nearest whole hundred.

Next smaller hundred		Number		Next greater hundred
26 400		26 482	≈	26 500
604 700	≈	604 719		604 800
140 300	≈	140 348		140 400
1 215 700		1 215 750	≈	1 215 800
499 400		499 499	≈	499 500
812 500	≈	812 500		812 500

5 Write these numbers as decimals.

a) $3 \times 1000 + 7 \times 10 + 5 \times 1 + 6 \times \frac{1}{10} + 2 \times \frac{1}{100} =$ 3075.62

b) $1 \times 1\,000\,000 + 7 \times 10\,000 + 4 \times 1000 + 8 \times 100 + 1 + 3 \times \frac{1}{100} =$ 1 075 801.03

c) $9 \times 100\,000 + 4 \times 100 + 6 \times 10 + 8 \times \frac{1}{10} + 3 \times \frac{1}{100} =$ 900 460.83

1

Write the number, then 10 times, 100 times and 1000 times its value in the place-value table. Complete the multiplications.

a) 237

HTh	TTh	Th	H	T	U	t	h
			2	3	7		
		2	3	7	0		
	2	3	7	0	0		
2	3	7	0	0	0		

$1 \times 237 = 237$
$10 \times 237 =$ 2370
$100 \times 237 =$ 23700
$1000 \times 237 =$ 237000

b) 65.2

HTh	TTh	Th	H	T	U	t	h
				6	5	2	
			6	5	2		
		6	5	2	0		
	6	5	2	0	0		

$1 \times 65.2 =$ 65.2
$10 \times 65.2 =$ 652
$100 \times 65.2 =$ 6520
$1000 \times 65.2 =$ 65200

c) 8.14

HTh	TTh	Th	H	T	U	t	h
					8	1	4
				8	1	4	
			8	1	4		
		8	1	4	0		

$1 \times 8.14 =$ 8.14
$10 \times 8.14 =$ 81.4
$100 \times 8.14 =$ 814
$1000 \times 8.14 =$ 8140

2

Write the number, then 1 tenth, 1 hundredth and 1 thousandth of its value in the place-value table. Complete the divisions.

a)

HTh	TTh	Th	H	T	U	t	h	th
1	4	3	0	0	0			
	1	4	3	0	0			
		1	4	3	0			
			1	4	3			

$143\,000 \div 1 =$ 143 000
$143\,000 \div 10 =$ 14 300
$143\,000 \div 100 =$ 1 430
$143\,000 \div 1000 =$ 143

b)

HTh	TTh	Th	H	T	U	t	h	th
		4	5	1	0			
			4	5	1			
				4	5	1		
					4	5	1	

$4510 \div 1 =$ 4510
$4510 \div 10 =$ 451
$4510 \div 100 =$ 45.1
$4510 \div 1000 =$ 4.51

c)

HTh	TTh	Th	H	T	U	t	h	th
			7	2	6			
				7	2	6		
					7	2	6	
					0	7	2	6

$726 \div 1 =$ 726
$726 \div 10 =$ 72.6
$726 \div 100 =$ 7.26
$726 \div 1000 =$ 0.726

1

Work out the calculation strategy and fill in the missing numbers.

a) 60 419 + 897 = 60 416 + 900 = 61 316

b) 5643 + 489 = 5643 + 500 – 11 = 6132

c) 12 345 – 678 = 12 367 – 700 = 11 667

d) 9636 – 3482 = 9636 – 3000 – 500 + 18 = 6 154

e) 41.3 – 12.4 = 41.3 – 12 – 0.4 = 28.9

2

Work out the calculation strategy and fill in the missing numbers.

a) 628 × 20 = 6280 × 2 = 12 560

b) 135 × 18 = 135 × 2 × 3 × 3 = 2 430

c) 135 × 18 = 135 × 20 – 270 = 2 430

d) 43 × 51 = 43 × 50 + 43 = 2 193

e) 305 × 14 = 305 × 10 + 305 × 4 = 4 70

f) 15.2 × 25 = 15.2 × 100 ÷ 2 ÷ 2 = 380

g) 252 ÷ 6 = 252 ÷ 2 ÷ 3 = 42

3

Do these calculations in a clever way in your exercise book (or mentally if you can).

a) 2 087 – 1022 = 1 065

b) 249 + 63 + 151 + 27 = 490

c) 13 × 4 × 25 = 1 300

d) 1063 × 29 × 0 = 0

e) 8.2 × 13 = 106.6

f) 3740 ÷ 170 = 22

g) 998 × 35 = 34.930

h) 28 500 ÷ 25 ÷ 4 = 285

4

Write a plan, convert the quantities where necessary, do the calculation and write the answer as a sentence in your exercise book.

a) The sides of a triangle are 2.3 cm, 31 mm and 0.018 m long.
What is the perimeter of the triangle? 72mm / 7.2cm / 0.072m

b) How many hours are in September? 720

c) A car travels 20 m every second. How far does it travel in: i) 1 200m
i) 1 minute ii) 2 hours? ii) 144 000m

d) If 750 g of meat costs £9 60 p, how much does 1 kg of meat cost? £12.80

1

a) Write these numbers as digits in increasing order in your exercise book.

Seventeen thousand and eighty three point two six 17 083.26

One million, three hundred thousand, four hundred and fifty point four six 1 300 450.46

One hundred and eleven thousand, two hundred and fifteen point zero nine 111 215.09

Four hundred and sixty two thousand five hundred and ninety point five 462 590.5

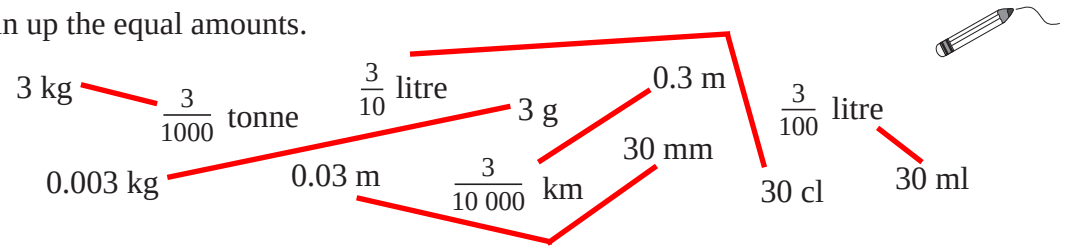
b) Round each number to the nearest:

i) thousand ii) hundred iii) ten iv) unit v) tenth

c) Write each number in sum form.

2

Join up the equal amounts.



3

In your exercise book, round these quantities (in the given unit where two are listed):

a) to the nearest 10 units:	b) to the nearest unit:	c) to the nearest 10th:
£503 455 £503 460	£611 32 p (£) £611	£1011 54 p (£) £1 011.50
7459.8 m 7 460m	88 cm 6.9 mm (m) 89 cm	1766.21 cm 1 766.2cm
300 005 g 300 010g	4 205.29 kg 4205kg	4 205.29 kg 4 205.3kg
15 litres 46 cl (litres) 20 l	1453.51 litres 1454 litres	1994.06 ml 1 994.1ml
83 104.55 km 83 100km	83 104 km 52 m (km) 83 104km	7 477.47 km 7 477.5km

4

Practise calculation in your exercise book.

a) i) 51 328 + 786 52 114 ii) 41.84 + 62.79 + 103.06 207.69 iii) 35 879 + 64121 100 000

b) i) 8574 – 1569 7 005 ii) 9000 – 2456 6 544 iii) 137.82 – 48.93 88.89

c) i) 413 × 600 247 800 ii) 75 × 16 ÷ 4 300 iii) 5376 × 11 – 1 59 135

d) i) 4254 ÷ 24 177.25 ii) (7023 + 542) ÷ 5 1 513 iii) 1269 ÷ 18 × 2 141

e) i) (121 ÷ 11) ÷ 100 0.11 ii) 8151 ÷ 4 2 037.75 iii) (6000 – 4368) ÷ 8 204

5

Solve these problems in your exercise book.

a) The perimeter of a regular octagon is 5.44 cm. What is the length of each side? 0.68cm / 6.8mm

b) How many seconds are in 1 week? 604 800

c) Paula took 2 hours 36 minutes to run 13 miles in a half marathan.
How long did it take her to run each mile on average? 12 minutes

d) One million jasmine flowers are needed to produce 1 kg of jasmine oil which is used in making perfume. How many jasmine flowers are needed for 1 g of oil? 1000

1

Write each addition in a shorter way, then calculate the result.

a) 700 + 700 + 700 = 3 x 700 = 2100

b) 45 + 45 + 45 + 45 + 45 + 45 = 6 x 45 = 270

c) 7100 + 7100 + 7100 + 7100 + 7100 = 5 x 7 100 = 35 500

d) 600 + 600 + 600 + 600 + 600 + 600 + 600 = 7 x 600 = 4 200

e) 10.5 + 10.5 + 10.5 = 3 x 10.5 = 31.5

f) 0.3 + 0.3 + 0.3 + 0.3 + 0.3 + 0.3 + 0.3 + 0.3 + 0.3 = 9 x 0.3 = 2.7

2

Fill in the missing factors.

a) 7 × 8 = 56, 7 × 800 = 5600, 0.8 × 7 = 5.6, 70 × 80 = 5600

b) 150 × 5 = 750, 5 × 15 = 75, 50 × 15 = 750, 50 × 1.5 = 75

c) 60 × 7 = 420, 70 × 60 = 4200, 600 × 7 = 4200, 60 × 0.7 = 42

d) 125 × 4 = 500, 125 × 40 = 5000, 1250 × 40 = 50 000, 40 × 12.5 = 500

e) 4 × 25 = 100, 4 × 250 = 1000, 25 × 40 = 1000, 2.5 × 40 = 100

f) 8 × 15 = 120, 8 × 150 = 1200, 15 × 80 = 1200, 0.8 × 150 = 120

3

Calculate the quotient and the remainder mentally.

a) i) 64 025 ÷ 2 = 32 012 r 1 ii) 64 025 ÷ 30 000 = 2 r 4 025

b) i) 1 020 000 ÷ 20 000 = 51 ii) 1 020 000 ÷ 4 = 255 000

c) i) 56 000 ÷ 700 = 80 ii) 56 000 ÷ 800 = 70

d) i) 710 608 ÷ 100 = 7 106 r 8 ii) 710 608 ÷ 1 = 710 608

e) i) 3240 ÷ 324 = 10 ii) 3240 ÷ 0 = undefined

4

Write a plan and do the calculation in your exercise book. Write only the result here.

a) Kate measured her heart beat as 72 beats in 1 minute.
How many times did her heart beat in 9 minutes? 648 times

b) A farmer gathered the apples from his orchard and packed them in boxes.
In a full box, there were 6 rows of 10 apples.
How many apples could he pack in 50 such boxes? 3 000 apples

c) 49 000 bricks were used for a building. This was 70 times as many bricks as were used to build a kennel for the guard dog.
How many bricks were used to build the kennel? 700 bricks

1

Calculate the sums, differences, products and quotients.

a) 260 + 30 = 290 | 2600 + 300 = 2 900 | 26 000 + 3000 = 29 000

5260 + 30 = 5 290 | 52600 + 300 = 52 900 | 526 000 + 3000 = 529 000

5260 + 430 = 5 690 | 52600 + 4300 = 56 900 | 526 000 + 43 000 = 569 000

b) 320 – 170 = 150 | 3200 – 1700 = 1 500 | 32 000 – 17 000 = 15 000

625 – 170 = 455 | 6250 – 1700 = 4 550 | 62 500 – 17 000 = 45 500

57 – 37 = 20 | 585 – 385 = 200 | 5899 – 3899 = 2 000

c) 300 × 8 = 2 400 | 300 × 80 = 24 000 | 300 × 8000 = 2 400 000

26 × 4 = 104 | 2600 × 4 = 10 400 | 260 × 4000 = 1 040 000

43 × 7 = 301 | 430 × 70 = 30 100 | 4300 × 700 = 3 010 000

d) 60 ÷ 12 = 5 | 600 ÷ 12 = 50 | 60 000 ÷ 12 = 5 000

420 ÷ 7 = 60 | 4200 ÷ 70 = 60 | 420 000 ÷ 7000 = 60

78 ÷ 20 = 3.9 / 3 r 18 | 7800 ÷ 200 = 39 | 78 000 ÷ 20 000 = 3.9 / 3 r 18 000

2

Colour the box if the statement is true. If it is **not** true, change the '=' sign to '≠'.

a) 368 + 152 = 152 + 368 ■ | 7230 – 430 ≠ 430 – 7230 □

b) 1230 × 21 = 21 × 1230 ■ | 460 ÷ 23 ≠ 23 ÷ 460 □

c) 290 – 0 ≠ 0 – 290 □ | 1 × 617 = 617 × 1 ■

0 × 8 = 8 × 0 ■ | 0 ÷ 63 ≠ 63 ÷ 0 □

d) (82 + 38) + 15 = 82 + (38 + 15) ■ | (670 + 130) – 100 = 670 + (130 – 100) ■

(400 – 250) + 50 ≠ 400 – (250 + 50) □ | (360 – 160) – 30 ≠ 360 – (160 – 30) □

400 – (250 + 50) = 400 – 250 – 50 ■ | 360 – (160 – 30) = 360 – 160 + 30 ■

e) (18 × 2) × 4 = 18 × (2 × 4) ■ | (18 × 4) ÷ 2 = 18 × (4 ÷ 2) ■

(60 ÷ 3) × 5 ≠ 60 ÷ (3 × 5) □ | (80 ÷ 4) ÷ 2 ≠ 80 ÷ (4 ÷ 2) □

60 ÷ (3 × 5) = 60 ÷ 3 ÷ 5 ■ | 80 ÷ (4 ÷ 2) = 80 ÷ 4 × 2 ■

f) 7 × (15 + 25) = 7 × 15 + 7 × 25 ■ | 7 + (15 × 25) ≠ (7 + 15) × (7 + 25) □

3

Solve the problems in your exercise book. Write only the results here.

a) A tradesman bought 8 machines of the same type for £4400 in total.
Later, he sold them for £5184.
How much profit did he make on each machine? £98

b) Six people attended a conference. The conference fee was £320 per person and the travel cost was £222 per person.
How much did their company have to pay altogether? £3 252

1 Calculate the **sums** in a clever way.

a) 275 + 99 + 25 + 34 + 66 = 499

b) 605 + 13 + 300 + 67 + 95 = 1 080

c) 810 + 183 + 140 + 7 + 1860 = 3 000

d) 15 + 35 + 6666 + 50 + 3334 = 10 100

2 Calculate the **products** in a clever way.

a) $5 \times 37 \times 25 \times 20 \times 4$ = 370 000

b) $25 \times 125 \times 4 \times 8 \times 7$ = 700 000

c) $2 \times 25 \times 8 \times 20 \times 70$ = 560 000

d) $5 \times 40 \times 5 \times 20 \times 65$ = 1 300 000

3 Calculate the results.

a) 75 – 52 + 39 + 25 – 18 = 69

b) $84 \div 15 \times 30 \div 12 \times 20$ = 280

c) $60 \div 15 + 67 - 37 - 25 \times 8 \div 5 + 15 \times 30$ = 444

4 Calculate the results and compare them.

a) i) 675 – (453 + 123) = 99

ii) 675 – (453 – 123) = 345

iii) 675 – 453 + 123 = 345

iv) 675 – 453 – 123 = 99

b) i) $480 \div (12 \times 4)$ = 10

ii) $480 \div (12 \div 4)$ = 160

iii) $480 \div 12 \times 4$ = 160

iv) $480 \div 12 \div 4$ = 10

5

a) $16 \times (26 + 30)$ = 896

b) $37 \times (200 - 100)$ = 3 700

c) $(156 + 44) \times 5$ = 1 000

d) $(200 - 20) \times 45$ = 8 100

e) $(78 + 96) \div 6$ = 29

f) $(160 - 75) \div 5$ = 17

g) $750 \div (10 + 15)$ = 30

h) $144 \div (72 - 48)$ = 6

i) $(430 + 220) \div 1$ = 650

j) $(220 + 430) \div 0$ = undefined

k) $(365 - 165) \div 1$ = 200

l) $(493 - 203) \div 0$ = undefined

m) $(147 - 147) \div 29$ = 0

n) $300 \div (15 - 15)$ = undefined

o) $4 \times (12 \times 25)$ = 1 200

p) $8 \times (45 \div 5)$ = 72

q) $350 \div (14 \times 5)$ = 5

r) $600 \div (60 \div 4)$ = 40

s) $9 \times (0 \div 3)$ = 0

t) $45 \times (9 \div 0)$ = undefined

1

Fill in the missing numbers.

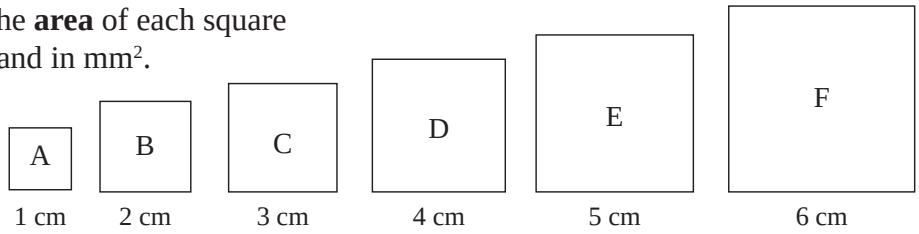
a) $4 \times \boxed{7} = 28$, $81 \div \boxed{9} = 9$, $\boxed{9} \times 6 = 54$, $\boxed{63} \div 7 = 9$

b) $5 \times \boxed{70} = 350$, $560 \div \boxed{80} = 7$, $\boxed{90} \times 3 = 270$, $\boxed{480} \div 8 = 60$

c) $20 \times \boxed{60} = 1200$, $3200 \div \boxed{80} = 40$, $\boxed{90} \times 50 = 4500$, $\boxed{1800} \div 60 = 30$

2

Write the **area** of each square in cm² and in mm².



Area of:

A: $\boxed{1}$ cm² = $\boxed{100}$ mm² B: $\boxed{4}$ cm² = $\boxed{400}$ mm²

C: $\boxed{9}$ cm² = $\boxed{900}$ mm² D: $\boxed{16}$ cm² = $\boxed{1600}$ mm²

E: $\boxed{25}$ cm² = $\boxed{2500}$ mm² F: $\boxed{36}$ cm² = $\boxed{3600}$ mm²

3

Continue the sequences using your own rule.

a) 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225

b) 100, 400, 900, 1600, 2 500, 3 600, 4 900, 6 400, 8 100, 10 000

c) 10×10, 20×20, 30×30, 40 x 40, 50 x 50, 60 x 60, 70 x 70, 80 x 80

4

Calculate the required values in your exercise book.

a) The area of a square is 10 000 cm². What length is each side? What is its perimeter?

b) The side of a square is 50 cm. What is its perimeter? What is its area?

c) The side of a square is 25 cm. What is its perimeter? What is its area?

d) The perimeter of a square is 60 cm. What length is each side? What is its area?

e) The side of a square is 35 cm. What is its perimeter? What is its area?

f) The perimeter of a square is 560 cm. What length is each side? What is its area?

100 cm 400 cm

200 cm 2 500 cm²

100 cm 625 cm²

15 cm 225 cm²

140 cm 1 225 cm²

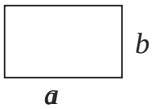
140 cm 19 600 cm²

5

Work out *Tommy*'s method and use it to calculate the area of these rectangles:

a) $a = 16$ m, $b = 57$ m; b) $a = 18$ m, $b = 57$ m; c) $a = 20$ m, $b = 57$ m

Tommy's method:



$a = 15$ m, $b = 57$ m

15	57
7	114
3	228
1	456

$A =$ 855 m²

912 m²

$a = 17$ m, $b = 57$ m

17	57
8	~~114~~
4	~~228~~
2	~~456~~
1	912

$A =$ 969 m²

1 026 m²

$a = 19$ m, $b = 57$ m

19	57
9	114
4	~~228~~
2	~~456~~
1	912

$A =$ 1083 m²

1 140 m²

1

Practise calculation.

a) 410.5 + 410.5 + 410.5 + 410.5 = 1 642

b) 7063.6 – 20.4 – 30.2 = 7 013

c) 160 ÷ 100 × 5 = 8

d) 12 × 12 + 2 × 10 × 10 = 344

e) 5 × (32 + 110) ÷ 5 = 142

f) 761 × 100 ÷ 5 ÷ 2 = 7 610

g) 7867 + 435 – 128 – 207 = 7 967

h) 200.6 – 33.2 × 3 + 899 = 1 000

2

Do the calculations in a clever way.

a) 386 + 78 + 83 + 22 + 517 = [1 086]

b) 106 – 43 + 54 – 117 = [0]

c) 1000 – 4 × 25 – 8.09 × 100 = [91]

d) 5792 – 76 + 300 – 16 = [6 000]

e) 140.5 + [359] = 160.5 + 339

f) 280 ÷ 5 ÷14 × [25] = 100

3

Find a rule and continue the sequence.

a) 4.3, 12.9, 38.7, 116.1, 348.3, 1 044.9, 3 134.7, 9 404.1 (x3)

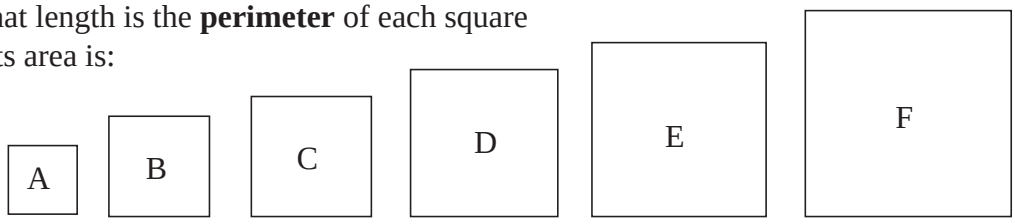
b) 250, 50, 10, 2, 0.4, 0.08, 0.016, 0.0032, 0.00064 (÷ 5)

c) 4575, 4470, 4365, 4 260, 4 155, 4 050, 3 945, 3 840, 3 735 (-105)

d) 100.73, 120.80, 140.87, 160.94, 181.01, 201.08, 221.15 (+20.07)

4

What length is the **perimeter** of each square if its area is:



A: P = [4] cm, B: P = [12] cm C: P = [28] cm

D: P = [36] cm E: P = [52] cm F: P = [400] cm

Which squares are similar? all of them

5

Solve the problems in your exercise book.

a) The side of a square is 30 cm. What is its area? 900 cm²

b) The perimeter of a square is 14.8 cm. What is its area? 13.69 cm² / 1369 mm²

c) The area of a square is 121 cm². What is its perimeter? 44 cm

d) The area of a square is 1.69 cm². What is the length of a side? 1.3 cm / 13mm

e) The volume of a cube is 125 cm³. What is the length of an edge? 5 cm

1

Do the first calculation, then use the result to help you do the other calculations mentally.

a)

	7	2	4	8
+	8	7	1	7
1	5	9	6	5

i) 7348 + 8717 = 16 065
ii) 7348 + 8617 = 15 965
iii) 7278 + 8747 = 16 025
iv) 7248 + 9717 = 16 965
v) 6248 + 9717 = 15 965
vi) 7240 + 8725 = 15 965

b)

	4	3	7	2
–	1	8	3	7
	2	5	3	5

i) 4370 – 1837 = 2 533
ii) 4372 – 837 = 3 535
iii) 4272 – 1737 = 2 535
iv) 4382 – 1837 = 2 545
v) 4372 – 2837 = 1 535
vi) 4472 – 1737 = 2 735

2

Fill in the missing numbers so that the operations and inequalities are true.

a)

	3	6	4	2
–	2	2	3	8
	1	4	0	4

<

	5	7	5	7
–	4	3	5	2
	1	4	0	5

<

	3	9	8	5
–	2	5	7	9
	1	4	0	6

b)

	8	8	8	8
+	3	3	3	3
1	2	2	2	1

<

	5	5	5	5
+	6	6	6	7
1	2	2	2	2

<

	9	9	9	9
+	2	2	2	4
1	2	2	2	3

c)

	1	0	0	0	0
–			9	9	9
		9	0	0	1

<

	2	0	0	0	1
–	1	0	9	9	9
		9	0	0	2

<

	1	1	1	1	1
–		2	1	0	8
		9	0	0	3

3

Estimate the result in your head first, then do the exact calculation.

a)

	4	2	9
		×	4
1	7	1	6

	3	6	0
		×	6
2	1	6	0

	4	5	3
		×	7
3	1	7	1

	6	0	6
		×	5
3	0	3	0

	9	3	6
		×	9
8	4	2	4

b)

	6	0	3	8
			×	3
1	8	1	1	4

		6	0	3	8
			×	3	0
1	8	1	1	4	0

	3	8	0	4
			×	8
3	0	4	3	2

			3	8	0	4
			×	8	0	0
3	0	4	3	2	0	0

4

Estimate the result in your head first, then do the exact calculation.

a)

	3	8
×	1	2
	7	6
3	8	0
4	5	1

b)

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

c)

		2	4	0
		×	5	1
		2	4	0
1	2	0	0	0
1	2	2	4	0

d)

		8	5	6
		×	2	7
	5	9	9	2
1	7	1	2	0
2	3	1	1	2

e)

		7	6	5	
		×	1	7	
	5	3	5	5	
	7	6	5	0	
1	3	0	0	5	

f)

		7	6	5	
		×	7	1	
		7	6	5	
5	3	5	5	0	
5	4	3	1	5	

g)

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

h)

		4	7	5	
	×	1	0	6	
	2	8	5	0	
4	7	5	0	0	
5	0	3	5	0	

1

Fill in the missing digits so that the results are correct.

a)

	8	7	6	5
+	3	4	5	6
1	2	2	2	1

b)

	9	7	5	3
+	2	4	6	8
1	2	2	2	1

c)

7	7	7	7	
− 3	3	3	3	
4	4	4	4	

d)

8	0	8	0	
− 2	5	2	5	
5	5	5	5	

2

Fill in the missing digits. Check that your answers are correct.

a)

		4	2	4
		×	5	2
		8	4	8
2	1	2	0	0
2	2	0	4	8

b)

	3	6	7
	×	2	1
	3	6	7
7	3	4	0
7	7	0	7

c)

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

3

a)

		5	2	9	1
			×	2	1
		5	2	9	1
1	0	5	8	2	0
1	1	1	1	1	1

b)

		5	2	9	1
			×	4	2
	1	0	5	8	2
2	1	1	6	4	0
2	2	2	2	2	2

c)

		5	2	9	1
		×	1	0	5
	2	6	4	5	5
5	2	9	1	0	0
5	5	5	5	5	5

d)

			5	2	9	1
			×	1	8	9
		4	7	6	1	9
	4	2	3	2	8	0
	5	2	9	1	0	0
	9	9	9	9	9	9

e)

									×	9
1	1	1	1	1	1	1	1	1		

Practise multiplication.

4

Practise division. Calculate the quotient and remainder. Check in your exercise book.

a)

	1	5	8	7	r 3
5	7	9	3	8	

b)

		6	5	7	r 4
6	3	9	4	6	

c)

		9	0	0	r 6
9	8	1	0	6	

5

Calculate the quotient and remainder. Check the results in your exercise book.

a)

			2	9	5	r 7
2	5	7	3	8	2	
	-	5	0			
		2	3	8		
	-	2	2	5		
			1	3	2	
		-	1	2	5	
					7	

b)

			3	3	4	r 10
2	9	9	6	9	6	
	-	8	7			
			9	9		
		-	8	7		
			1	2	6	
		-	1	1	6	
				1	0	

c)

				4	1	r 16
7	5	3	0	9	1	
	-	3	0	0		
				9	1	
			-	7	5	
				1	6	

6

Fill in the digits which are missing from the dividend, then calculate the remainder.

a)

2	6

76 ÷ 35 = 76 r 16

b)

8	0

16 ÷ 16 = 501

c)

4	7

01 ÷ 62 = 75 r 51

1 Estimate the result in your head first, then do the multiplication in your exercise book.

a) $37 \times 1700 =$ 62 900 b) $2405 \times 370 =$ 889 850 c) $777 \times 444 =$ 344 988

d) $608 \times 508 =$ 308 864 e) $767 \times 401 =$ 307 567 f) $149 \times 6006 =$ 894 894

2 Estimate the result in your head first, then do the division in your exercise book.

a) $818 \div 5 =$ 163 r 3 b) $476 \div 6 =$ 79 r 2 c) $823 \div 7 =$ 117 r 4

d) $5429 \div 8 =$ 678 r 5 e) $728 \div 12 =$ 60 r 8 f) $684 \div 72 =$ 9 r 36

3 Solve these problems in your exercise book.

a) A group of 6 people met a group of 11 people. Each member of the first group shook hands with each member of the second group. How many handshakes were there? 6 x 11 = 66

b) Lee measured his heartbeat as 72 beats in a minute. How many times did his heart beat in 21 minutes? 72 x 21 = 1 512

c) A butcher bought 57 kg of meat for £1026. How much did he pay per kg?

d) A spare part for a car costs £63. How many such parts can the garage buy for £2696? 2 696 ÷ 63 = 42 r £50

1 026 ÷ 57 = £18

4 What is the secret number if:

a) the product of the secret number and 40 is 2600 — 65

b) it is the product of 60 and 2400 — 144 000

c) the quotient when the secret number is divided by 50 is 800 — 40 000

d) it is the quotient of 600 divided by 20 — 30

e) the quotient of 7500 divided by the secret number is 50? — 150

5 If it is possible, solve the problem in your exercise book and write the answer here. Underline any data which are not needed. List any important data which are missing.

a) Peter is 16 years old but his savings are just one fifteenth of the savings of his sister who is 5 years younger than he is. How much has Peter saved if his sister has saved £7500?

£500

b) In London, 15 mm of rain fell at 3 am. At 1800 hours, there was another downpour. How much rain fell then?

We need to know information for the rainfall at 1800 hours

c) Cindy is 5 years old and weighs 24 kg. Her grandfather is 13 times older. How old is Cindy's grandfather and how much does he weigh?

5 x 13 = 65 years old We need more information to calculate Cindy's grandfathers weight

1 Write a plan, estimate, calculate and check in your exercise book. Write the result here.

a) Ian wants to buy a boat. He has saved £1347. If the price of the boat is £2580, how much money does Ian still need to save? £ 1 233

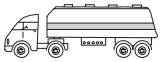
b) A greengrocer sold 75 kg of apples on Monday, 45 kg of apples on Tuesday and 124 kg of apples on Wednesday.

i) How many more kg of apples did he sell on Wednesday than on Monday? 49 kg

ii) How much money did he get from selling apples on these three days if he sold the apples at £1 50 p per kg? £ 366

c) A firm ordered 750 tonnes of oil. The oil was delivered in a container truck. The truck could carry only 18 tonnes of oil, so it had to make several deliveries.

i) How many deliveries did the truck have to make? 42

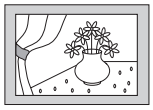
ii) How much oil was in the final delivery?  12 t

d) Peter has saved £735, which is 5 times as much as the amount that Paul has saved. How much money has Paul saved? £ 147

e) Ann has £214 in her bank account, which is one fifteenth of the money in Dave's account. How much is in Dave's account? £ 3 210

2 Write a plan, estimate, calculate and check your answer in your exercise book. Write the answer in a sentence here. Underline any data not needed in the calculation.

a) Christopher bought a painting for £2600. Then he sold it 3 weeks later for £2800. After another 2 weeks, he changed his mind and bought the painting back for £3100. After 1 week, he sold the painting again for £3200. Did he make a profit or a loss on the painting and how much was it?



Answer: Profit of £300

b) A box 15 cm deep holds 13 kg of tomatoes and a box 20 cm deep holds 17 kg of tomatoes. What is the total price of all the tomatoes in the 2 boxes if 1 kg of tomatoes costs £2.25.

Answer: £67.50

c) Kate made some jam from 25 kg of apricots and 7 kg of sugar. She lost 8 kg of fruit through boiling and then sieving to remove the stones and skin. How much did it cost to make 1 kg of jam if 1 kg of apricots cost £1.28, 1 kg of sugar cost £1.10, and other costs (covers and labels) were £1.25?

Answer: £1.71

d) A shopkeeper bought 120 kg of potatoes from one farmer for 76 p per kg and 59 kg from another farmer for 69 p per kg. He then sold all the potatoes at the same price so that he made a profit of 16 p per kg.

At what price did he sell the potatoes?

Answer: 90p

1

Do the first calculation, then use the result to help you do the other calculations mentally.

a)

	5	1	7	3
+	6	5	9	8
1	1	7	7	1

i) 5183 + 6599 = 11 782 iv) 5273 + 6698 = 11 971

ii) 5173 + 6498 = 11 671 v) 5173 + 6098 = 11 271

iii) 15173 + 598 = 15 771 vi) 5186 + 6585 = 11 771

b)

	7	4	0	5
–	2	8	6	6
	4	5	3	9

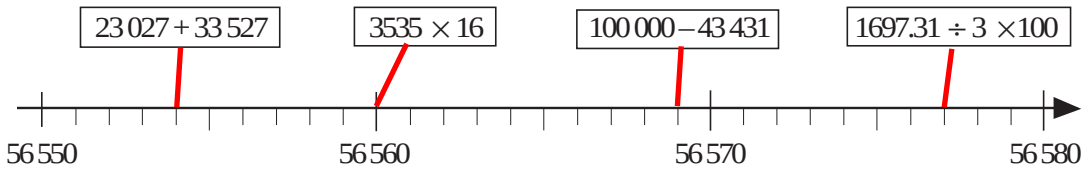
i) 7405 – 2966 = 4 439 iv) 7505 – 3066 = 4 439

ii) 7505 – 2766 = 4 739 v) 8405 – 1866 = 6 539

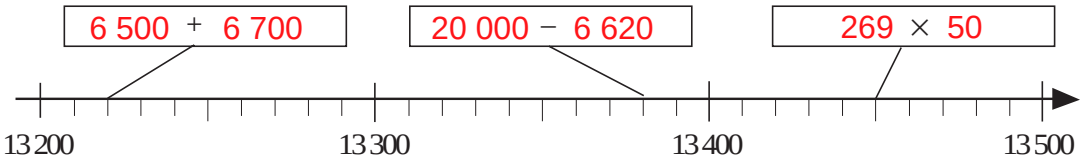
iii) 7410 – 2865 = 4 545 vi) 7495 – 2956 = 4 539

2

a) Join each operation to the matching result on the number line.



b) Write the missing numbers in the operations to match the results shown.



3

Fill in the numbers which are missing from the calculations.

a)

	7	8	9	4
+	5	6	8	5
1	3	5	7	9

b)

6	2	0	7	3
– 4	9	6	3	9
1	2	4	3	4

c)

3	9	3	4
	×	2	0
7	8	6	8	0

d)

	1	0	5	3
5	5	2	6	5

4

Practise calculation in your exercise book.

a) i) 106 199 ii) 140 875 iii) 1 779

b) i) 5 305 116 ii) 310 378 iii) 61 r 56

a) i) 46 121 + 3875 + 56 203 ii) 289 742 – 148 867 iii) 888 + 99 × 9

b) i) 305 117 + 4 999 999 ii) 375 215 – 64 837 iii) 4326 ÷ 70

c) i) 7013 + 35 + 9 + 2663 ii) 127 564 – 46 572 iii) 3580 × 28

c) i) 9 720 ii) 80 992 iii) 100 240

5

Solve the problems in your exercise book.

a) Tom was given £50 for his birthday. He treated 3 friends to the cinema and they all had an ice-cream. If a cinema ticket cost £7.25 and an ice-cream tub cost £1.30, how much money did Tom have left? £15.80

b) Mary found 54 buttons in her Gran's sewing box. Gran said that she used to have 15 times as many. How many buttons used to be in the sewing box? 810

c) Mum made 6 lbs of marmalade with 852 g of Seville oranges and 2.7 kg of sugar. What ingredients would she need to make 16 lbs of marmelade?

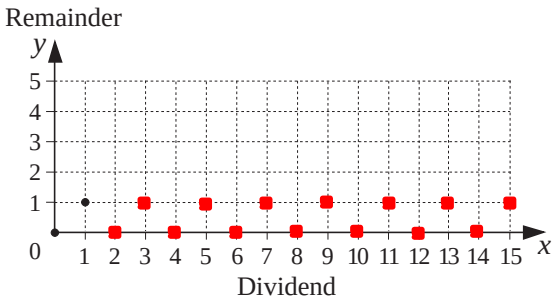
Seville oranges: 2 272g / 2kg 272g

Sugar: 7200g / 7kg 200g

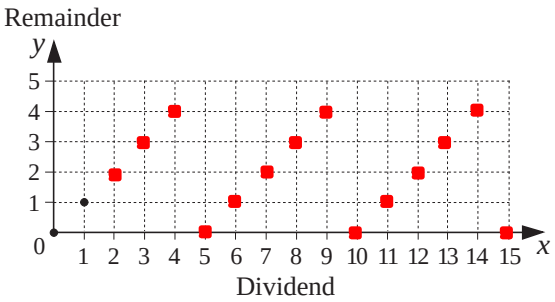
1

Show in the graphs the remainders obtained when whole numbers which are not negative and not greater than 15 are:

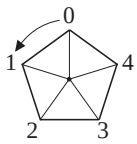
a) divided by 2

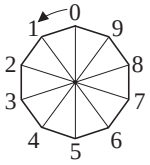


b) divided by 5.



2





Use the regular **pentagon** and **decagon** to help you to complete the table.

Number		3	5	12	43	79	154	228	2430	2433	2436	2437	2435
Remainder after dividing by:	(2)	1	1	0	1	1	0	0	0	1	0	1	1
	(5)	3	0	2	3	4	4	3	0	3	1	2	0
	(10)	3	5	2	3	9	4	8	0	3	6	7	5

3

Follow the pattern. Fill in the missing numbers and words.

a) i)
$7 = 0 \times 10 + 7$
$33 = 3 \times 10 + 3$
$60 = \boxed{6} \times 10 + \boxed{0}$
$85 = \boxed{8} \times 10 + \boxed{5}$

Divisible by 10, 2 and 5

ii)
$704 = \boxed{70} \times 10 + \boxed{4}$
$4358 = \boxed{435} \times 10 + \boxed{8}$
$30\,521 = \boxed{3\,052} \times 10 + \boxed{1}$
$285\,029 = \boxed{28\,502} \times 10 + \boxed{9}$

Divisible by 10, 2 and 5

We only need to look at the units digit.

b) When a [natural] number is divided by 10, 2 or 5, the remainder is the same as when its [units] [digit] is divided by 10, 2 or 5.

4

Follow the pattern. Fill in the missing numbers. Write a sentence about what you notice.

a)
$7 = 0 \times 100 + 7$
$33 = 0 \times 100 + 33$
$200 = 2 \times 100 + 0$
$375 = \boxed{3} \times 100 + \boxed{75}$
$524 = \boxed{5} \times 100 + \boxed{24}$

Divisible by 100, 4 and 25

b)
$2176 = \boxed{21} \times 100 + \boxed{76}$
$7390 = \boxed{73} \times 100 + \boxed{90}$
$28\,408 = \boxed{284} \times 100 + \boxed{8}$
$11\,950 = \boxed{119} \times 100 + \boxed{50}$
$678\,462 = \boxed{6\,784} \times 100 + \boxed{62}$

Divisible by 100, 4 and 25

We only need to look at the tens and units digits.

1

a) Follow the example and continue the pattern.

i)
$1 = 0 + 1$
$10 = 9 + 1$
$100 = 99 + 1$
$1000 = 999 + 1$
$10\,000 = 9999 + 1$
...

Divisible by 9 and 3

ii)
$2 = 0 \times 2 + 2$
$20 = 9 \times 2 + 2$
$200 = 99 \times 2 + 2$
$2000 = 999 \times 2 + 2$
$20\,000 = 9999 \times 2 + 2$
...

Divisible by 9 and 3

iii)
$7 = 0 \times 7 + 7$
$70 = 9 \times 7 + 7$
$700 = 99 \times 7 + 7$
$7000 = 999 \times 7 + 7$
$70\,000 = 9999 \times 7 + 7$
...

Divisible by 9 and 3

b) Complete the sentence about each part.

i) When 1000 is divided by 9 or by 3, the remainder is the same as when [1] is divided by 9 or by [3].

ii) When 200 is divided by [9] or by 3, the remainder is the same as when [2] is divided by [9] or by 3.

iii) When 70 000 is divided by 9 or by 3, the remainder is the same as when [7] is divided by 9 or by 3.

2

Complete the tables to show the remainders when the numbers are divided by 9 and by 3.

a)

Number		8000	300	40	6	8346
Remainder after dividing by:	(9)	8	3	4	6	3
	(3)	2	0	1	0	0

b)

Number		70 000	4000	500	30	8	74 538
Remainder after dividing by:	(9)	7	4	5	3	8	0
	(3)	1	1	2	0	2	0

3

Circle in *red* the numbers which are exactly divisible by 9.
Underline in *green* the numbers which are exactly divisible by 3.

534, 436, 354, 7155, 435, 643, 5175, 453, 111, 20 202, 44 044, 555 555 555, 56 418, 50 418

Write a sentence about what you notice in your exercise book.

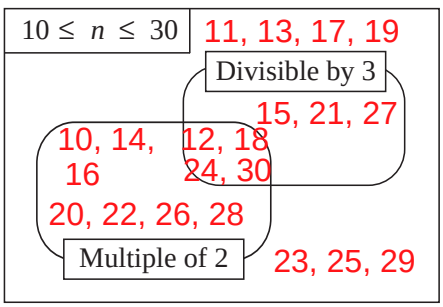
RED: digits add to number divisible by 9

GREEN : digits add to number divisible by 3

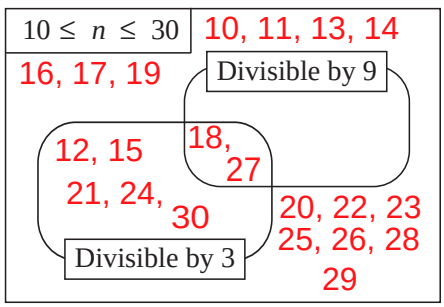
4

Write the whole numbers from 10 to 30 in the Venn diagrams.

a)

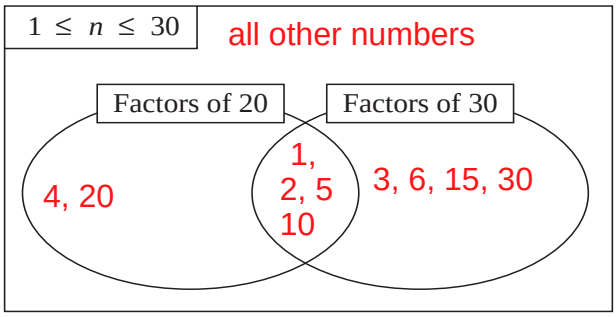


b)



1

a) Write the whole numbers from 1 to 30 in the Venn diagram.



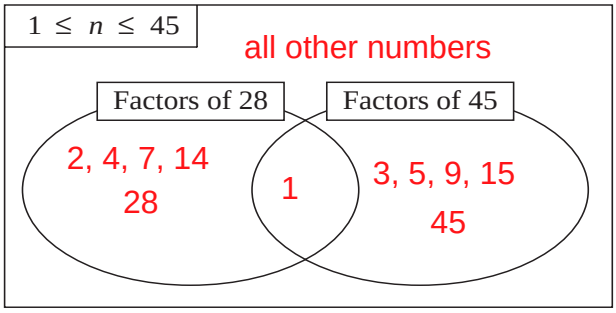
List the **common factors** of 20 and 30.

1, 2, 5, 10

What is the **greatest** common factor?

10

b) Write the whole numbers from 1 to 45 in the Venn diagram.



List the **common factors** of 28 and 45.

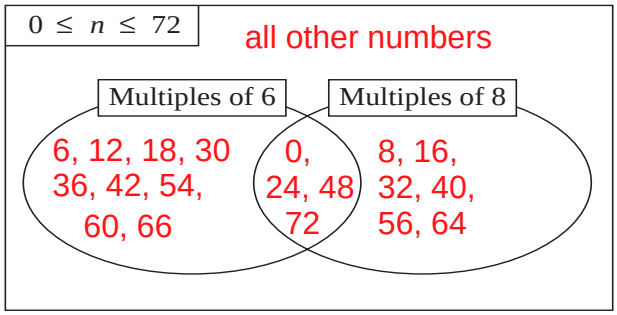
1

What is the **greatest** common factor?

1

2

a) Write the whole numbers from 0 to 72 in the Venn diagram.



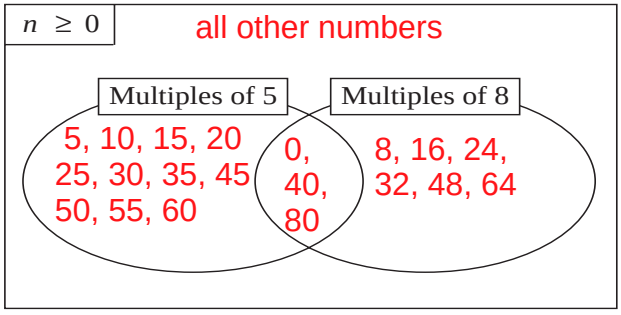
List the **common multiples** of 6 and 8.

0, 24, 48, 72

What is the **smallest** common multiple of 6 and 8 which is not negative?

0

b) Write some integers which are **not negative** in each part of the Venn diagram.



List the **common multiples** of 5 and 8 which are not negative.

0, 40, 80

What is the **smallest** positive common multiple of 5 and 8?

40

3

a) Which positive whole number is the greatest **common factor** of:

i) 1 and 8 1 ii) 16 and 24 8 iii) 8 and 15 1 iv) 15 and 45? 15

b) Which natural number is the smallest **common multiple** of:

i) 1 and 8 8 ii) 16 and 24 48 iii) 8 and 15 120 iv) 15 and 45? 45

1

Write T if the statement is true and F if it is false. Write examples or counter examples in your exercise book.

a) If a natural number is a multiple of 10, it is also a multiple of 5. T

b) If a natural number is exactly divisible by 5, it is a multiple of 10. F

c) If a natural number is exactly divisible by 5 and by 2, it is a multiple of 10. T

d) If a natural number is a multiple of 9, it is also a multiple of 3. T

e) If a natural number is a multiple of 3, it is also a multiple of 9. F

f) If a natural number is exactly divisible by 3 and by 5, it is a multiple of 15. T

g) If a natural number is a multiple of 4 and of 6, it is also a multiple of 24. F

2

i) 72 0 ii) 43 0 0 iii) 6 5 iv) 33 v) 2 0 00

Complete the numbers in your exercise book so that each number is:

Answers for part a) shown

a) divisible by 2

b) divisible by 4

c) divisible by 5

d) divisible by 5 but **not** by 25

e) a multiple of 25 but **not** a multiple of 5

f) divisible by 5 and by 4.

3

Below each number write the remainder when it is divided by 6.

24	25	26	27	28	29	30
0	1	2	3	4	5	0

Select from these 2-digit numbers:

a) **two** numbers so that their sum is divisible by 6 — 24, 30

b) **two** numbers so that their difference is divisible by 6 — 24, 30

c) **two** numbers so that their product is divisible by 6 — 24, 30

d) **three** numbers so that their sum is divisible by 6 — 25, 26, 27

e) **three** numbers so that their sum is **not** divisible by 6 — 26, 27, 28

f) **three** numbers so that their product is divisible by 6 — 25, 26, 27

g) **three** numbers so that their product is **not** divisible by 6. — 25, 27, 29

4

Complete the numbers so that the **result** of each operation is exactly divisible by 7.

a) 1237 + 73 7 b) 1237 – 73 3 c) 1237 × 1 4 d) 1237 + 4 2 + 1 6

5

Decide on the answer by trials or by reasoning but without doing a calculation.

a) Could the product of 2 successive natural numbers be 999? No

b) Could the sum of 2 successive natural numbers be 2000? No

c) Could the sum of 3 successive natural numbers be 2001? Yes

d) Could the product of the digits of a natural number be: i) 26 ii) 35? i) No ii) Yes

e) How many '0's are there at the end of the result of: 20 × 21 × 22 × 23 × 24 × 25? 3

f) Can 4 natural numbers have different remainders when divided by 3? No

1

We have 70 *green* marbles and 84 *blue* marbles. We want to put them into bags so that each bag contains the same number of *green* marbles and the same number of *blue* marbles as all the others.

a) What is the greatest number of bags we can make? 14

b) How many marbles of each colour will be in each bag? 5 green, 6 blue

2

Study these numbers.

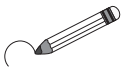
76 581, 930 476, 36 520, 8 764 425, 589 641

Without doing a division:

a) **underline** in *green* the numbers which are exactly divisible by 3;

b) **circle** in *red* the numbers which are multiples of 5;

c) **tick** in *yellow* the numbers which are exactly divisible by 4.



3

Some digits are missing from these numbers.

a) 1 5 4 2 b) 1 6 7 4 c) 1 3 4 1 6 d) 9 9 0 0

Write the complete numbers in your exercise book so that each number is:

i) a multiple of 3

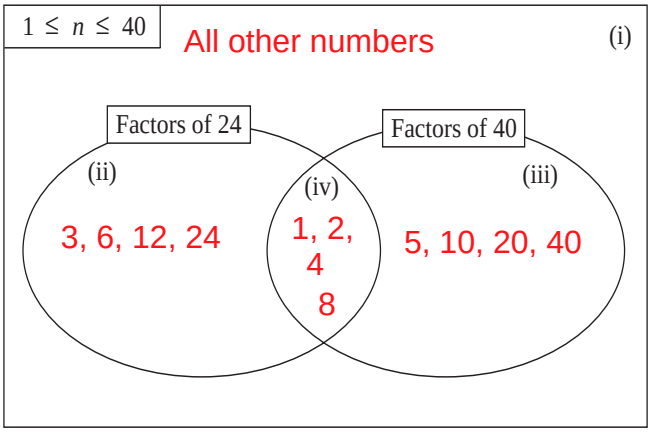
ii) exactly divisible by 4

iii) a multiple of 5 but **not** a multiple of 4

iv) a multiple of 5 **and** a multiple of 4.

4

a) Write the natural numbers from 1 to 40 in the Venn diagram.



b) What is the **greatest common factor** of 24 and 40?

c) What is the **lowest common multiple** of 24 and 40?

d) What kind of numbers are in the parts of the diagram labelled i), ii), iii) and iv)?

Write a sentence to describe each set. iv) Factors of 24 and 40

i) Not factors of 24 or 40 ii) Factors of 24, not 40 iii) Factors of 40, not 24

5

a) At mid-day, Charlie noticed a train going under a railway bridge and a bus going over the bridge at the same time. If there is a bus every 10 minutes and a train every 12 minutes, how long will Charlie have to wait before he sees the same thing happening again? 60 minutes / 1 hour

b) Is this statement true or false? Write examples or a counter example as a check.

If a positive natural number is a multiple of 3, it is also a multiple of 9.

False: 6, 12, 15

1

Practise addition and subtraction. Check your results.

a)

	1	4	1	6	5	8
	3	3	7	9	0	2
	2	4	6	8	5	5
+	4	4	4	4	4	4
1	1	7	0	8	5	9

b)

				3	8	1	
	7	9	2	5	3	6	
					4	5	
2	0	3	6	8	0	3	
+		5	1	4	6	0	
2	8	8	1	2	2	5	

c)

3	3	3	3	3	3	3	
	3	3	3	3	3	3	
		3	3	3	3	3	
			3	3	3	3	
+				3	3	3	
3	7	0	3	6	6	5	

d)

	8	5	3	2	0	4
–	3	2	2	0	6	1
	5	3	1	1	4	3

e)

6	5	7	4	3	9	4	
–		7	6	0	2	8	
6	4	9	8	3	6	6	

f)

3	3	3	3	3	3	3	
–	5	5	5	5	5	5	
2	7	7	7	7	7	8	

2

Practise multiplication and division in your exercise books. Check your results.

a) 142 857 × 6 857 142 b) 2563 × 72 184 536 c) 841 × 301 253 141

d) 714 285 ÷ 5 142 857 e) 999 999 ÷ 7 142 857 f) 10 001 ÷ 73 137

3

Write a plan and do the calculations in your exercise book. Write only the results here.

a) There are two baskets of apples. In the first basket there are 4 kg 70 g of apples and in the second basket there are 480 g more apples.
What amount of apples is in the second basket? 4kg 550g

b) Which quantity is 2684 kg more than 15 tonnes 46 kg? 17t 730kg

c) A 324 mm length was cut from an iron bar and 3 m 28 cm was left. What was the length of the bar before it was cut? 3m 60cm 4mm

d) Which quantity is 24 times as much as 36 litres 50 cl? 876 litres

e) Which quantity is one 24th of 8 km 400 m? 350m

4

Solve these problems in your exercise book.

a) A natural number ends in zero. If we leave off the zero we get another number. The sum of these two numbers is 5445. What was the original number? 4 950

b) The difference between a number ending in zero and a second number, formed by leaving off the zero of the first number, is 5445. What was the first number? 6 050

c) Is it possible that the product of two **consecutive** natural numbers ends in:
i) 4 No ii) 8 No iii) 6? Yes

d) Calculate the sum of the digits in the number 38 516 then subtract it from 38 516. Is the difference divisible by 9? Try it with other natural numbers. Yes

e) I thought of a 5-digit natural number. When I wrote a '4' in front of it, the 6-digit number I made was 4 times as much as the number I would have made if I had written the 4 at the end of the 5-digit number.
What was the number that I first thought of? 10 256

1 Do the addition and subtraction in millimetres, centimetres and metres.

a)
652 418 mm
1043 706 mm
+ 93 038 mm
1 789 162

b)
65 241.8 cm
104 370.6 cm
+ 9 303.8 cm
178 916.2

c)
652.418 m
1043.706 m
+ 93.038 m
1 789.162

d)
3405 261 mm
– 1094 283 mm
2 310 978

e)
340 526.1 cm
– 109 428.3 cm
231 097.8

f)
3405.261 m
– 1094.283 m
2 310.978

2 Do the addition and subtraction in metres and kilometres.

a)
6 425 m
802 600 m
35 000 m
710 m
+ 1 015 m
845 750 m

6.425 km
802.600 km
35.000 km
0.710 km
+ 1.015 km
845.750 km

b)
432 068 m
– 210 875 m
221 193 m

432.068 km
– 210.875 km
221.193 km

3 Do the multiplication and division in millimetres, centimetres and metres.

a)

	6	8	4	2	mm
			×	7	
4	7	8	9	4	

	6	8	4	.	2	cm
			×		7	
4	7	8	9		4	

	6	.	8	4	2	m
			×		7	
4	7		8	9	4	

b)

		8	4	9	
6	5	0	9	4	mm

		8	4	9	
6	5	0	9	.	4 cm

	0	8	4	9	
6	5	.	0	9	4 m

4 Do the multiplications in your exercise book. Check your results with a calculator.

a) 405.3 cm × 23
9 321.9 cm

b) 6.4 km × 105
672 km

c) 8.205 m × 213
1 747.665

5 Do the divisions in your exercise book. Check your results with multiplication.

a) 3932.5 cm ÷ 13
302.5 cm

b) 4454.8 cl ÷ 86
51.8 cl

c) 69.147 km ÷ 27
2.561 km

6 Do the division in millimetres here, then in centimetres and metres in your exercise book.

4586 mm ÷ 25

			1	8	3	. 4 4
2	5	4	5	8	6	mm

1 Practise addition in your exercise book. Check your results.

a) 3826 + 8519 12 345 b) 38.26 + 85.19 123.45 c) 0.3826 + 0.8519 1.2345

d) 417.358 + 9.49 426.848 e) 608.7 + 5.42 + 94.3 708.42 f) 80.09 + 256 + 0.82 336.91

2 Practise subtraction in your exercise book. Check your results.

a) 183.6 – 147.8 35.8 b) 605.32 – 50.4 554.92 c) 825 – 413.94 411.06

d) 810.3 – 39.28 771.02 e) 25.304 – 24.33 0.974 f) 567.05 – 467.1 99.95

3 Write a plan, calculate, check and write the answer as a sentence in your exercise book.

a) A joiner fits together a 24 mm wide piece of wood and a 1.8 cm wide piece of wood to make a plank. How wide is the plank? 4.2cm / 42mm

b) A lorry without a load weighs 3 tonnes 780 kg. If 1000 bricks with a total mass of 3.25 tonnes are loaded on the lorry and the lorry is driven over a weighbridge, what would the scale on the weighbridge read? 7.03 tonnes / 7t 30kg

c) A farmer gathered 17.2 tonnes of wheat from three fields.
He gathered 6.54 tonnes from the first field and 2 tonnes 870 kg from the second field. How much wheat did he gather from the third field? 7.79 tonnes / 7t 790kg

4 Practise multiplication and division.

a) $125 \times 8 =$ 1000 $12.5 \times 8 =$ 100 $1.25 \times 8 =$ 10 $0.125 \times 8 =$ 1

b) $87 \times 52 =$ 4524 $8.7 \times 52 =$ 452.4 $0.87 \times 52 =$ 45.24 $0.087 \times 52 =$ 4.524

c) $154 \times 16 =$ 2464 $15.4 \times 16 =$ 246.4 $1.54 \times 16 =$ 24.64 $0.154 \times 16 =$ 2.464

d) $75 \div 3 =$ 25 $7.5 \div 3 =$ 2.5 $0.75 \div 3 =$ 0.25 $0.075 \div 3 =$ 0.025

e) $673 \div 5 =$ 134.6 $67.3 \div 5 =$ 13.46 $6.73 \div 5 =$ 1.346 $0.673 \div 5 =$ 0.1346

f) $720 \div 12 =$ 60 $72 \div 12 =$ 6 $7.2 \div 12 =$ 0.6 $0.72 \div 12 =$ 0.06

5 Write a plan, calculate, check and write the answer as a sentence in your exercise book.

a) 0.42 kg of prunes can be made from 1 kg of plums. 32.76 kg
What amount of prunes can be made from 78 kg of plums?

b) How long is each side of a regular octagon if its perimeter is 341.8 cm? 42.725 cm

c) The area of a rectangle is 63.6 cm^2. The length of one of its sides is 12 cm.
What is the length of the **adjacent** side? 5.3 cm

6 Do the divisions in your exercise book and continue them until there is no remainder.

a) 26.04 ÷ 24 1.085 b) 805.2 ÷ 66 12.2 c) 0.03 ÷ 12 0.0025

1 Write the first term and the next 5 terms of each sequence in your exercise book.

a) Its first term is 8346 and it is increasing by 520. 8 346, 8 866, 9 386, 9 906, 10 426, 10 946

b) Its first term is 24 080 and it is decreasing by 5200. 24 080, 18 880, 13 680, 8 480, 3 280, -1 920

c) Its first term is 13.3 and it is decreasing by 3.2. 13.3, 10.1, 6.9, 3.7, 0.5, -2.7

2 Work out a rule and continue each sequence for **5** more terms. Write the rule you used.

a) 10 638, 10 794, 10 950, 11 106, 11 262, 11 418, 11 574, 11 730, (+156)

b) 410.7, 390.1, 369.5, 348.9, 328.3, 307.7, 287.1, 266.5, (-20.6)

c) 0.2, 0.3, 0.5, 0.8, 1.2, 1.7, 2.3, 3.0, 3.8, 4.7 (+0.1,+0.2,+0.3...)

d) 1.2, 2.4, 3.6, 4.8, 6, 7.2, 8.4, 9.6, 10.8, (+1.2)

e) 10.24, 5.12, 2.56, 1.28, 0.64, 0.32, 0.16, 0.08, (÷2)

3 In your exercise book, write the **smallest** and the **greatest**:

a) whole number which can be rounded to:

i) 600 as the nearest 100 i) 550, 649

ii) 4000 as the nearest 1000 ii) 3500 , 4499

iii) 5 million as the nearest million; iii) 4 500 000, 5 499 999

b) number which can be rounded to:

i) 7 as the nearest unit i) $6.5 \leq n < 7.5$

ii) 0.8 as the nearest tenth. ii) $0.75 \leq n \leq 0.85$

4 Write the name of the operation in the box and complete the equations.

a) $6.7 + 10.8 = 17.5$ $a + b = c$, $a =$ c - b $b =$ c - a

addition

b) $8.25 - 4.6 = 3.65$ $a - b = c$, $a =$ c + b $b =$ a - c

Subtraction

c) $14.3 \times 5 = 71.5$ $a \times b = c$, $a =$ c ÷ b $b =$ c ÷ a

Multiplication

d) $42.6 \div 3 = 14.2$ $a \div b = c$, $a =$ c x b $b =$ a ÷ c

Division

5 Which numbers do the letters represent? Solve the equations and check your solutions.

a) $1.75 + x = 7.1$ 5.35 b) $6 + (x + 0.5) = 8$ 1.5 c) $y - 5.02 = 3.8$ 8.82

d) $15 - z = 8.4$ 6.6 e) $8 - (u + 5) = 2.6$ 0.4 f) $(9.3 - v) + 5 = 5$ 9.3

g) $7.2 \times x = 14.4$ 2 h) $y \times 10 = 12$ 1.2 i) $x \div 42 = 1.5$ 63

j) $720 \div y = 120$ 6 k) $z \times 0.1 = 5$ 50 l) $96 \div u = 10$ 9.6

1

Practise addition and subtraction. Check your results.

a)

	2	5	4	8	6	4
	5	4	7	1	3	2
	3	8	9	5	9	7
+	4	6	3	9	0	8
1	6	5	5	5	0	1

b)

				1	4	3	5
	8	9	7	2	5	5	
				8	8	7	
4	6	8	9	1	3	2	
+			7	5	6	3	8
5	6	6	4	3	4	7	

c)

5	5	5	5	.	5	5	5
	6	6	6	.	6	6	6
		5	5	.	5	5	5
			6	.	6	6	6
+			0	.	5	5	5
6	2	8	4	.	9	9	7

d)

	9	0	4	3	1	5
–	4	3	8	1	6	9
	4	6	6	1	4	6

e)

1	0	9	7	0	2	4	
–			8	9	7	6	5
1	0	0	7	2	5	9	

f)

7	7	7	7	.	7	7	7
–		8	8	8	.	8	8	8
6	8	8	8	.	8	8	9

2

Practise multiplication and division. Do parts e) and f) in your exercise book.

a)

	3	7	5	0	7	2
					×	8
3	0	0	0	5	7	6

b)

		3	4	0	7	6
				×	5	6
	2	0	4	4	5	6
1	7	0	3	8	0	0
1	9	0	8	2	5	6

c)

		8	4	9	.	0	5
				×	7	5	
	4	2	4	5	2	5	
5	9	4	3	3	5	0	
6	3	6	7	8	7	5	

d)

	1	2	6	9	8	4
7	8	8	8	8	8	8

e) 570 136 ÷ 28
20 362

f) 3.672 ÷ 27
0.136

3

a) Write these numbers as digits in increasing order in your exercise book.

i) sixty five point seven two five
ii) one hundred and fifty point three
iii) seventy two point nine four
iv) eight point zero nine six

8.096, 65.725, 72.94, 150.3

b) Calculate the sum of all the numbers. How much less than 1000 is it? 702.939

c) Calculate the difference between:
i) the two middle numbers 7.215
ii) the smallest and greatest numbers. 142.204

d) Round each number to the nearest:
i) ten 10 70 70 150
ii) one 8 66 73 150
iii) tenth 8.1 65.7 72.9 150.3

e) What is the **mean** value of the four numbers?

4

a) I am thinking of a number. If I multiply it by 5 and double the result, I need to add on 15 to make 100. What is the number I am thinking of? 8.5

b) I am thinking of a number. If I multiply it by 100 and halve the result, I need to subtract 0.15 to make 1. What is the number I am thinking of? 0.023

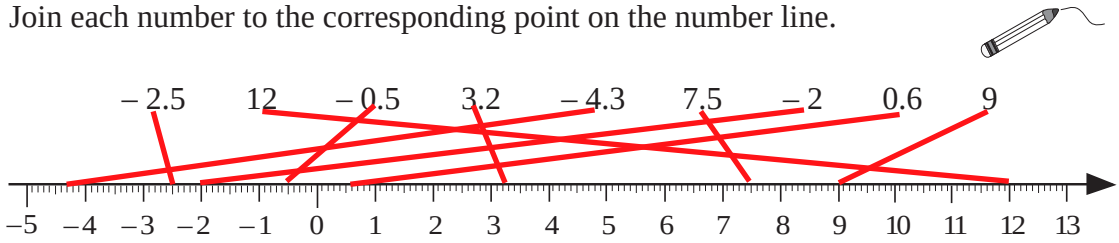
5

Solve these equations and inequalities. Check your results.

a) $0.332 + a = 10$ 9.668
b) $5 \times b - 4.07 = 5$ 1.814
c) $c - 92.7 = 3.8$ 96.5
d) $d \div 100 = 0.054$ 5.4
e) $8 \times (e \div 10) = 2.5$ 3.125
f) $(76.4 - f) + 5 = 80$ 1.4
g) $0.1 \times 100 < g \leq 1.5 \times 10$ $10 < g \leq 15$
h) $h \div 10 < 2.2 - h$ $h < 2$

1

Join each number to the corresponding point on the number line.



2

Solve the problems in your exercise book. Check your answer in context.

a) Rob has £64 50 p but is also £18.50 in debt. What is his balance? £46.00

b) Ted has £64 50 p but is also £108.50 in debt. What is his balance? -£44.00

c) The highest point of a bridge is 2.40 m above a river. The river is 3.70 m deep at that point.

How far would a coin fall from the highest point on the bridge to the bottom of the river? 6.1m

d) A farmer had a bank balance of – £2500 before he harvested and sold his crops. After the harvest, his bank balance was – £1300.

Was the farmer's bank balance better or worse after the harvest and by how much?

Better by £1 200

3

Practise addition in your exercise book.

a) (+ 11) + (– 7), 4 (+ 110) + (– 70), 40 (+1100) + (– 700), 400 (+ 1.1) + (– 0.7) 0.4

b) (+ 6) + (– 15), -9 (+ 60) + (– 150), -90 (+ 600) + (– 1500), -900 (+ 0.6) + (– 1.5) -0.9

c) (– 23) + (– 41), -64 (– 230) + (– 410), -640 (– 2300) + (– 4100), -6 400 (– 2.3) + (– 4.1) -6.4

d) 15 + (– 80), -65 150 + (– 800), -650 1500 + (– 8000), -6 500 1.5 + (– 8) -6.5

e) – 28 + 36, 8 – 280 + 360, 80 – 2800 + 3600, 800 – 2.8 + 3.6 0.8

4

Practise subtraction in your exercise book.

a) (+ 18) – (+ 5), 13 (+ 1.8) – (+ 0.5) 1.3

b) (+ 7) – (+ 32), -25 (+ 0.7) – (+ 3.2) -2.5

c) (– 43) – (– 15), -28 (– 4.3) – (– 1.5) -2.8

d) (– 6) – (– 21), 15 (– 0.6) – (– 2.1) 1.5

e) (+ 65) – (– 20), 85 6.5 – (– 2) 8.5

f) (– 40) – (+ 32), -72 – 4 – (+ 3.2) -7.2

g) (– 33) – 0, -33 – 3.3 – 0 -3.3

h) 0 – (+ 81), -81 0 – (+ 8.1) -8.1

i) 0 – (– 16), 16 0 – (– 1.6) 1.6

j) + 75 – (+ 75), 0 – 7.5 – (– 7.5) 0

5

Write each subtraction as an addition in your exercise book. Calculate and check the sum.

a) (+ 80) – (+ 30) 50

b) + 4.5 – (+ 10) -5.5

c) – 70 – (– 25) -45

d) – 2.5 – (– 6) 3.5

e) 6 – (– 3) 9

f) 3.2 – (– 6) 9.2

g) – 44 – (+ 22) -66

h) – 2.2 – (+ 4.4) -6.6

i) 0 – (+ 53) -53

j) 0 – (– 5.3) 5.3

k) – 72 – (– 8) -64

l) 12.6 – (+ 40.8) -28.2

1 Write each addition and subtraction in a simpler form before doing the calculation.

a) i) (+ 83) + (+ 36) = 83 + 36 = 119 ii) (+ 8.3) – (– 3.6) = 8.3 + 3.6 = 11.9

b) i) (+ 100) + (– 70) = 100 - 70 = 30 ii) (+ 1) – (+ 0.7) = 1 - 0.7 = 0.3

c) i) (+ 26) + (– 82) = 26 - 82 = -56 ii) (+ 2.6) – (+ 8.2) = 2.6 - 8.2 = -5.6

d) i) (– 49) + (+ 94) = -49 + 94 = 45 ii) (– 4.9) – (– 9.4) = -4.9 +9.4 = 4.5

e) i) (– 35) + (– 53) = -35 - 53 = -88 ii) (– 3.5) – (+ 5.3) = -3.5 - 5.3 = -8.8

f) i) 0 + (+ 42) = 0 + 42 = 42 ii) 0 – (– 4.2) = 0 + 4.2 = 4.2

g) i) 0 + (– 27) = 0 - 27 = 27 ii) 0 – (+ 2.7) = 0 - 2.7 = 2.7

h) i) 48 + (– 48) = 48 - 48 = 0 ii) 4.8 – (+ 4.8) = 4.8 - 4.8 = 0

2 Do the calculations in a clever way in your exercise book.

a) 45 – 39 + 14 – 15 + 26 – 11 20 b) 63 – 98 + 37 – 32 + 27 – 37 -40

c) 207 – 57 – 140 – 10 + 23 – 48 -25 d) – 200 – 50 – 102 – 42 + 300 + 64 -30

e) 1416 – 234 – 172 + 584 – 628 966 f) 1000 – 2450 + 1550 – 56 – 944 -900

g) – (4 – 6) – (– 5) 7 h) 5 – (– 9 – 14) 28

3 Find a rule and complete the table. Draw axes in your exercise book and plot the points.

a)

x	– 15	–12	– 10	– 6	– 2.5	– 1	0	1	2	5.5	8	10	14	15	15.5
y	15	12	10	6	2.5	1	0	1	2	5.5	8	10	14	15	15.5

Rule: y = absolute value of x

b)

x	– 15	–12	– 10	– 6	– 2.5	– 1	0	1	2	5.5	8	10	14	15	15.5
y	15	12	10	6	2.5	1	0	– 1	-2	– 5.5	-8	-10	-14	– 15	-15.5

Rule: y = -x

4 Write each multiplication as an addition in your exercise book and calculate the sum.

a) (+ 7) × 3 b) (– 7) × 3 c) (+ 3) × 6 d) (– 3) × 6

a) 7 + 7 + 7 = 21 b) (-7) + (-7) + (-7) = -21 c) 3 + 3 + 3 + 3 + 3 + 3 = 18 d) (-3) + (-3) + (-3) + (-3) + (-3) + (-3) = -18

5 Look at how the product changes. Continue the pattern in your exercise book.

a)
(+ 8) × (+ 3) = 24
(+ 8) × (+ 2) = 16
(+ 8) × (+ 1) = 8
(+ 8) × 0 = 0
(+ 8) × (– 1) = -8
. . .

b)
(– 8) × (+ 3) = -24
(– 8) × (+ 2) = -16
(– 8) × (+ 1) = -8
(– 8) × 0 = 0
(– 8) × (– 1) = 8
. . .

c)
(– 25) × (– 3) = 75
(– 25) × (– 2) = 50
(– 25) × (– 1) = 25
(– 25) × 0 = 0
(– 25) × 1 = -25
. . .

1

Work out a rule and complete the table.

a	25	8	– 12	9	– 10	3.1	-100	– 10.5	0.3	0	– 1.2	1.5	-1.1
b	– 100	-32	48	– 36	40	-12.4	400	42	– 1.2	0	4.8	– 6	4.4

Rule: a = b ÷ -4 b = a x -4

2

Solve the problems in your exercise book. Write only the results here.

a) The temperature was 9°C. It fell by 6°C, then by 5°C, then it rose by 2°C and rose again by 5°C. What is the temperature now? 5°C

b) James had £100 in cash but owed £20. Then £10 of his debt was cancelled. What is his balance now? £90

c) Sue had £100 in cash but was £120 in debt. She spent another £40. What is her balance now? -£60

d) The temperature is falling steadily by 2°C every hour. It is now 0°C.

i) What will the temperature be in 3 hours' time? -6°C

ii) What was the temperature 4 hours ago? 8°C

3

Note how the quotient changes. Check with reverse multiplication.

a)
(+ 27) ÷ (+ 3) = 9
(+ 18) ÷ (+ 3) = 6
(+ 9) ÷ (+ 3) = 3
0 ÷ (+ 3) = 0
(– 9) ÷ (+ 3) = -3
(– 18) ÷ (+ 3) = -6
(– 27) ÷ (+ 3) = -9

b)
(+ 27) ÷ (– 3) = -9
(+ 18) ÷ (– 3) = -6
(+ 9) ÷ (– 3) = -3
0 ÷ (– 3) = 0
(– 9) ÷ (– 3) = 3
(– 18) ÷ (– 3) = 6
(– 27) ÷ (– 3) = 9

c)
8 ÷ (– 2) = -4
4 ÷ (– 2) = -2
2 ÷ (– 2) = -1
0 ÷ (– 2) = 0
– 2 ÷ (– 2) = 1
– 4 ÷ (– 2) = 2
– 8 ÷ (– 2) = 4

4

Fill in the missing numbers.

a) [-9] × (– 5) = 45, – 2.5 × [5] = – 12.5, [-3.2] × 3 = – 9.6, [4] × (– 7) = – 28

b) 200 ÷ 40 = [5], – 36 ÷ (+ 4) = [-9], – 60 ÷ (– 12) = [5], 48 ÷ (– 8) = [-6]

c) [-28] ÷ (+ 7) = – 4, [-66] ÷ (– 6) = 11, [6] ÷ 5 = 1.2, [120] ÷ (– 3) = – 40

d) (– 75) ÷ [3] = – 25, (– 39) ÷ [-3] = 13, 4.2 ÷ [3] = 1.4, 150 ÷ [-3] = – 50

5

Calculate the result in 2 different ways where possible in your exercise book.

a) (– 8 + 5) × 7 -21 b) (– 15 – 8) × 4 -92 c) (– 7 + 5) × (– 9) 18 d) (– 28 + 14) ÷ 7 -2

e) (– 18 – 12) ÷ 3 -10 f) (– 8 + 20) ÷ (– 4) -3 g) (– 21 + 21) ÷ 13 0 h) (– 12 + 5) ÷ 0 No solution

i) (15 – 30) ÷ (– 1) 15 j) – 66 ÷ (24 – 18) -11 k) – 80 ÷ (– 6 + 16) -8 l) 13 ÷ (– 7 + 8) 13

1

Complete the sentences so that they are well-known laws.

a) The sum of two (or more) negative numbers is Negative and its absolute value is the Sum of the numbers' Absolute Values.

b) To add a positive and a negative number, calculate the difference of the Absolute values and take the sign of the number which has the Greater absolute value.

c) To multiply by a negative number, multiply the Opposite number of the multiplicand by the opposite Positive number.

d) The product of a negative and a positive number is Negative and its absolute value is equal to the Product of their absolute values.

e) The product or quotient of two negative numbers is Positive.

2

Practise calculation in your exercise book.

a) i) $(+ 12.3) + (- 24)$ -11.7 ii) $(- 2300) + (- 1100)$ -3 400 iii) $6.5 + (- 2.3) + (+ 5) + (- 9.2)$ 0

b) i) $4.7 - (+ 5.3)$ -0.6 ii) $- 210 - (+ 120)$ -330 iii) $6.8 - (- 2)$ 8.8
iv) $- 40 - (- 50)$ 10

c) i) $+ 8.1 \times (- 6)$ -48.6 ii) $- 150 \times 9$ -1 350 iii) $- 10.5 \times (- 5)$ 52.5
iv) $- 2 \times 3 \times (- 1) \times (+ 4) \times (- 5)$ -120

d) i) $3 \div (- 2)$ -1.5 ii) $(- 105) \div 21$ -5 iii) $(- 8.4) \div (- 7)$ 1.2
iv) $- 123 \div 1$ -123 v) $41.3 \div (- 1)$ -41.3

e) i) $(- 3) \times (- 3)$ 9 ii) $(- 3) \times (- 3) \times (- 3)$ -27 iii) $(- 3) \times (- 3) \times (- 3) \times (- 3)$ 81
iv) $(- 4) \times (- 4) \times (- 4)$ -64

3

Fill in the tables according to the given rules.

a) *Rule:* $y = (- 2) \times x$

x	$- 6$	$- 5$	$- 4$	$- 3$	$- 2$	$- 1$	0	1	2	3	4	5	6
y	12	10	8	6	4	2	0	-2	-4	-6	-8	-10	-12

b) *Rule:* $y = (- 2) \times x + 3$

x	$- 6$	$- 5$	$- 4$	$- 3$	$- 2$	$- 1$	0	1	2	3	4	5	6
y	15	13	11	9	7	5	3	1	-1	-3	-5	-7	-9

In your exercise book, draw a coordinate grid. On it plot the (x, y) points from both tables. Use a different colour for each table. What do you notice?

1

Practise addition and subtraction in your exercise book.

a) 55 – 0.5, 54.5 5.5 – 0.05 5.45 b) 16 – 4.3, 11.7 1.6 – 0.43 1.17

c) – 76 – (– 2.8), -73.2 7.6 – (– 0.28) -7.32 d) – 32 – (– 0.5), -31.5 – 3.2 – (– 0.05) -3.15

e) 84 – (– 11.5), 95.5 8.4 – (– 1.15) 9.55 f) – 90 – 5.6, -95.6 – 9 – 0.56 -9.56

g) – 11 – 0.11; -11.11 – 1.1 – 0.011 -1.111 h) 0.44 – 6.9, -6.46 0.044 – 0.69 -0.646

i) 10 – (– 3.5), 13.5 1 – (– 0.35) 1.35 j) – 12.1 – (– 12.1), 0 – 1.21 – (– 1.21) 0

2

a) Find a rule and complete the table. b) Write the rule in different ways.

c) Mark the points on the coordinate grid, using a different colour for each table.

i)

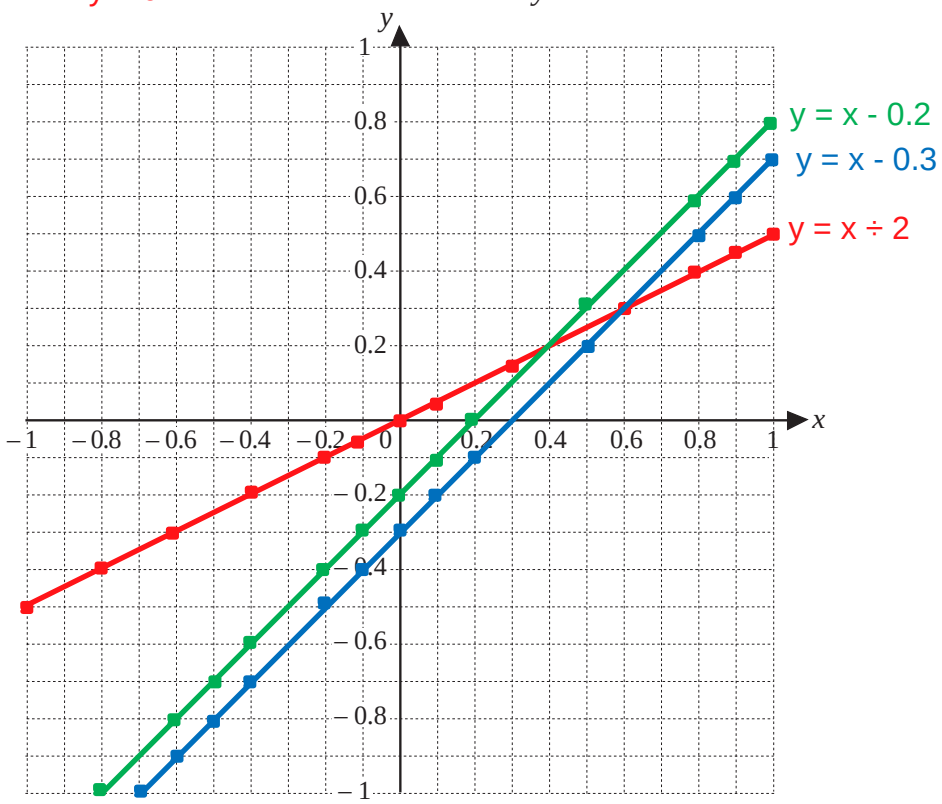
x	– 1	– 0.8	– 0.6	-0.4	– 0.2	– 0.1	0	0.1	0.3	0.6	0.8	0.9	1
y	– 0.5	-0.4	-0.3	– 0.2	-0.1	– 0.05	0	0.05	0.15	0.3	0.4	0.45	0.5

Rule: x = 2y y = x ÷ 2

ii)

x	– 0.8	– 0.6	– 0.5	– 0.4	– 0.2	– 0.1	0	0.1	0.2	0.5	0.8	0.9	1
y	– 1	-0.8	– 0.7	-0.6	-0.4	– 0.3	-0.2	– 0.1	0	0.3	0.6	0.7	0.8

Rule: x = y + 0.2 y = x - 0.2



d) Join up the dots which are the same colour. What do you notice?

3

$x = y + 0.3$, y = x - 0.3 Write different values of x and y from – 1 to + 1 in a table in your exercise book. Using a different colour from those used in *Question 2*, mark these points on the grid and join them up. What do you notice?

The line y = x - 0.3 is parallel to the line y = x - 0.2