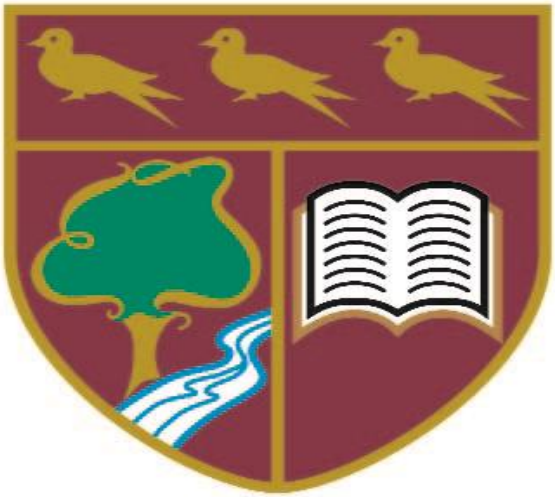
Upper School
Written Methods
A Parent Booklet



Pound Hill Junior School

The maths work your child is doing at school may look different to the kind of calculations you remember. This is because children are encouraged to work mentally, where possible, using personal jottings to help support their thinking. Even when children are taught more formal written methods, they are only encouraged to use these methods for calculations they cannot solve in their heads.

When faced with a calculation problem, encourage your child to ask…

- *Could I do this in my head using drawings or jottings to help me?*
- *Do I need to use a written method?*

However, when the time comes, the written methods for the four operations of addition, subtraction, multiplication, and division that we teach the children have not fundamentally changed. It is more the finer details, such as what we call the 'exchanging' process or where we record a carry that there seems to be a difference between the way people have learnt and how children are taught at PHJS.

Some parents also worry that they will confuse children by teaching them a different method. However, if there is a discussion comparing the benefits and drawbacks of each method, this can be a valuable learning tool on the path to Mastery. Discussing the efficiency and suitability of different strategies is an important part of maths lessons.

*In this booklet we will show you the different methods your child will use as they progress through the school. If you support the children master these methods at home, it will provide a stable foundation for further learning. Success Ladders will also be provided to emulate the learning process that we use in the classroom, as well as some activities designed to broaden and deepen the children's learning. Key Language for each method will be provided like this: *Language**

If you would like further resources and worksheets, go to https://whiterosemaths.com/parent-resources and go to the appropriate resource page.

The following methods will be covered in this booklet: **<u>Addition & Subtraction</u>** ○ Compact Method beyond 4 digits **<u>Multiplication</u>** ○ Short Multiplication ThHTO x O ○ Long Multiplication ThHTO x TO **<u>Division</u>** ○ Bus Stop method 4 digits by a 1-digit number ○ Long Division 4 digits by a 2 digit number (Year 6)	*Next to each success ladder, there will be a QR code. Use the ipads or your phone to scan the code using the photo app, which will take you to a video of Mr Ferguson talking through the method. The code below will take you to the website which has all the videos together.* **Please note that the QR links take you to a youtube video. This was the easiest way to upload these videos, but there is no controlling the recommended videos or ads. Please be aware and monitor any children viewing these videos as you normally would with online safety.**

AO: Use the compact written method for addition & subtraction	Addition video
Greater Depth	
Solve addition problems	
Met	
Use the compact method to solve addition and subtraction calculations	Subtraction video
Working Towards	
Use the compact method to solve addition and subtraction calculations with out carrying or exchanging	
KEY LANGUAGE: *Carry* *Bridging* *Exchanging*	

WT- Solve the calculations. Remember to start with the ones column first.

Without Carries

1) 2,374 + 1,623 =

	2	3	7	4
+	1	6	2	3

2) 13,273 + 5,426 =

+					

Without Exchanges

3) 8,785 - 4,351=

	8	7	8	5
-	4	3	5	1

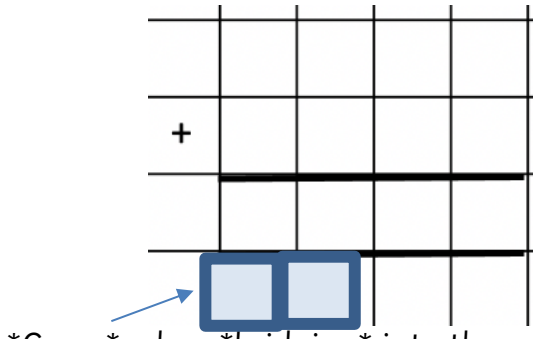
4) 58,739 - 37,416 =

-					

Met- Lay out and solve the calculations

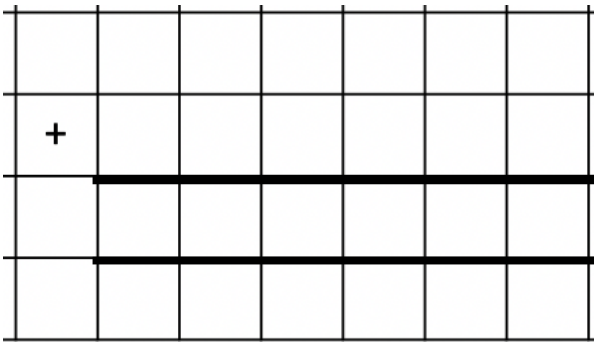
With Carries

1) 3,482 + 4,856 =



Carry when *bridging* into the next column

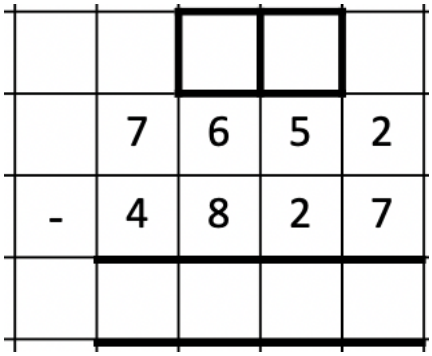
2) 83,472 + 18,843 =



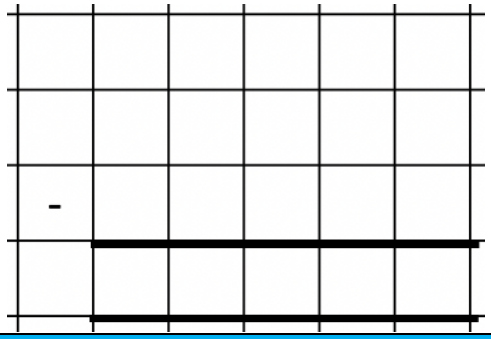
With Exchanging

3) 7,652 – 4,827 =

Do you have enough ones for 2 – 7?
Exchange from the tens & hundreds column

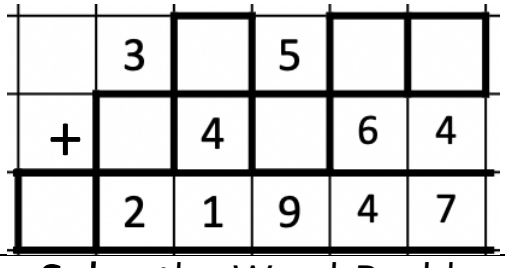


4) 64,953 – 27,547 =

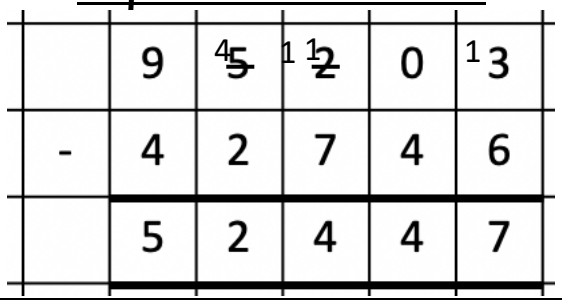


GD – Solve the problems on the square paper below

Reasoning: find the missing digits



Explain the mistake



Solve the Word Problem

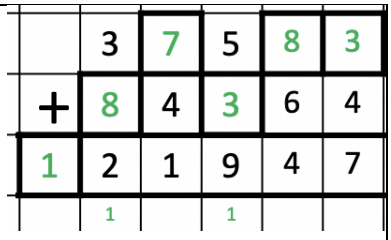
A stadium holds 42,392 people on Monday and 25,426 fewer on Tuesday. How many was there altogether?

What if: Adapt one of these problems for a partner.

- Can you change the **context** of the word problem?
- Can you choose appropriate digits for the other problems?

Answers- check answers with a green pen

WT	Met
1) 2,374 + 1,623 = 3,997 2) 13,273 + 5,426 = 18,699 3) 8,785 - 4,351= 4,434 4) 58,739 - 37,416 = 21,323	1) 3,482 + 4,856 = 8,338 2) 83,472 + 18,843 = 102,315 3) 7,652 – 4,827 = 2,825 4) 64,953 – 27,547 = 37,406



GD Word Problem – (42,392 - 25,426 = 16,966) + 42,392 = 59,358

Explain – Went to the hundreds column to exchange but missed out the tens- should have been 95,203-42,746 = 52457

AO: Use the short multiplication method

Greater Depth
Solve multiplication problems
Met
Use the short multiplication method with awkward digits
Working Towards
Use the short multiplication method with simple digits

Short Multiplication Video

KEY LANGUAGE:
Carry

WT- Solve the calculations. Remember to start multiplying the ones column first.

3 x 1 digit

1) 243 x 2 =

	2	4	3
x			2

2) 415 x 4

		4	1	5
x				4

Carry

4 x 1 digit

3) 1,324 x 5

		1	3	2	4
x					5

Carries

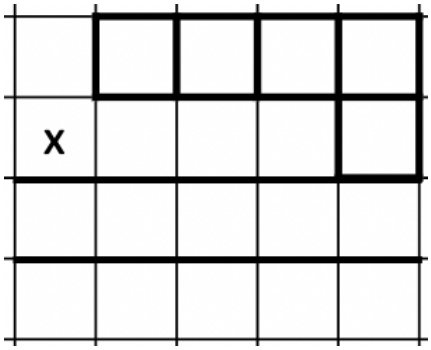
4) 4,835 x 3

	4	8	3	5
x				3

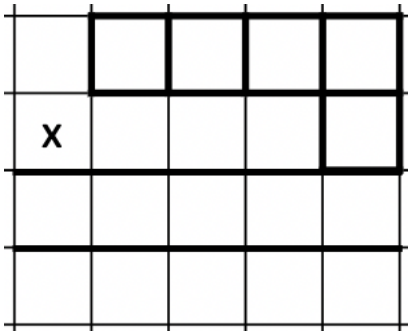
Met- Solve the calculations. Remember to start multiplying the ones column first.

4 x 1 digit

1) 4,876 x 9 =

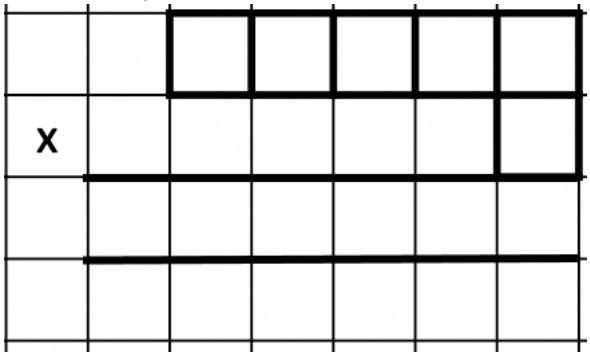


2) 9,386 x 7 =

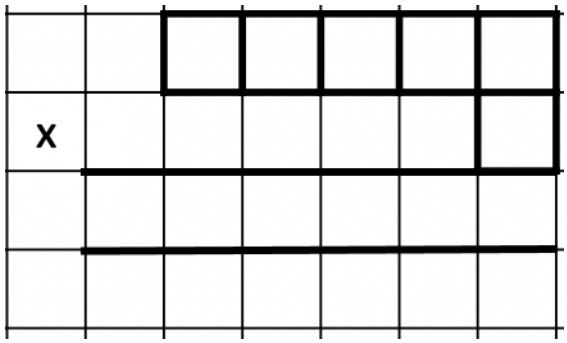


5 x 1 digit

3) 65,784 x 6 =



4) 83,473 x 9 =



GD – Solve the problems on the square paper below

Reasoning: find the missing digits

	5			2
x				4
2		3	2	8
	3	1		

Explain the mistake

	4	2	3	1
x				6
2	5,	2	8	6
	1	1		

Solve the Word Problem

Each school chair weighs 2,154 grams. How much do 6 weigh?

Can you give your answer in grams and kilograms?

What if: Adapt one of these problems for a partner.

- Can you change the **context** of the word problem?
- Can you choose appropriate digits for the other problems?

Answers- check answers with a green pen

WT	Met
1) 243 x 2 = 486	1) 4,876 x 9 = 43,884
2) 415 x 4 = 1,660	2) 9,386 x 7 = 65,702
3) 1,324 x 5 = 6,620	3) 65,784 x 6 = 394,704
4) 4,835 x 3 = 14,505	4) 83,473 x 9 = 751,257

GD Word Problem – 2,154 x 6 = 12,924 g = 12.924kg

Explain – Forgot to add the carry in the hundreds column- so 4231 x 6 = 25,386

MISSING DIGITS

	5	8	3	2
x				4
2	3	3	2	8
	3	1		

AO: Use the long multiplication method

Greater Depth
Solve multiplication problems
Met
Use the long multiplication method with correct layout
Working Towards
Use the long multiplication method with layout support

Long multiplication video

KEY LANGUAGE: *Carry** Bob/Place holder*

WT- Solve the calculations. Remember to start multiplying the ones column first.

2 x 2 digit

1) 43 x 25 =

			4	3
	x		2	5
+				☺

(5 x 43)
(20 x 43)

2) 26 x 83 =

			2	6
	x		8	3
+				☺

(3 x 26)
(80 x 26)

3 x 2 digit

3) 834 x 52 =

			8	3	4
		x		5	2
	+				☺

(2 x 834)
(50 x 834)

4) 485 x 63 =

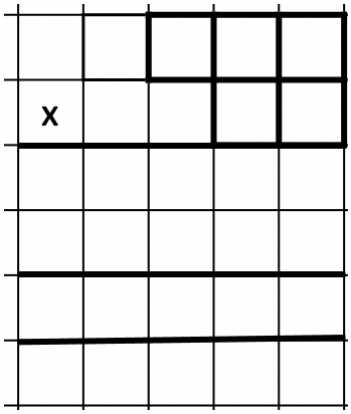
			4	8	5	
		x		6	3	
	+				☺	

(3 x 485)
(60 x 485)

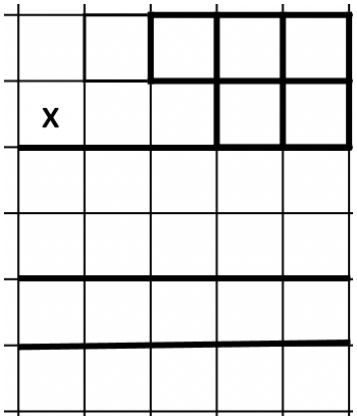
Met- Solve the calculations. Remember to start multiplying the ones column first.

3 x 2 digit

1) 873 x 36 =

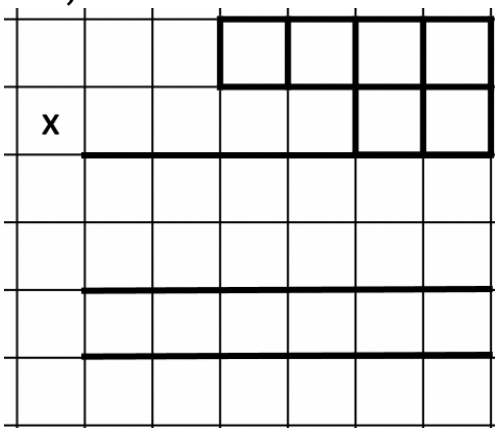


2) 283 x 76 =

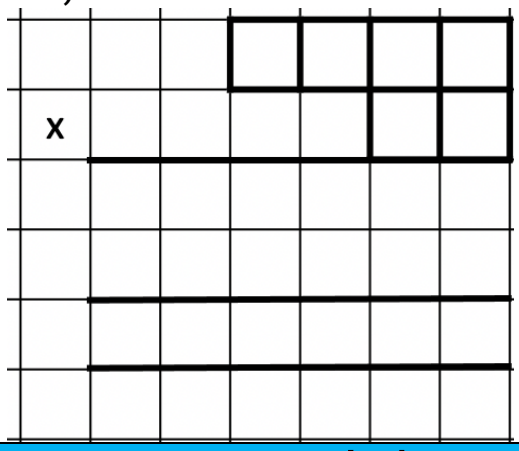


4 x 2 digit

3) 3,736 x 42 =



4) 7,934 x 35 =

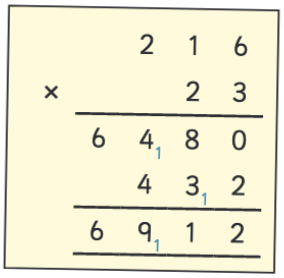


GD – Solve the problems on the square paper below

Reasoning: find the missing digits

	Th	H	T	O
		3	2	▢
×			▢	2
		6	5	2
+	9	7	8	0
1	0	4	3	2
	1	1		

Explain the mistake



Solve the Word Problem

A car park has 230 rows of 17 spaces.
There are 1,250 cars already parked.
How many empty spaces are there?

What if: Adapt one of these problems for a partner.

- Can you change the **context** of the word problem?
- Can you choose appropriate digits for the other problems?

Answers- check answers with a green pen

WT	Met
1) 43 x 25 = 1,075 2) 26 x 83 = 2,158 3) 834 x 52 = 43,368 4) 485 x 53 = 25,705	1) 873 x 36 = 31,428 2) 283 x 76 = 21,508 3) 3,736 x 42 = 156,912 4) 7,934 x 35 = 277,690

GD Word Problem – (230 x 17) -1250 = 2660

Explain – Put Bob in the top row not the 2nd. Should be (216 x 3 = 648) + (216 x 20 = 4320) = 4968

MISSING DIGITS

	Th	H	T	O
		3	2	6
×			3	2
		6	5	2
		1		
+	9	7	8	0
		1		
1	0	4	3	2
	1	1		

AO: Use the bus stop method

Greater Depth	Bus Stop Method Video
Solve division problems	
Met	
Use the bus stop method	
Working Towards	
Use the bus stop method with support with remainders	
KEY LANGUAGE: *Remainder* *Carry remainder* *how many __ go into*	

WT- Solve the 4 ÷ 1 digit calculations

1) 6,939 ÷ 3 =

3	6	9	3	9

2) 2,864 ÷ 2 =

3	2	8	6	4

3) 3,256 ÷ 8 =

	0		0	
8	~~3~~ 3	2	~~5~~ 5	6

4) 5,648 ÷ 4 =

Start in the 1000s column.

Circle groups of 4 and carry the remaining counters to the next column.

4	5	6	4	8

Met- Solve the calculations, give the answer with remainder

4 ÷ 1 digit

1) 5,635 ÷ 4 =

2) 7,854 ÷ 3 =

3) 9,524 ÷ 8 =

5 ÷ 1 digit

4) 72,832 ÷ 6 =

5) 58,696 ÷ 9 =

6) 16,823 ÷ 7 =

GD – Solve the problems on the square paper below

Reasoning: *find the missing digits*

	1		3	2
6		5		2

Explain *the mistake*

	2	6	1	1	r1
3	8	$^{2}4$	5	4	

Solve *the Word Problem*

Mr White wins £7,548 in the lottery. He gives £2,300 to charity and shares the rest between himself and 7 teachers. How much do they have each?

What if: Adapt *one of these problems for a partner.*

- *Can you change the* **context** *of the word problem?*
- *Can you choose appropriate digits for the other problems?*

Answers- check answers with a green pen

WT	Met	
1) 6939 ÷ 3 = 2,313 2) 2864 ÷ 2 = 1,432 3) 3256 ÷ 8 = 407 4) 5,648 ÷ 4 = 1412	1) 5,635 ÷ 4 = 1,408 r3 2) 7,854 ÷ 3 = 2618 3) 9,524 ÷ 8 = 1190 r4	4) 72,832 ÷ 6 = 72,832 r4 5) 58,696 ÷ 9 = 6,521 r7 6) 16,823 ÷ 7 = 2403 r2
GD Word Problem – (7,548 – 2,300) ÷ 8 = £656 Explain – Forgot to carry the remainder in the tens column & 24 ÷ 3 should be 8 in hundreds Should be 8,454 ÷ 3 = 2,818		MISSING DIGITS

	1	4	3	2
6	8	5	9	2

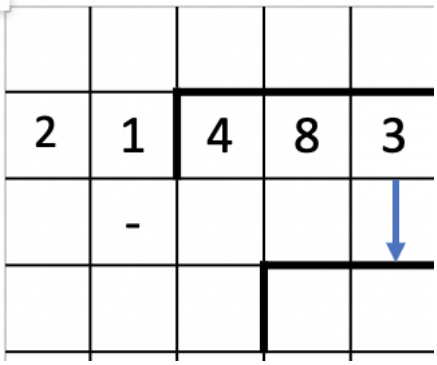
AO: Use the long division method (Year 6)

Greater Depth	Long Division Video
Solve division problems	
Met	
Use the bus stop method	
Working Towards	
Use the long division method with layout support with remainders	
KEY LANGUAGE: *Remainder* *Carry remainder* *how many __ go into*	

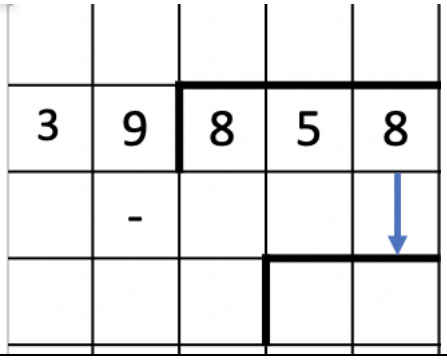
WT- Solve the calculations

3 ÷ 2 digit calculations

1) 483 ÷ 21=

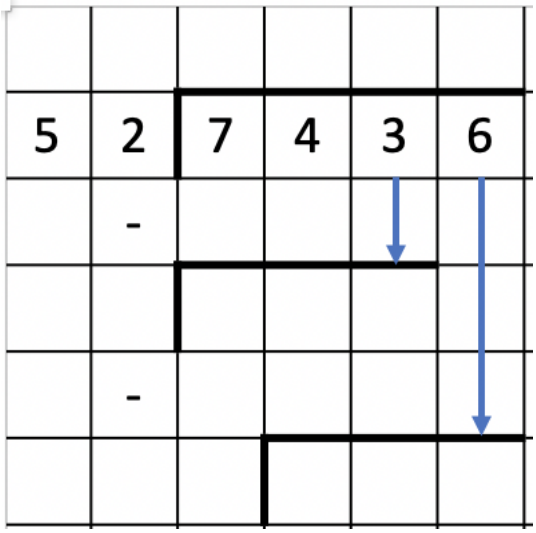


2) 858 ÷ 39=



4 ÷ 2 digit calculations

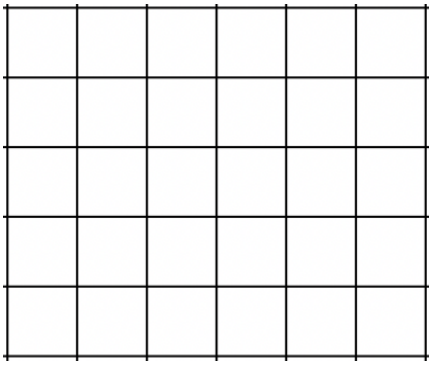
3) 7,436 ÷ 52 =



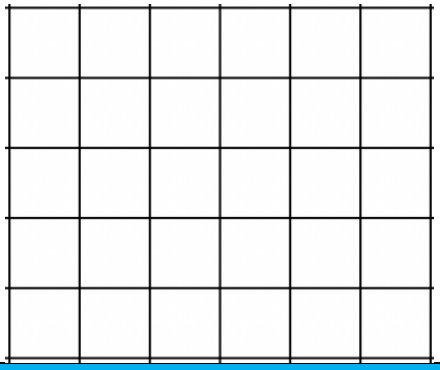
Met- Lay out and solve the calculations, give the answer with remainder

3 ÷ 2 digit

1) 528 ÷ 22 =

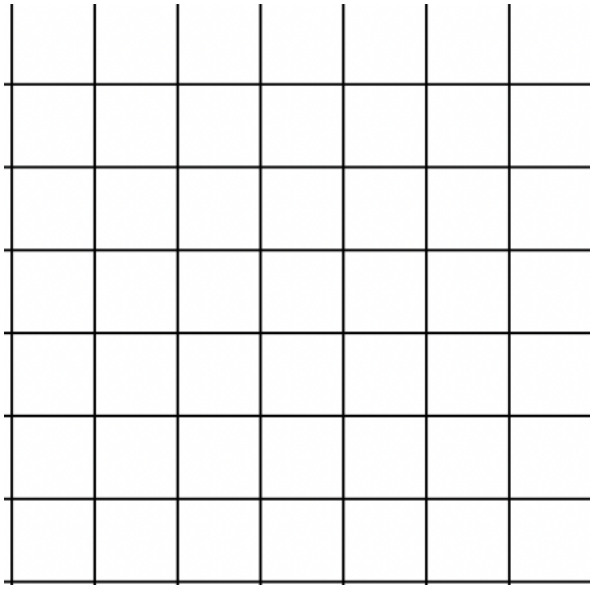


2) 817 ÷ 19 =



4 ÷ 2 digit

3) 2,665 ÷ 41 =



GD – Solve the problems on the square paper below

Reasoning: *find the missing digits*

		2	3
	3	9	1
	3	4	
		5	1
		5	1
			0

Explain *the mistake*

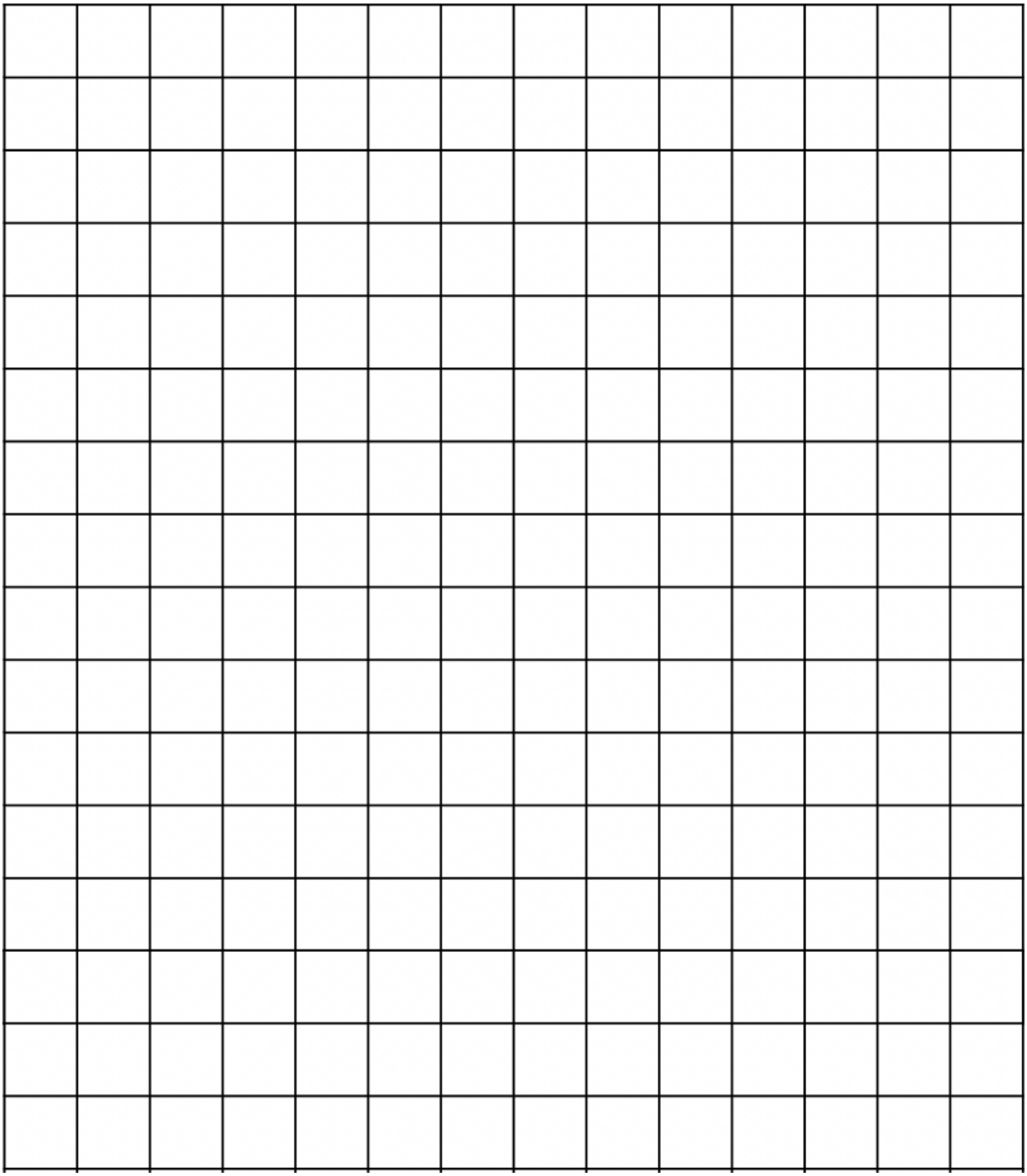
			1	1	r	20
4	9	5	3	9		
		4	9			
			6	9		

Solve *the Word Problem*

A bag holds 2.375 kg of guinea pig food. One bag of food needs to last for 19 days. How much food can the guinea pig have each day?

What if: Adapt *one of these problems for a partner.*

- *Can you change the* **context** *of the word problem?*
- *Can you choose appropriate digits for the other problems?*



Answers- check answers with a green pen		MISSING DIGITS 17
WT	**Met**	
1) 483 ÷ 21 = 23 2) 858 ÷ 39 = 22 3) 7,436 ÷ 52 = 143	1) 528 ÷ 22 = 24 2) 817 ÷ 19 = 43 3) 2,665 ÷ 41 = 65	

GD Word Problem – (2.375 ÷ 19 = 0.125kg =

Explain – subtraction error when bringing down the remainder- the answer is 11 but there is no remainder