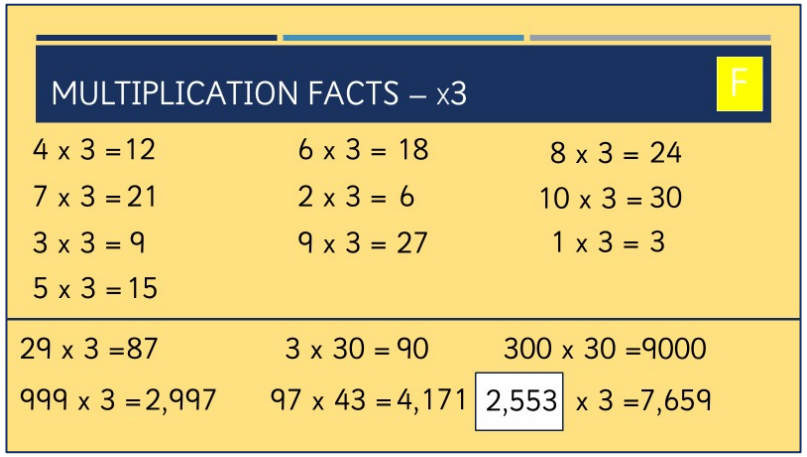
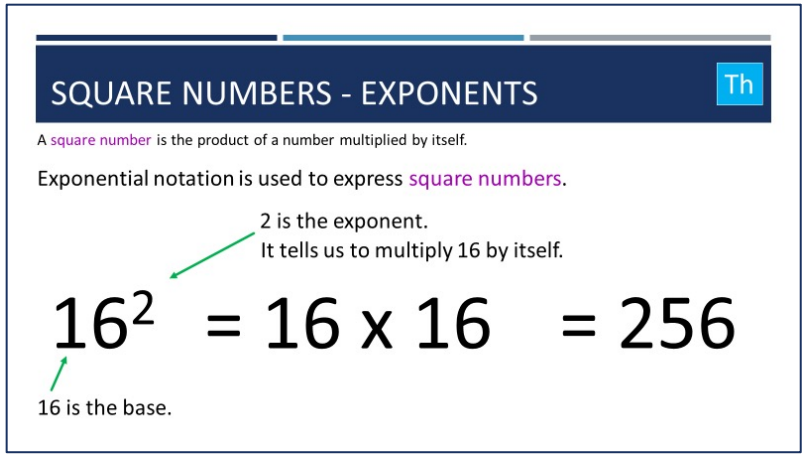
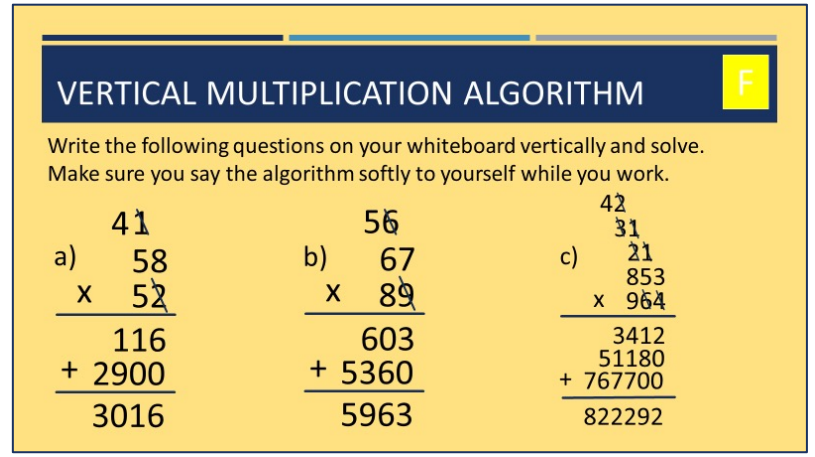
Explicit Maths Instruction in the Primary Classroom







David Morkunas
Classroom Teacher

@DaveMorkunas
Bentleigh West Primary School

Session Outline

- About me
- Bentleigh West Primary School background and journey
- Low Variance Curriculum
- Timetable overview
- Standard algorithms for the four operations
- Problem solving and worded problems: CUBES and bar model
- A typical mathematics lesson in Grade 4
- Problem solving
- Daily reviews in Mathematics
- Q&A

About Me

- Worked as a financial auditor for PwC

- Chose to study teaching at 27

- Applied to ~70 schools, eventually landed at BWPS

- Particular passion for teaching maths and the role that memory plays in learning

- Huge nerd

Bentleigh West Primary School

- Previously considered a “coasting” school
- Began moving towards evidence-based instruction in late 2015
- Schools teach biologically **secondary** knowledge
- Explicit Direct Instruction (EDI)
  - Links well to Rosenshine’s Principles of Instruction
  - Checking for Understanding, Obtaining a High Success Rate, Daily Review
  - Aligns to HITS (Multiple Exposures, Questioning)
- Definition of learning: change in long-term memory
  - Kirschner, Sweller, and Clark
  - Multiple exposures required to facilitate this

A Caveat...

Student Outcomes

2022 NAPLAN

Grade 3 Numeracy: **485**

Grade 5 Numeracy: **556**

66% of Grade 5 students achieved scores in the top 2 bands

4% of Grade 5 students scored in the bottom 2 bands

Low Variance Curriculum

- Developed at the end of the 2017 school year; rolled out first in 2018
- Allows teachers to focus on **how** to teach, not what to teach
- Minimises variance in instruction

Week	Number and Algebra	Number and Algebra	Statistics and Probability OR Measurement and Geometry	Worded Problems/Problem Solving
T1W1	Read (review) and order numbers to 5 digits (worksheet/presentation practice) Order 5-digit numbers in ascending and descending order	Greater than, less than Compare values using greater than and less than symbol.	LI: read analogue clocks to the nearest second	No Lesson
T1W2	LI: read and model 6 digits numbers and their place value	LI: order 6-digit numbers in ascending and descending order.	LI: convert between 12 and 24 hour time	Review Part/Part/Whole bar model (subtraction and addition). Use flow chart.
T1W3	LI: solve 5-digit addition problems with renaming using the vertical algorithm	LI: order 6-digit numbers on number lines	LI: select appropriate units to measure capacity	Review Part/Part/Whole bar model (multiplication and division). Use flow chart.
T1W4	LI: solve 5-digit subtraction problems with renaming using the vertical algorithm	LI: solve 2x2 digit multiplication using the area method.	LI: convert between units of measurement using place value (mass).	3/4 Maths Model Drawing 2.11 Example Ben has twice as many stickers as Jim. Ken has 65 more stickers than Ben. The three boys have 945 stickers altogether. How many stickers does Ken have? https://youtu.be/iaCH4R1j7ew SBM Unit A – Lesson 1
T1W5	LI: Solve 5-digit subtraction problems with internal zeroes	LI: solve 2x2-digit multiplication problems using the vertical algorithm Needs to be a 2x1-digit lesson next year	Select appropriate units of length Convert between units of measurement using place value (length).	3/4 Maths Model Drawing 2.12 Example Ben has twice as many stickers as Jim. Ken has 85 fewer stickers than Ben. The three boys have 945 stickers altogether. How many stickers does Ken have? https://youtu.be/qmgq4VsGFUs SBM Unit A – Lesson 2

Timetable

90 mins of Mathematics daily

Maths Review (30 mins)

- wide selection of previously-taught material
- used principles of spaced, interleaved, and retrieval practice
- PPT used from Monday to Thursday, independent maths quiz on Friday

New Waves Mental Maths (15 mins)

- From Monday to Wednesday this is teacher-modelled
- On Thursday and Friday, students complete independently

Maths Lesson (45 mins)

- New content (as per LVC)
- Monday and Wednesday: Number & Algebra
- Tuesday: Problem Solving (bar model)
- Thursday: Measurement & Geometry **or** Statistics & Probability
- Friday: Reteach

Timetable

Monday	Tuesday	Wednesday	Thursday	Friday
Maths Review PPT 30 mins	Maths Review PPT 30 mins	Maths Review PPT 30 mins	Maths Review PPT 30 mins	Independent Maths Quiz 30 mins
New Waves Mental Maths Teacher-led, 15 mins	New Waves Mental Maths Teacher-led, 15 mins	New Waves Mental Maths Teacher-led, 15 mins	New Waves Mental Maths Independent, 15 mins	New Waves Mental Maths Independent, 15 mins
New Lesson **Number & Algebra** 45 mins	New Lesson **Problem Solving** 45 mins	New Lesson **Number & Algebra** 45 mins	New Lesson **M&G or S&P** 45 mins	Reteach 45 mins

Standard algorithms for the four operations

- Booker text and Dr. Stephen Norton videos
- Provide a scaffold for students
- Place value language is heavily embedded
- Requires students to have experience with renaming
- Scalable; can still be used to solve complex problems

VERTICAL ADDITION WITH RENAMING

With renaming:
Always start with the place furthest to the right.

"1 hundred 5 hundreds equal 6 hundreds."
"6 ones add 6 ones equals 12 ones."
"1 ten add 5 tens equals 6 tens."
4 hundreds add 3 hundreds equals 7 hundreds."
6 tens add 4 tens equals 10 tens."

"Rename as 1 ten, 2 ones."

Write the ones in the ones column.

Write the tens in the tens column.

Write the hundreds in the hundreds column.

Move to the tens.

Move to the hundreds.

The answer is 702.

$$\begin{array}{r} {\scriptstyle 1\ 1} \\ 356 \\ +\ 346 \\ \hline 702 \end{array}$$

VERTICAL SUBTRACTION ALGORITHM

With renaming:

Always start with the place furthest to the right.

"I have 5 ones, can I take away 7 ones?"

"No, RENAME!"

"Rename 1 hundred as 10 tens."

"Now I have 15 ones, can I take away 7 ones?"

"Yes, DO IT!"

"15 ones take away 7 ones equals 8 ones."

"I have 2 tens, can I take away 4 tens?"

"No, RENAME!"

"Rename 1 hundred as 10 tens."

"Now I have 12 tens, can I take away 4 tens?"

"Yes, DO IT!"

"12 tens take away 4 tens equals 8 tens."

"I have 7 hundreds, can I take away 3 hundreds?"

"Yes, DO IT!"

"7 hundreds take away 3 hundreds equals 4 hundreds."

The answer is 488.

Subtract the tens.

Subtract the hundreds.

$$\begin{array}{r} 7\,12\,15 \\ \cancel{8}\;\cancel{3}\;\cancel{5} \\ -\;3\;4\;7 \\ \hline 4\;8\;8 \end{array}$$

VERTICAL MULTIPLICATION ALGORITHM

2 by 2 digit:

We start with the bottom-right digit.

Step 1: Multiply the ones by the ones.

"3 ones multiplied by 6 ones equals 18 ones."

"Rename as 1 ten, 8 ones."

Step 2: Multiply the ones by the tens.

"3 ones multiplied by 3 tens equals 9 tens."

"Add 1 ten equals 10 tens."

"Rename as 1 hundred, 4 tens."

Step 3: Multiply the tens by the ones.

"4 tens multiplied by 6 ones equals 24 tens."

"Add 1 ten equals 14 tens."

Step 4: Multiply the tens by the tens.

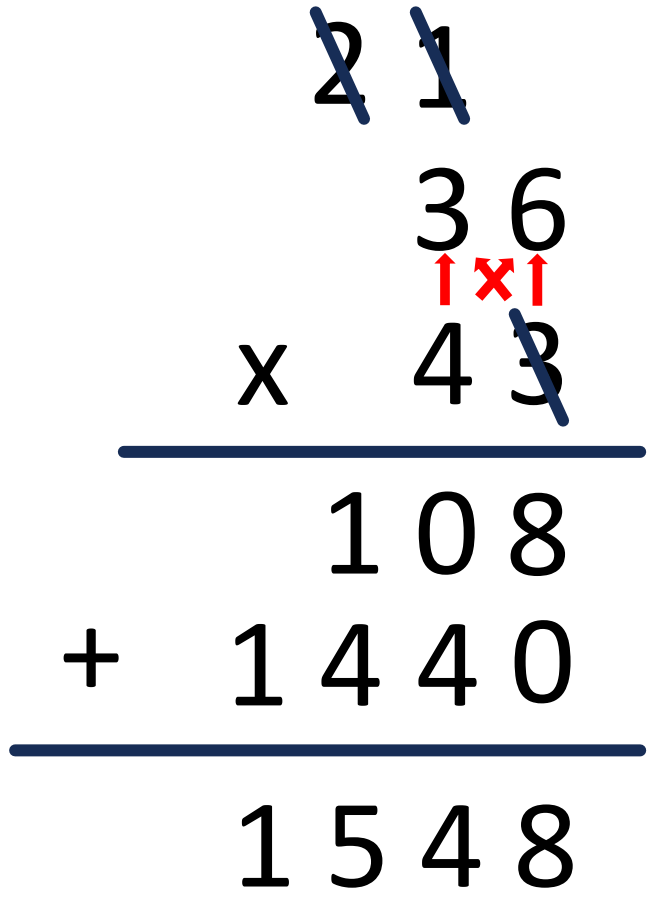
"4 tens multiplied by 3 tens equals 12 hundreds."

"Add 1 hundred equals 13 hundreds."

Add the two numbers to get our final answer.

Add our big fat zero.

Our answer is 1548.



LONG DIVISION

Step 1 – Divide

"Can 9 tens be shared among 4?"

"Yes."

"How many would each share receive?"

2 tens. Put this 2 in your answer.

Step 2 – Multiply

"How many tens have been shared out?"

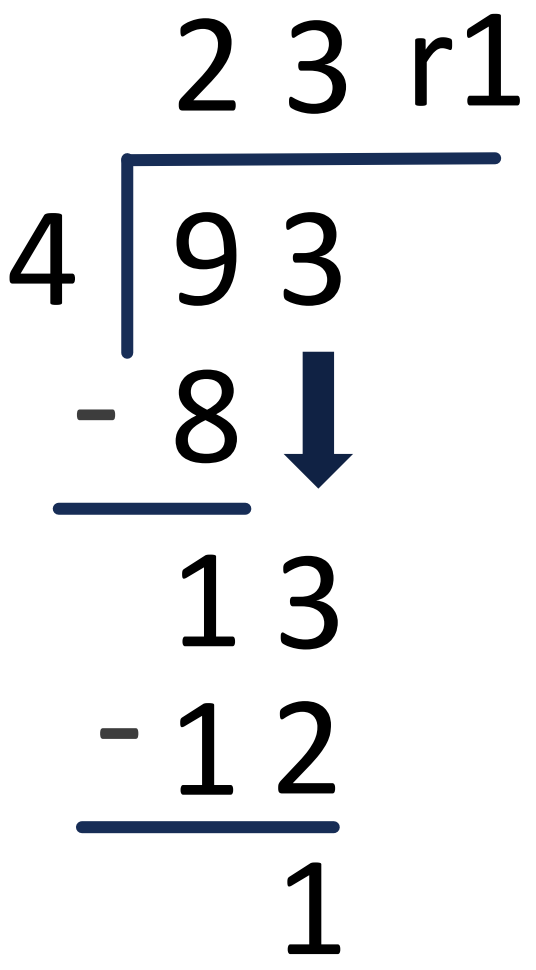
2 x 4 = 8

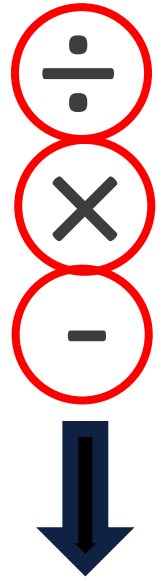
Step 3 – Subtract

"How many tens are left?"

9 – 8 = 1

Step 4 – Drag Down





Repeat these four steps until you have arrived at your answer.

Problem Solving

- CUBES and Singapore Bar Model approach
- Framework to deconstruct questions
- Useful scaffold for those with reading difficulties
- Worked examples

CUBES

Circle the key numbers,
Underline the question,
Box any maths action words,
Evaluate and draw,
Solve and check.

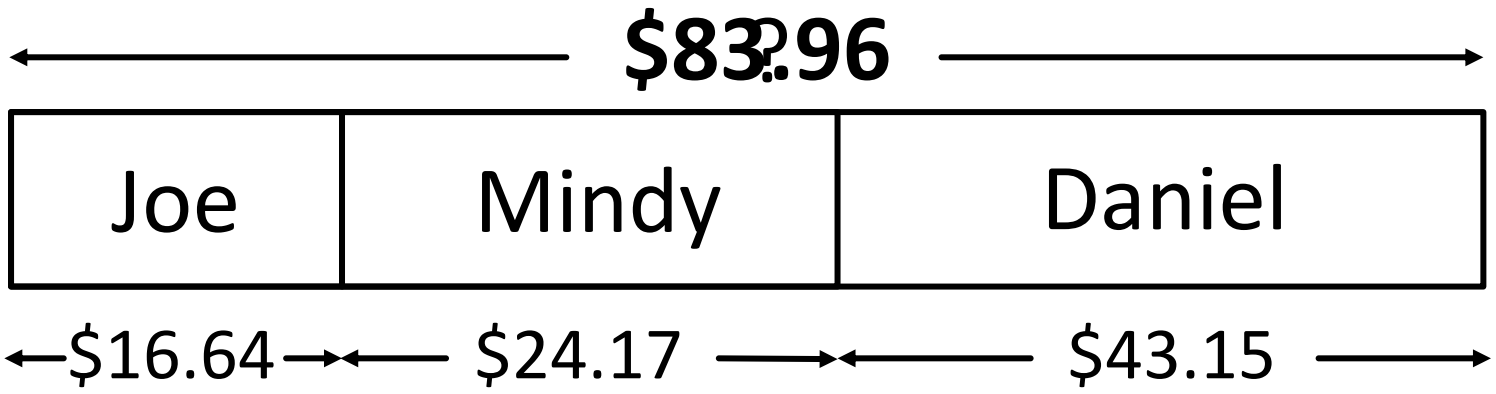
Adam had 3 ants. Bec had 5 ants.
How many ants did they have in total?

$3 + 5 = 8$

We use **CUBES** to solve worded problems.

Joe's meal cost $16.64. Mindy's meal cost $24.17. Daniel's meal cost $43.15. What was the total cost of the three meals?

Circle the key numbers,
Underline the question,
Box any maths action words,
Evaluate and draw,
Solve and check.



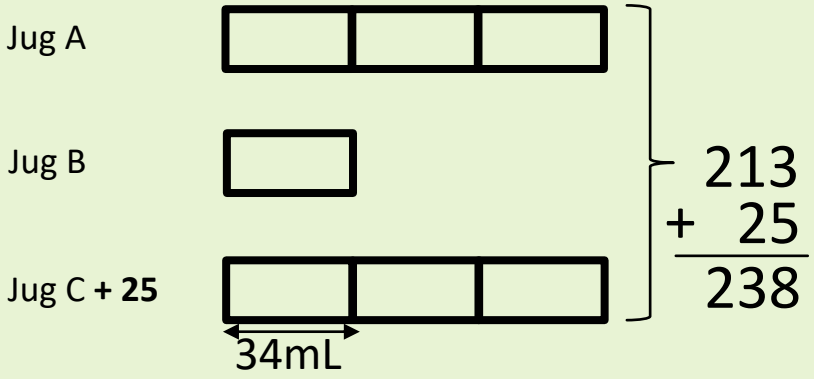
We have the **parts**, now we need to calculate the **whole**.

$$\begin{array}{rr} & 11\ 1 \\ & \$\ \ 16.64 \\ & \$\ \ 24.17 \\ + & \$\ \ 43.15 \\ \hline & \$\ \ 83.96 \end{array}$$

The meal cost $83.96 in total.

Worked Example

Jug A contained three times as much olive oil as Jug B. Jug C contained 25mL less olive oil than Jug A. If the three jugs contained a total of 213mL of olive oil, how much did Jug C contain?



Step 1: Add the "fewer" onto the total.

7 equal parts equal 238mL.

Step 2: Calculate the value of 1 equal part.

$$7 \overline{)\,238} = 34$$

1 equal part equals 34mL.

Step 3: Calculate Jug C's total.

$$34 \times 3 = 102$$

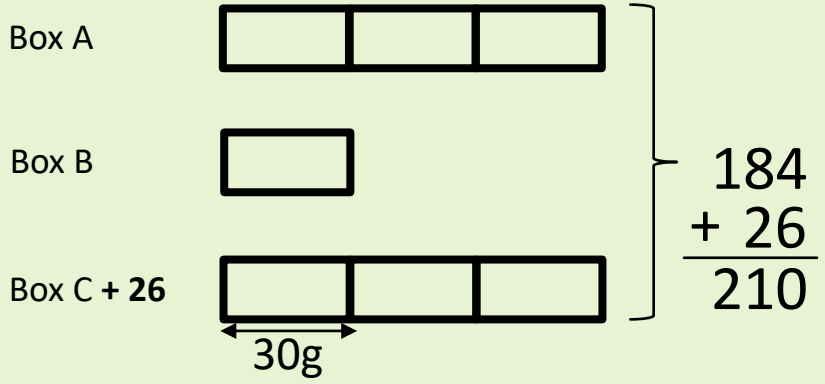
Step 4: Subtract the 25mL extra to get the total.

$$102 - 25 = 77$$

Jug C contained 77mL of olive oil.

Your Turn

Box A contained three times as much sugar as Box B. Box C contained 26g less sugar than Box A. If the three boxes contained a total of 184g of sugar, how much did Box C contain?



Step 1: Add the "fewer" onto the total.

Step 2: Calculate the value of 1 equal part.

$$7 \overline{)\,210} = 30$$

Step 3: Calculate Box C's total.

$$30 \times 3 = 90$$

Step 4: Subtract the 26g extra to get our answer.

$$90 - 26 = 64$$

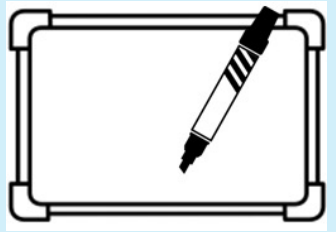
Box C contained 64g of sugar.

GRADE 4 – NUMBER & ALGEBRA

LEARNING INTENTION:

Use short division to solve problems with remainders

Solve these questions on your whiteboard.



```
   15 r2
3 | 47
  - 3
    17
  - 15
     2
```

```
   260 r1
3 | 781
  - 6
    18
  - 18
     01
   -  0
      1
```

```
    662 r1
6 | 3973
  - 36
     37
   - 36
      13
    - 12
       1
```

You learned the **long division** algorithm a couple of weeks ago. Today we will cover the **short division** algorithm, which is a quicker way of solving these problems.

This is how we set up a division question.

This is our answer. It is called the **quotient**.

This is the **divisor.** It is the number that we are dividing our dividend by.

2 8 r 2

8 6 ÷ 3

This is the **dividend**. It's the starting number that we want to divide.

I am trying to solve 89 ÷ 7.

Is my question set up correctly? Finish these stems on your whiteboards.

CFU

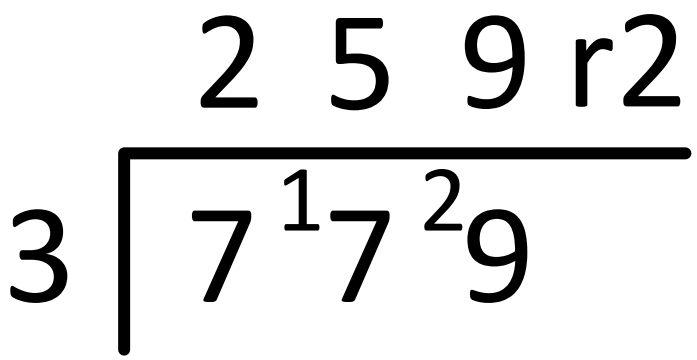
This setup is incorrect/correct because the dividend and divisor are in the wrong positions.

This setup is incorrect/correct, but it can be fixed by swapping the dividend and the divisor.

This setup is incorrect/correct, so I need to fix it before I begin solving.

Here is how the question should look:

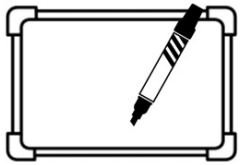
Short division is very similar to long division.
The main difference is that we do some of the steps **in our heads.**



Can we share 7 hundreds among 3?	YES, DO IT!
How many hundreds will each share receive?	**2**
How many hundreds remain?	**1**
Can we share 17 tens among 3?	YES, DO IT!
How many tens will each share receive?	**5**
How many tens remain?	**2**
Can we share 29 ones among 3?	YES, DO IT!
How many ones will each share receive?	**9**
How many ones remain?	**2**

We began with 7 hundreds and we've shared 6 of them (3 x 2), so there is 1 left.

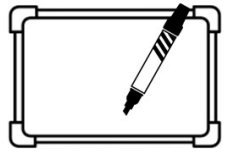
Short division is very similar to long division.
The main difference is that we do some of the steps **in our heads.**



$$5 \overline{)\, 2\,3^{3}8} \quad 4\ 7\ \text{r}3$$

Can we share 2 hundreds among 5?	NO, RENAME!
Can we share **23** tens among 5?	YES, DO IT!
How many tens will each share receive?	**4**
How many tens remain?	**3**
Can we share 38 ones among 5?	YES, DO IT!
How many ones will each share receive?	**7**
How many ones remain?	**3**

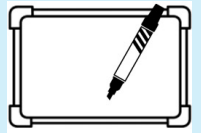
Short division is very similar to long division.
The main difference is that we do some of the steps **in our heads.**



$$\begin{array}{r} 2\ 2\ 8\ 4\ \text{r}3 \\ \hline 4 \,\big|\, 9^{1}1^{3}3^{1}9 \end{array}$$

Can we share 9 thousands among 4?	YES, DO IT!
How many thousands will each share receive?	**2**
How many thousands remain?	**1**
Can we share 11 hundreds among 4?	YES, DO IT!
How many hundreds will each share receive?	**2**
How many hundreds remain?	**3**
Can we share 33 tens among 4?	YES, DO IT!
How many tens will each share receive?	**8**
How many tens remain?	**1**
Can we share 19 ones among 4?	YES, DO IT!
How many ones will each share receive?	**4**
How many ones remain?	**3**

Solve the following questions on your whiteboard.



a) $33 \div 2$

$$2 \overline{)\, 3\,{}^{1}3} \quad = \quad 1\ 6\ \text{r}1$$

b) $619 \div 4$

$$4 \overline{)\, 6\,{}^{2}1\,{}^{1}9} \quad = \quad 1\ 5\ 4\ \text{r}3$$

c) $6523 \div 7$

$$7 \overline{)\, 6\ 5\,{}^{2}2\,{}^{1}3} \quad = \quad 9\ 3\ 1\ \text{r}6$$

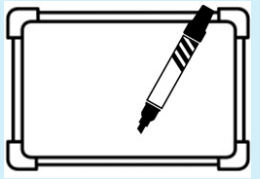
d) $32687 \div 13$

$$13 \overline{)\, 3\ 2\,{}^{6}6\,{}^{1}8\,{}^{5}7} \quad = \quad 2\ 5\ 1\ 4\ \text{r}3$$

So why are we learning this?

- **Short division** is a much quicker algorithm to use when compared with **long division.** Getting comfortable with this will save a lot of time when solving division problems!

Solve the following questions on your whiteboard.



a) $57 \div 4$

$$\begin{array}{r} 14\ r1 \\ 4\overline{)\,5^{1}7} \end{array}$$

b) $871 \div 5$

$$\begin{array}{r} 174\ r1 \\ 5\overline{)\,8^{3}7^{2}1} \end{array}$$

a) 31 ÷ 2

$$2\overline{)\,3^{1}1}\quad =\quad 1\ 5\ \text{r}1$$

b) 74 ÷ 5

$$5\overline{)\,7^{2}4}\quad =\quad 1\ 4\ \text{r}4$$

c) 73 ÷ 3

$$3\overline{)\,7^{1}3}\quad =\quad 2\ 4\ \text{r}1$$

d) 573 ÷ 4

$$4\overline{)\,5^{1}7^{2}3}\quad =\quad 1\ 4\ 3\ \text{r}1$$

e) 738 ÷ 5

$$5\overline{)\,7^{2}3^{3}8}\quad =\quad 1\ 4\ 7\ \text{r}3$$

f) 754 ÷ 3

$$3\overline{)\,7^{1}5\ 4}\quad =\quad 2\ 5\ 1\ \text{r}1$$

g) 812 ÷ 7

$$7\overline{)\,8^{1}1^{4}2}\quad =\quad 1\ 1\ 6$$

h) 9354 ÷ 8

$$8\overline{)\,9^{1}3^{5}5^{7}4}\quad =\quad 1\ 1\ 6\ 9\ \text{r}2$$

i) 5371 ÷ 6

$$6\overline{)\,5\ 3^{5}7^{3}1}\quad =\quad 8\ 9\ 5\ \text{r}1$$

j)* 37849 ÷ 12

$$12\overline{)\,3\ 7^{1}8^{6}4^{4}9}\quad =\quad 3\ 1\ 5\ 4\ \text{r}1$$

k)* 75899 ÷ 14

$$14\overline{)\,7\ 5^{5}8^{2}9^{1}9}\quad =\quad 5\ 4\ 2\ 1\ \text{r}5$$

l)* 819057 ÷ 23

$$23\overline{)\,8\ 1^{12}9^{14}0^{2}5^{2}7}\quad =\quad 3\ 5\ 6\ 1\ 1\ \text{r}4$$

m)* 657984 ÷ 41

$$41\overline{)\,6\ 5^{24}7^{1}9\ 8^{34}4}\quad =\quad 1\ 6\ 0\ 4\ 8\ \text{r}16$$

n)* 917702 ÷ 64

$$64\overline{)\,9\ 1^{27}7^{21}7^{25}0^{58}2}\quad =\quad 1\ 4\ 3\ 3\ 9\ \text{r}6$$

o)* 8499657 ÷ 75

$$75\overline{)\,8\ 4\ 9^{9}9^{24}9^{24}6^{21}5^{65}7}\quad =\quad 1\ 1\ 3\ 3\ 2\ 8\ \text{r}57$$

p)* 999888777 ÷ 137

$$137\overline{)\,9\ 9\ 9^{40}8^{134}8^{115}8^{62}7^{79}7^{112}7}\quad =\quad 7\ 2\ 9\ 8\ 4\ 5\ 8\ \text{r}31$$

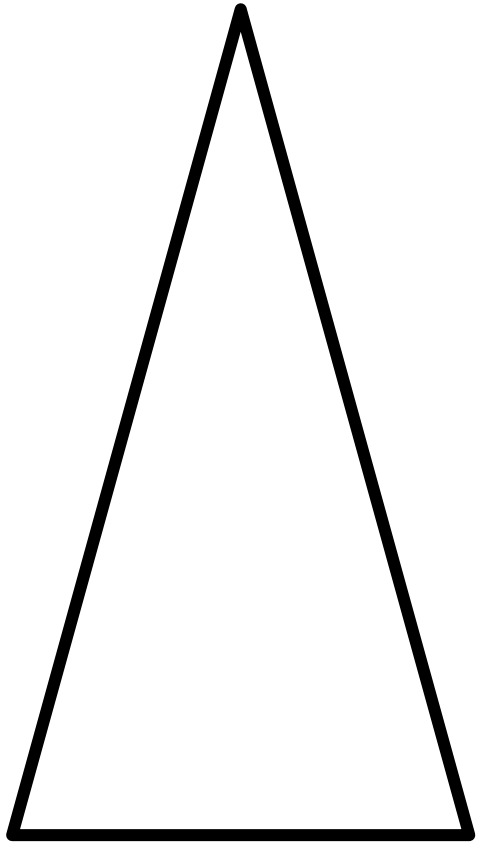
Daily Reviews

- Teaching a skill/concept once doesn’t lead to mastery
- Regular review/multiple exposures help transfer knowledge to long-term memory
- Heavily supported by research
- Mini whiteboards
- Fast pace
- Great opportunity for formative assessment

UNITS OF MEASUREMENT

kilometres

2D SHAPES



scalene triangle

UNITS OF TIME

minutes in an hour

60

COMPASS DIRECTIONS

Northeast

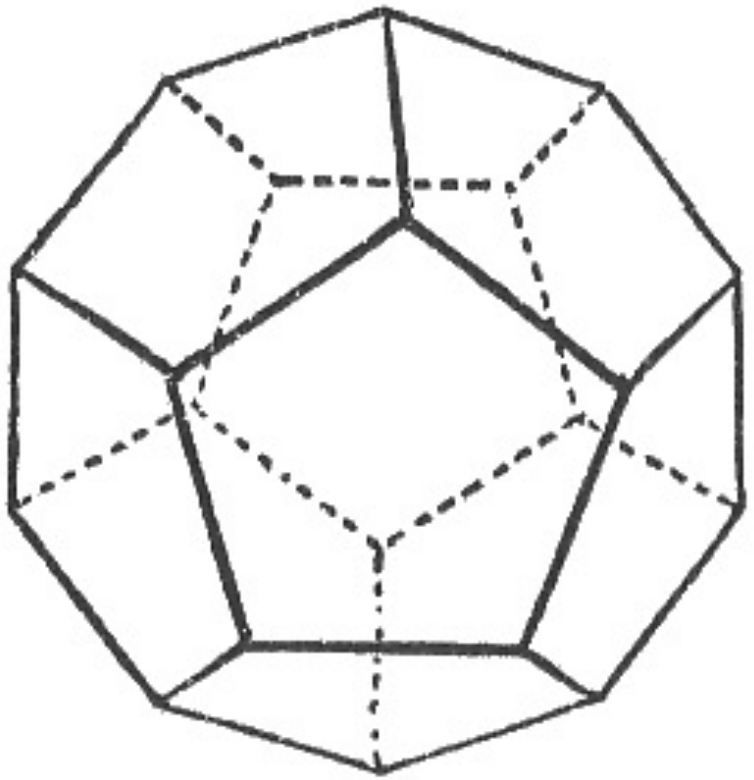
NE

MEASUREMENT CONVERSIONS

Sides on a pentagon?

5

3D SOLIDS



dodecahedron

UNITS OF TIME

years in a millenium 1000

Month after February? March

MULTIPLICATION FACTS – x8

E

1 x 8 = 8

2 x 8 = 16

3 x 8 = 24

4 x 8 = 32

5 x 8 = 40

6 x 8 = 48

7 x 8 = 56

8 x 8 = 64

9 x 8 = 72

10 x 8 = 80

MULTIPLICATION FACTS – x8

1 x 8 = 8	3 x 8 = 24	6 x 8 = 48
10 x 8 = 80	7 x 8 = 56	8 x 8 = 64
2 x 8 = 16	5 x 8 = 40	9 x 8 = 72
4 x 8 = 32		

18 x 8 = 144	5 x 80 = 400	60 x 80 = 4,800
385 x 8 = 3,080	66 x 38 = 2,508	139 x 8 = 1,112

SKIP COUNTING BY 8s

Let's skip count backwards by 8s, starting from 80.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

FACT FAMILIES

$$5 * 8 = 40$$

FACT FAMILIES

$$7 * 8 = 56$$

VERTICAL ADDITION WITH RENAMING

F

Write the following questions on your whiteboard vertically and solve.
Make sure you say the algorithm softly to yourself while you work.

a)
```
  11
 575
+687
----
1262
```

b)
```
  11
 4.63
+3.89
-----
 8.52
```

c)
```
  21
 845
 667
+997
----
2509
```

d)
```
 1 11
 8.637
+5.884
------
 14.521
```

SUBTRACTION ACROSS ZERO

F

Write the following questions on your whiteboard vertically and solve.
Make sure you say the algorithm softly to yourself while you work.

a)
$$\begin{array}{r} 2\,9\,11 \\ 3\,\cancel{0}\,\cancel{1} \\ -\;1\,6\,7 \\ \hline 1\,3\,4 \end{array}$$

b)
$$\begin{array}{r} 4\,9\,13 \\ 5\,\cancel{0}\,\cancel{3} \\ -\;3\,2\,7 \\ \hline 1\,7\,6 \end{array}$$

c)
$$\begin{array}{r} 7\,10 \\ \cancel{8}\,\cancel{0}.9 \\ -\,5\,5.7 \\ \hline 2\,5.2 \end{array}$$

d)
$$\begin{array}{r} 6\,11\;\;9\,15 \\ \cancel{7}\,\cancel{2}.\,0\,\cancel{5} \\ -\,4\,5.6\,8 \\ \hline 2\,6.3\,7 \end{array}$$

MULTIPLICATION – AREA MODEL

Th

Solve these questions using the area model.

a) 56 x 6 = 336

	50	6
6	300	36

$$\begin{array}{r} 300 \\ +\ 36 \\ \hline 336 \end{array}$$

b) 73 x 68 = 4964

	70	3
60	4200	180
8	560	24

$$\begin{array}{r} 1 \\ 4200 \\ 180 \\ +\ 560 \\ 24 \\ \hline 4964 \end{array}$$

c) 548 x 636 = 448528

	500	40	8
600	300000	24000	4800
30	15000	1200	240
6	3000	240	48

$$\begin{array}{r} 111 \\ 300000 \\ 24000 \\ 4800 \\ 15000 \\ 1200 \\ 240 \\ 3000 \\ 240 \\ +\ 48 \\ \hline 448528 \end{array}$$

SHORT DIVISION

F

Solve the following problems using short division.

a) $4396 \div 3$

$$3 \overline{)\,4^{1}3^{1}9^{1}6} \quad = \quad 1\ 4\ 6\ 5\ \text{r}1$$

b) $573 \div 6$

$$6 \overline{)\,5\ 7^{3}3} \quad = \quad 9\ 5\ \text{r}3$$

c) $49624 \div 7$

$$7 \overline{)\,4\ 9\ 6\ 2^{6}4} \quad = \quad 7\ 0\ 8\ 9\ \text{r}1$$

d) $758476 \div 37$

$$37 \overline{)\,7\ 5^{1}8^{18}4^{36}7^{34}6} \quad = \quad 2\ 0\ 4\ 9\ 9\ \text{r}13$$

MIXED NUMBERS → IMPROPER FRACTIONS

M

Convert the following mixed numbers into improper fractions.

a) $4\frac{1}{3} = \frac{13}{3}$

b) $6\frac{1}{2} = \frac{13}{2}$

c) $8\frac{2}{3} = \frac{26}{3}$

d) $7\frac{5}{9} = \frac{68}{9}$

e) $13\frac{7}{12} = \frac{163}{12}$

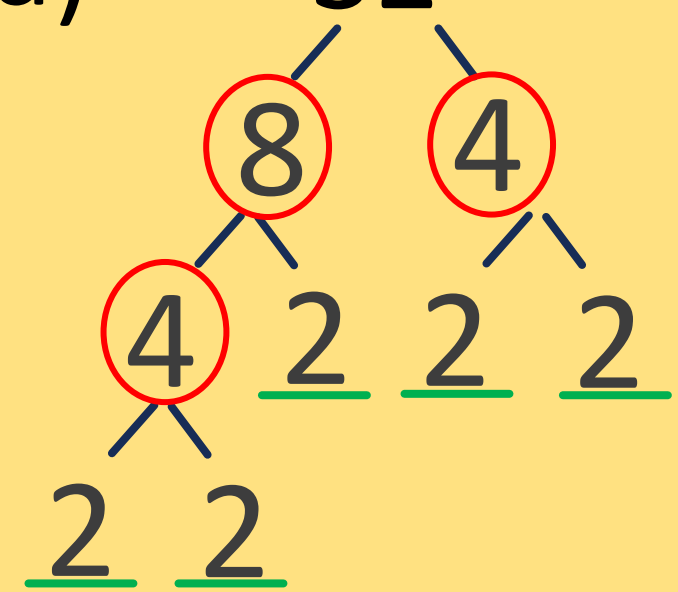
f) $243\frac{13}{27} = \frac{6574}{27}$

PRIME FACTORISATION

F

Create factor trees and determine the prime factors of the following numbers.

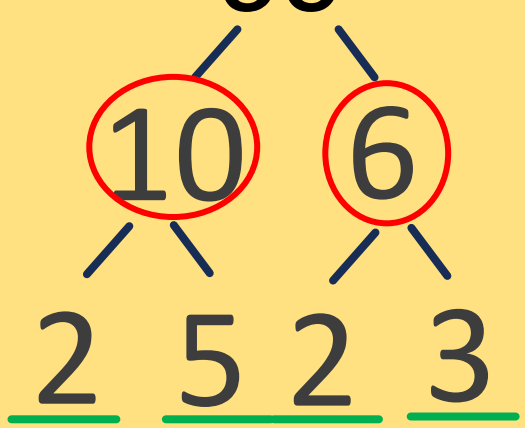
a) 32



$2 \times 2 \times 2 \times 2 \times 2 = 32$

$2^5 = 32$

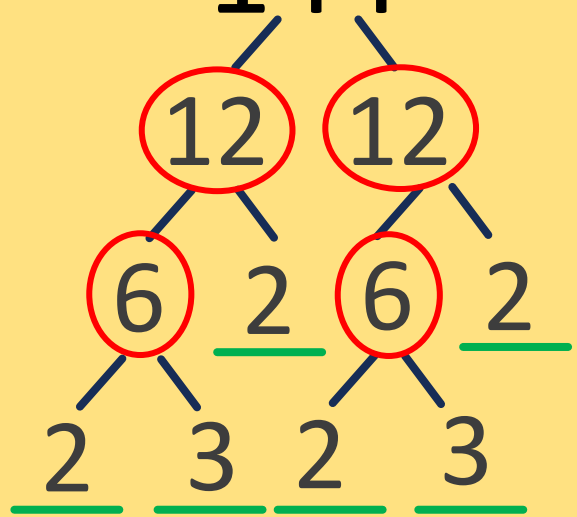
b) 60



$2 \times 5 \times 2 \times 3 = 60$

$2^2 \times 3 \times 5 = 60$

c) 144



$2 \times 2 \times 2 \times 2 \times 3 \times 3 = 144$

$2^4 \times 3^2 = 144$

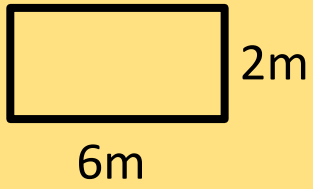
PERIMETER

F

Perimeter is the total distance around a 2D shape.

Square: P = L + L + L + L Rectangle: P = L + L + W + W Irregular: P = total of all sides

a)

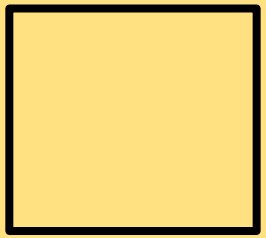


P = L + L + W + W

P = 6 + 6 + 2 + 2

P = 16m

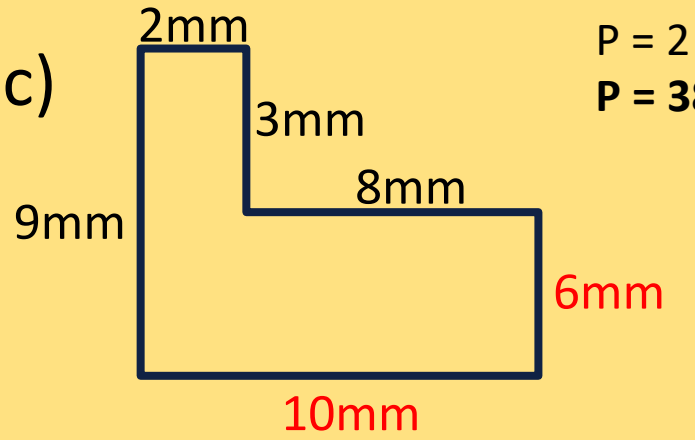
b)



P = 4.8 + 4.8 + 4.8 + 4.8

P = 19.2cm

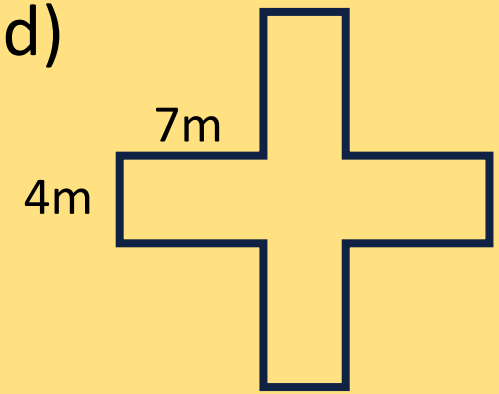
c)



P = 2 + 3 + 8 + 6 + 10 + 9

P = 38mm

d)



P = 4 + 4 + 4 + 4 + 7 + 7 + 7 + 7 + 7 + 7 + 7 + 7

P = 72m

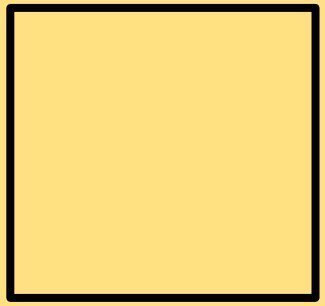
AREA

Th

Area is the total space inside a 2D shape.

Square: A = L x L Rectangle: A = L x W

a)



A = L x L

A = 8 x 8

A = 64cm²

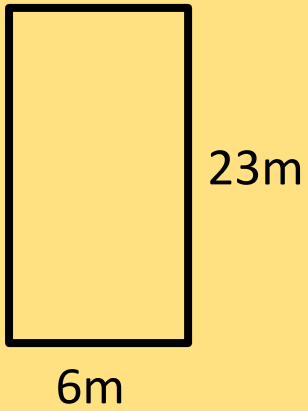
b)

A = L x W

A = 9 x 5

A = 45mm²

c)

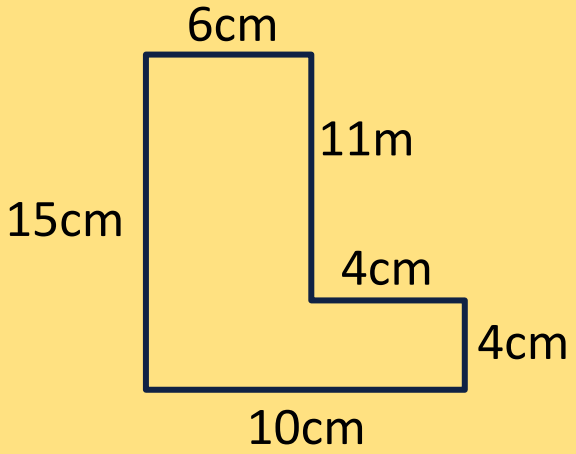


A = L x W

A = 6 x 23

A = 138m²

d)



A = 106cm²

Friday Maths Quiz

Term 3, Week 6 Maths Quiz *Name:* _____ *Date:* _____

Questions with * should be attempted after the rest of the sheet is completed.

1. Write **prime** or **composite** next to each number.

a) 5 _____ b) 8 _____

c) 11 _____ d) 15 _____

e) 31 _____ f) 50 _____

g) 81 _____ h) 97 _____

i)* 227 _____ j)* 231 _____

k)* 773 _____ l)* 2003 _____

2. Expand and solve these equations. The first few have been expanded for you.

a) $3^2 = 3 \times 3 =$ b) $5^2 = 5 \times 5 =$ c) $2^2 = 2 \times 2 =$

d) 7^2 e) 9^2 f) 10^2

g) 15^2 h) 24^2

i)* 57^2 j)* 784^2

3. Expand and solve these equations. The first few have been expanded for you.

a) $2^3 = 2 \times 2 \times 2 =$ b) $3^3 = 3 \times 3 \times 3 =$

c) $2^4 =$ d) $10^3 =$

e) $5^3 =$ f) $3^4 =$

g)* $8^4 =$ h)* $7^5 =$

Term 3, Week 6 Maths Quiz – Student Responses **Name:**_____

1a ☐ 1b ☐ 1c ☐ 1d ☐ 1e ☐ 1f ☐ 1g ☐ 1h ☐ 1i ☐ 1j ☐ 1k ☐ 1l ☐

2a ☐ 2b ☐ 2c ☐ 2d ☐ 2e ☐ 2f ☐ 2g ☐ 2h ☐ 2i ☐ 2j ☐

3a ☐ 3b ☐ 3c ☐ 3d ☐ 3e ☐ 3f ☐ 3g ☐ 3h ☐

4 ☐ 5 ☐ 6 ☐

Friday Maths Quiz

Grade 4 2022 - Friday Maths Quiz Data - Guttman Chart

					List factors of 2	List factors of 11	List factors of 8	Calculate duration between 10:30 and 18:30	Calculate duration between 9:00 and 13:00	Calculate duration between 15:30 and 20:45	Calculate duration between 08:15 and 10:45	Bar Model - Unit D - Lesson 2 (easy)	List factors of 16	Calculate duration between 05:10 and 16:55	Calculate duration between 14:45 and 18:10	List factors of 40	Bar Model - Unit D - Lesson 2 (hard)	List factors of 100	List factors of 169	Calculate duration between 4:15am and 8:02	Calculate duration between 1:56am and 11:3	Bar Model - Unit D - Lesson 2 (very hard)	List factors of 400	Total
					1a)	1c)	1b)	2b)	2a)	2d)	2c)	3	1d)	2f)	2e)	1e)	4	1f)	1g)	2g)	2h)	5	1h)	
[redacted]				Absent?																				
					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	19
					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	17
					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	17
					1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	0	16
					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	16
					1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	0	1	1	16
					1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	13
					1	1	1	0	1	0	1	1	1	0	1	1	1	0	0	0	1	1	0	12
					1	1	1	1	1	1	1	1	0	1	1	0	1	0	0	0	0	1	0	12
					1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	12
					1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	12
					1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	12
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					1	1	1	1	1	1	1	0	1	1	0	0	0	0	0	0	1	0	0	11
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					1	1	1	1	1	1	1	1	0	0	0	1	0	0	0	0	0	0	0	10
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					1	1	0	1	1	1	0	1	1	0	1	0	0	0	0	0	0	0	0	8
					1	1	1	1	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	8
					1	1	1	1	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	8
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					1	0	1	1	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	7
					1	1	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	6
					1	1	1	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	6
					1	1	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	6
					1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	6
					1	1	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	6
					1	1	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	6
			Total		86	85	84	83	82	74	71	70	65	61	56	53	47	32	22	17	16	9	6	

RESOURCES

- Booker, Bond, Sparrow & Swan
Teaching Primary Mathematics

- Stephen Norton videos and PDF:
Teaching And Learning Fundamental Mathematics

- Maths Model Drawing Made Easy and Inspiring

Q&A

PROBABILITY – INDEPENDENT EVENTS

Th

Write the answer to these questions on your whiteboard.

a) Rolling a number less than 6 with a 6-sided die. $\frac{5}{6}$

b) Rolling a number greater than 7 with a 10-sided die. $\frac{3}{10}$

c) Selecting the Ace of Hearts from a deck of cards. $\frac{1}{52}$

d) Rolling a 7 with a 6-sided die. 0

d) Getting green or orange on this spinner. $\frac{2}{5}$

SQUARE NUMBERS

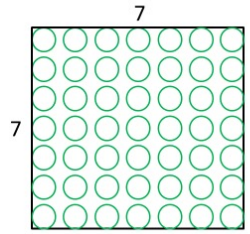
Th

A square number is the product of a number multiplied by itself.

When presented as an array, a square number makes a square shape.

49 is a square number.

It is the result of 7 multiplied by itself.



SHORT DIVISION

F

Solve the following problems using short division.

a) $4396 \div 3$

$$3 \overline{)\,4^{1}3^{1}9^{1}6} \quad 1\ 4\ 6\ 5\ r1$$

b) $573 \div 6$

$$6 \overline{)\,5\ 7^{3}3} \quad 9\ 5\ r3$$

c) $4\,9\,6\,2\,4 \div 7$

$$7 \overline{)\,4\ 9\ 6\ 2^{6}4} \quad 7\ 0\ 8\ 9\ r1$$

d) $7\,5\,8\,4\,7\,6 \div 37$

$$37 \overline{)\,7\ 5^{1}8^{18}4^{36}7^{34}6} \quad 2\ 0\ 4\ 9\ 9\ r13$$

Twitter: @DaveMorkunas