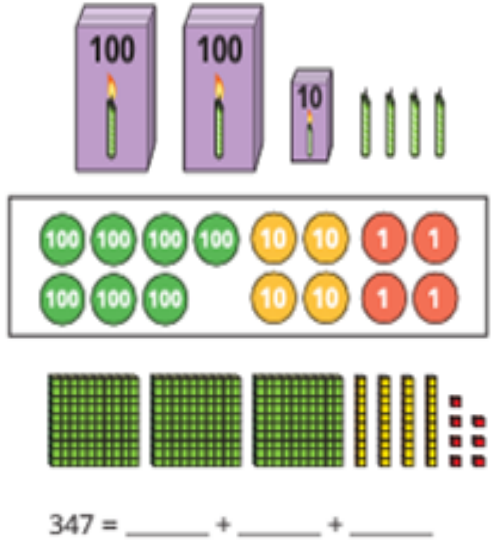
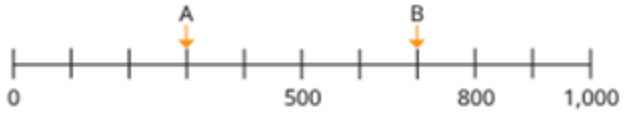
Maths – Place Value

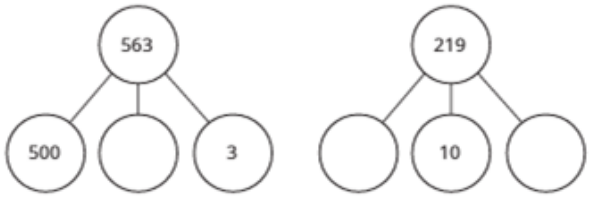
YEAR 4
Term 1

Small Steps:

1. Represent numbers to 1,000.
2. Partition numbers to 1,000.
3. Number line to 1,000.
4. Thousands.
5. Represent numbers to 10,000.
6. Partition numbers to 10,000.
7. Flexible partitioning of numbers to 10,000.
8. Find 1, 10, 100, 1000 more or less.
9. Number line to 10,000.
10. Estimate on a number line to 10,000.
11. Compare numbers to 10,000
12. Order numbers to 10,000.
13. Roman numerals.
14. Round to the nearest 10.
15. Round to the nearest 100.
16. Round to the nearest 1,000.
17. Round to the nearest 10, 100 or 1,000.







Key Questions:

- What is the value of each base 10 piece/place value counter?
- How did you count the pieces?
- Does the order in which you build the number matter?
- Can you represent the number another way?
- How many hundreds/tens/ones are there in 465?
- How do you write a number that has zero tens/ones?
- What number is equal to 300 + 70 + 9?
- What is the value of the missing part? How do you know?
- What is the value of the digit ____ in the number ____?
- What are the values at the start/end points of the number line?
- What is the difference in value between the start and end points?
- How many intervals are there? What are they worth?
- How can you work out the halfway point of an interval?
- What other numbers can you mark on the number line?
- Why are the start and end values of a number line important?

Stem Sentences:

- There are ____ hundreds, _____ tens and ____ ones. The number is ____.
- When a number has no ____, then we use ____ as a placeholder.
- ____ has ____ hundreds, ____ tens and ____ ones.
- ____ = ____ + ____ + ____
- The number that is made up of ____ hundreds, ____ tens and ____ ones is ____.
- The difference in value between the start and end of the number line is ____.

Key Vocabulary:

represent
thousand
ones
tens
hundreds
zero
placeholder
base 10
place value
2-digit
3-digit
4-digit
partition
part-whole model
parts
wholes
expanded form
number line
label
identify
missing values
difference
start point
end point
midpoint
dividing
interval

Maths – Place Value

YEAR 4

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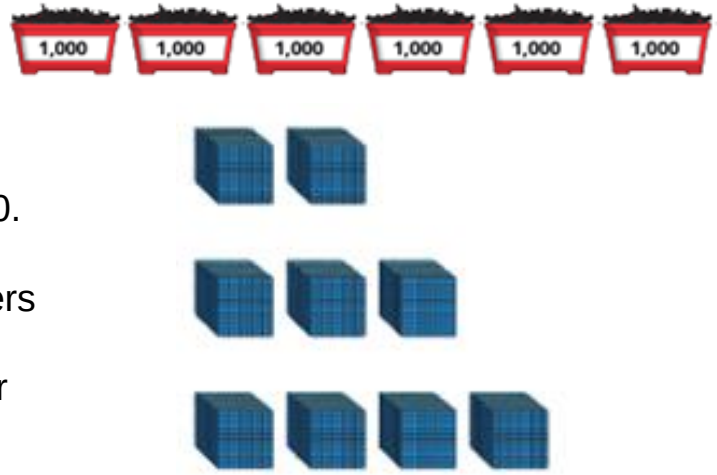
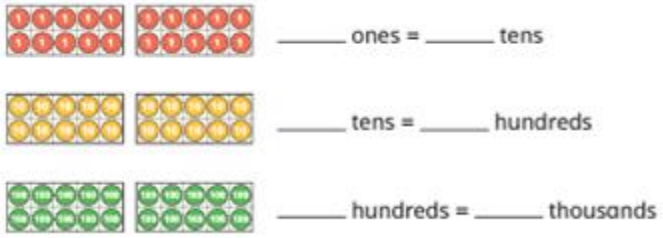
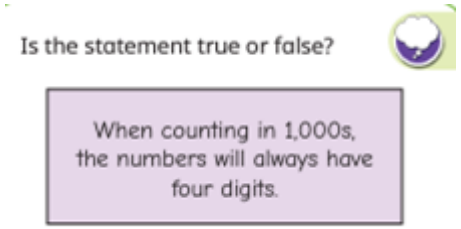




1,000	2,000			
		7,000	8,000	9,000

Key Questions:

- Counting in 1,000s from 3,000, what is the next number?
- Counting back in 1,000's from 7,000, tell me a number you would say. How do you know?
- How many thousands are there in 6,000?
- How many hundreds are there in 1,000?
- How many hundreds are the in 6,000?



Stem Sentences:

- The next multiple of 1,000 is ____.
- The previous multiple of 1,000 is ____.
- 1 thousand is equal to ____ hundreds, so ____ thousands is equal to _ hundreds.
- ____ thousands can be written in numerals as ____.

Key Vocabulary:

thousand
forwards
backwards
multiple
number track
ones
hundreds
4-digit
equal to
base 10
place value counters
ten frame
next
previous
numerals

Maths – Place Value

YEAR 4

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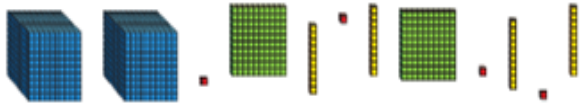
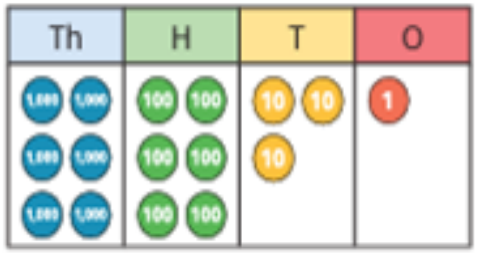
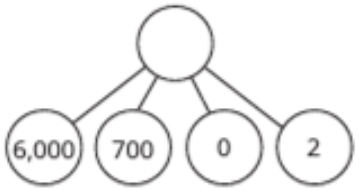




1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000
100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9



Key Questions:

- What number is represented?/What is the value of each digit?
- Represent 4,672 using base 10/place value counters.
- How many thousands, hundreds, tens and ones are in the number____?
- How would you represent 6,000 + 0 + 60 + 9
- How do you know the counter in the thousands column has a greater value than the counter in the ones column?
- What is the value of each digit in 4,715?
- Does the order in which you partition the number matter?
- What number is equal to 7,000 + 0 + 30 + 4?
- What does a zero in a place value column tell you?
- How can you write the number using a part-whole model?
- What different multiples of 1,000 could be the first part?
- How does this affect the values of the other parts?
- What can you exchange the thousands/hundreds/tens/ones digit for?
- How do you work out the whole given the parts?

Stem Sentences:

- There are ____ thousands, ____ hundreds, ____ tens and ____ ones.
- The number is ____.
- _____ has _____ thousands, ____ hundreds, ____ tens and ____ ones.
- ____ = ____ + ____ + ____ + ____
- ____ is equal to ____ thousands, ____hundreds, ____tens and ____ ones or ____thousands, ____hundreds, ____tens and ____ ones.

Key Vocabulary:

thousand
hundreds
tens
ones
ten thousand
place value
Gattegno
columns
times the size
a tenth the size
zero
placeholder
4-digit
partition
numerals
expanded form
value
part-whole
partitioning
omitted
flexible partitioning
whole number
parts
addition
subtraction
exchanges

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YEAR 4

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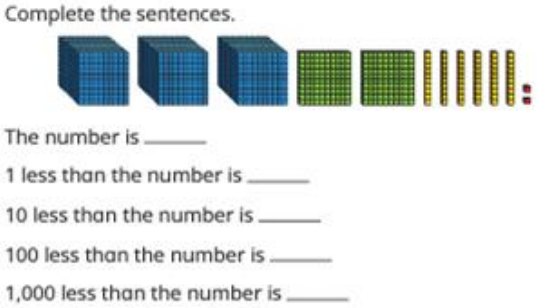
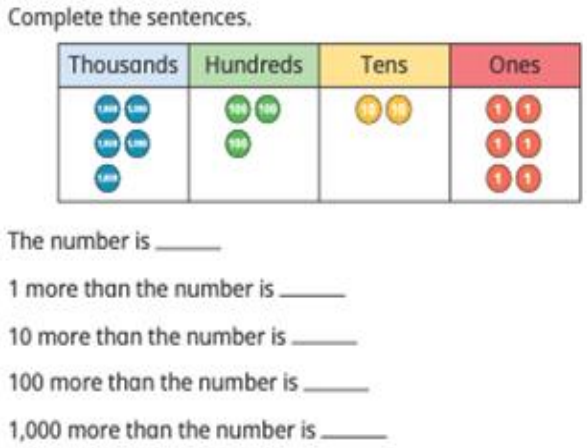
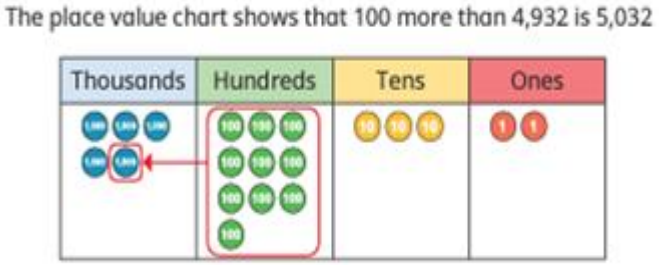
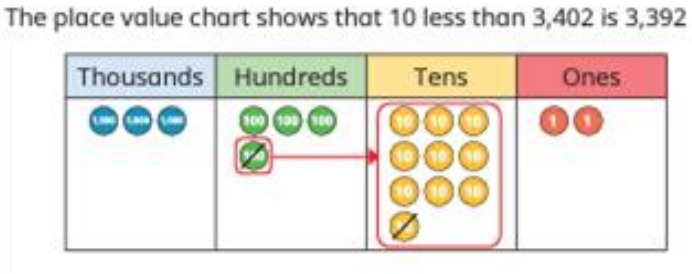






Key Questions:

- How many ones/tens/hundreds/thousands are in ____?
- How will the number change if you add an extra 1/10/100/1,000?
- Which column changes if you find 1,000 more/less than a number?
- Can finding 1/10/100 more/less change more than one column? When does this happen?
- Do you need to make an exchange?
- How can you find 100 less than 8,012? What exchange do you need to make?
- Which columns stay the same/change?



Stem Sentences:

- There are ____ tens/hundred/thousands in ____.
- 1 more/less than ____ tens in ____ tens.
- _____ more/less than _____ is ____.

Key Vocabulary:

more
less
3-digit
4-digit
base 10
place value counters
multiples
zero
placeholder
columns
change
stay the same
ones
tens
hundreds
thousands
always
sometimes
never

Maths – Place Value

YEAR 4

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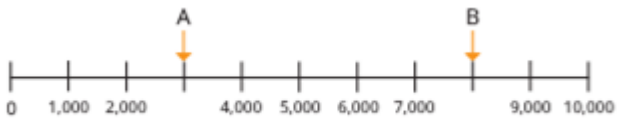

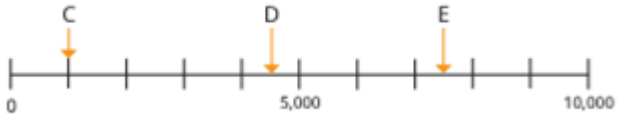

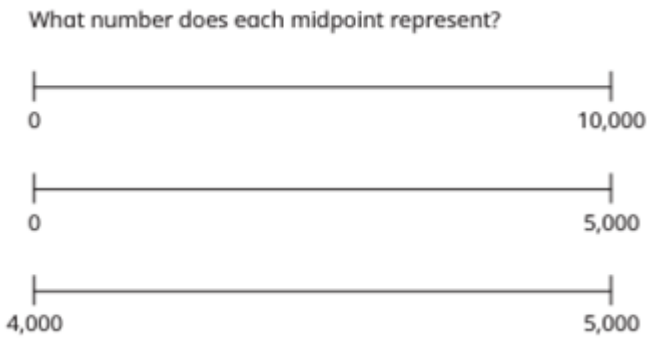

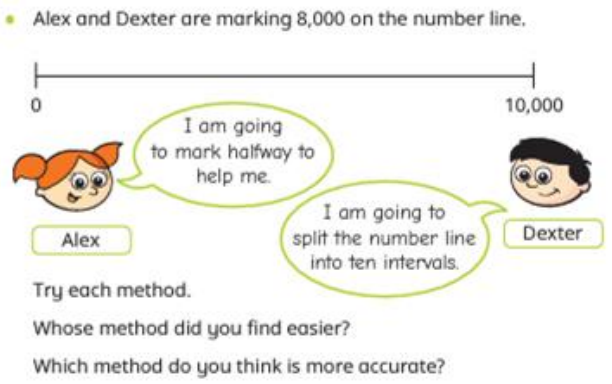

Key Questions:

- What are the values at the start and end points of the number line?
- What is the difference in value between the start and end points?
- How many intervals are there?
- How can you work out what each interval is worth?
- How can you work out the halfway point of an interval?
- What other numbers can you mark on the number line?
- Why are the start and end values of a number line important?
- What is the midpoint of the number line?
- How does knowing the midpoint help you to place the number on the number line?
- What other numbers could you mark on accurately?
- Which division is the arrow closer to? Is the number greater than or less than this value?
- How would splitting the line into more intervals help?
- How accurate do you think your estimate is?

Stem Sentences:

- The difference in value between the start and end of the number line is _____.
- There are ____ intervals. Each interval is worth ____.
- The midpoint of the number line is ____.
- ____ is closer to ____ than ____.

Key Vocabulary:

number line
thousand
ten thousand
label
identify
values
difference
between
start point
midpoint
end point
dividing
interval
worth
halfway
estimate
estimating
additional
one-quarter
three-quarter
closer
less than
greater than
accurately
division

Maths – Place Value

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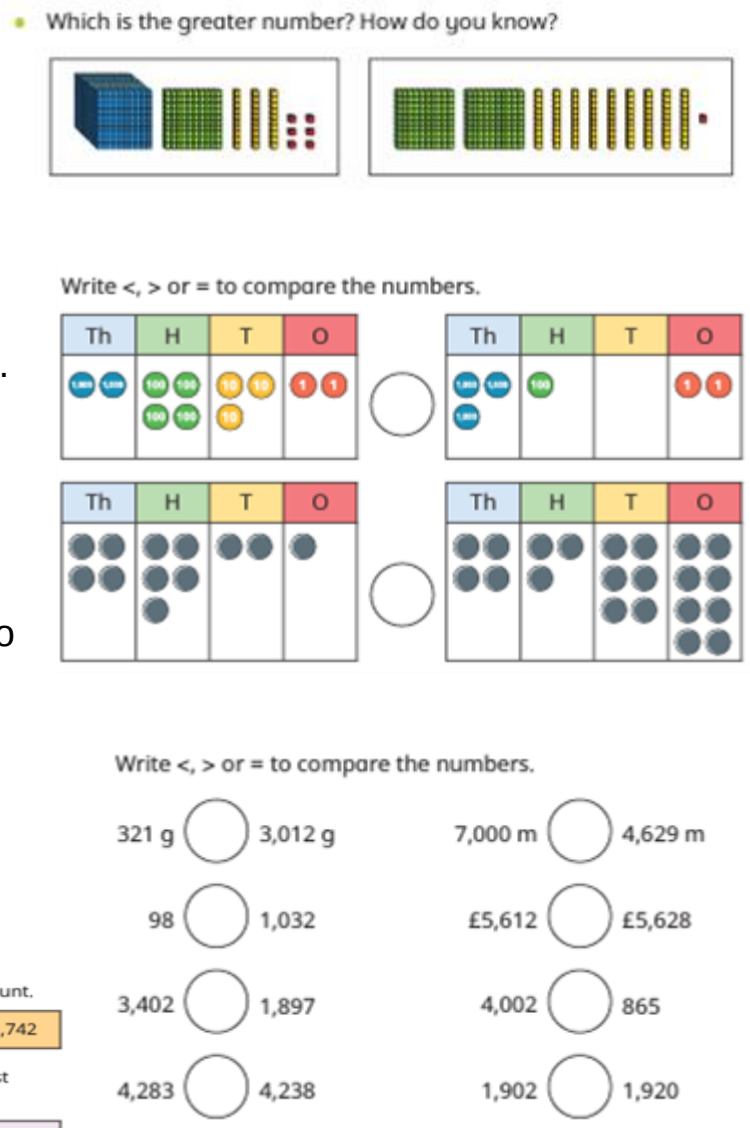
16.
17.



Key Questions:

- What is the value of the first digit in _____?
- What is the value of the ____ digit in _____?
- How many thousands/hundreds/tens/ones are there?
- Which column do you start comparing from?
- Which digit in each number has the greatest value?
- What is the value of these digits?
- When comparing two numbers, if the first digits are equal in value, what do you look at next?
- Which is the greater number? How do you know?
- What is the difference between ascending and descending order?
- What is different about comparing numbers with the same number of digits and comparing numbers with different numbers of digits?

Stem Sentences:

- If the digits in the ____ column are the same, I need to look in the ____ column.
- ____ is greater than ____ because…
- ____ is less than ____ because…
- ____ is greater than _____, so _____ thousand is greater than ____ thousand.
- ____ is less than ____, so ____ thousand is less than ____ thousand.

Key Vocabulary:

comparing
ten thousand
greater than
smaller than
less than
more than
inequality
symbols
base 10
place value counters
number lines
same
columns
right
digits
order
ascending
descending
value
zero
placeholders
comparisons

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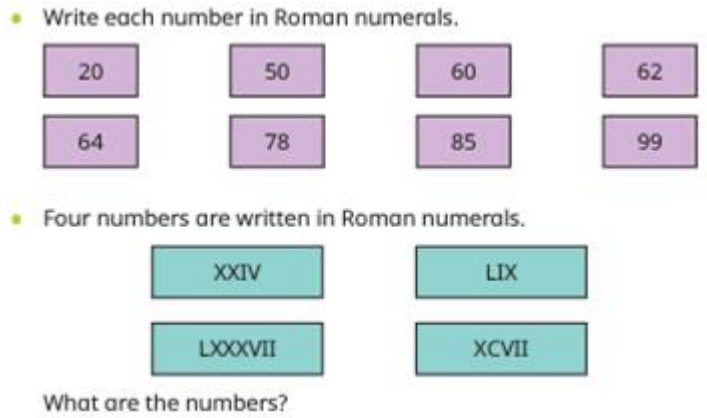
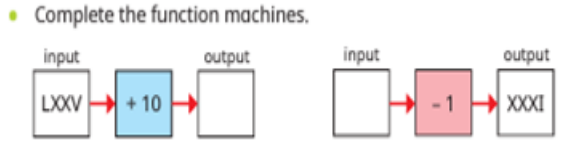
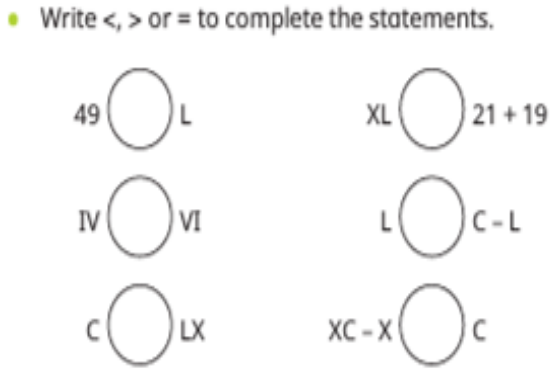




Key Questions:

- What patterns can you see in the Roman number system?
- What rules do you use when converting numbers to Roman numerals?
- What letters are used in the Roman number system? What does each letter represent?
- How do you know what order to write the letters in when using Roman numerals?
- What is the same and what is different about representing the number twenty-nine in the Roman number system and our number system?



Stem Sentences:

- The letter ____ represents the number ____.
- I know ____ is greater than ____ because ____.

Key Vocabulary:

roman numerals
clock face
L
C
similarities
differences
number system
zero
placeholders
IV
I
XL
XC
patterns
rules
converting
letters
represent
order
greater than
less than

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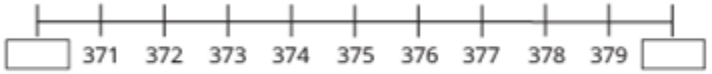
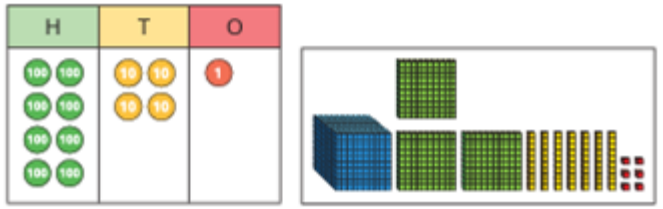


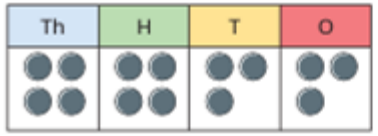
378 is closer to _____ than _____

378 rounded to the nearest 10 is _____

375 rounded to the nearest 10 is _____

Round each number to the nearest 100





Each of the numbers round to 4,000 to the nearest 1,000

What could the missing digits be?

4,__28 __,842

4,2__8 __,482

Key Questions:

- What is the multiple of 10/100/1,000 after ____?
- What is the multiple of 10/100/1,000 before ____?
- Which multiple of 10/100/1,000 is _____ closer to? How do you know?
- Which numbers rounded to the nearest 10/100/1,000 result in zero?
- Which place value column do you need to look at to decide which multiple to round to?
- What numbers when rounded to the nearest 10 give the result 50/500?
- What is the same and what is different about rounding to the nearest 10, 100 and 1,000?

- Round each number to the nearest 1,000

2,290	720	3,450	9,932
5,049	53	6,500	9,502

Stem Sentences:

- The two multiples of 10/100/1,000 the number lies between are ____ and ____.
- ____ is closer to ____ than ____.
- ____ rounded to the nearest 10/100/1,000 is ____.

Key Vocabulary:

rounding
nearest 10
2-digit
previous
next
multiples
3-digit
zero
placeholder
tens
column
number lines
closer to
after
before
place value
nearest 100
same
different
nearest 1,000
hundreds
between
above
round to

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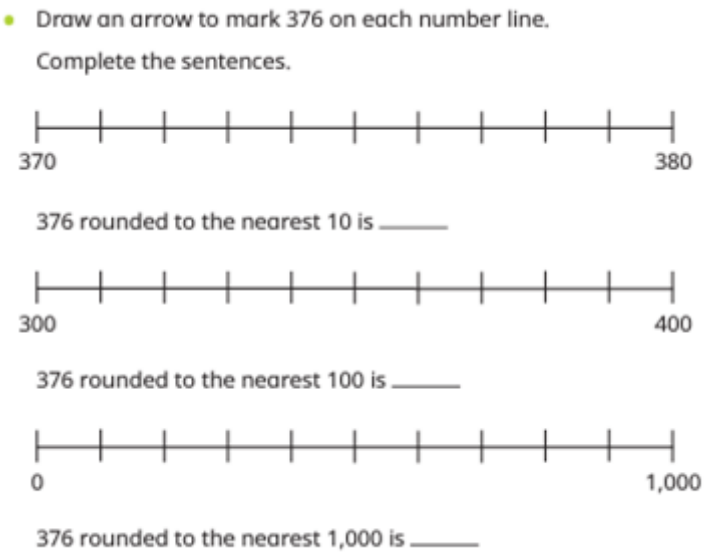
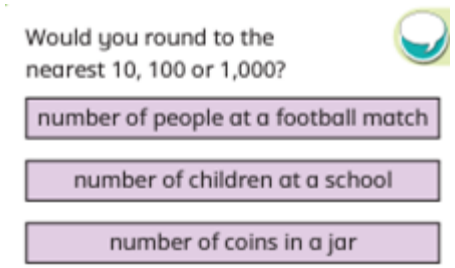


Complete the table.

Number	7,126	4,996	2,006	499
Rounded to the nearest 10				
Rounded to the nearest 100				
Rounded to the nearest 1,000				

Key Questions:

- What is the multiple 10/100/1,000 after ____?
- What is the multiple of 10/100/1,000 before ____?
- Which multiple of 10/100/1,000 is ____ closer to? How do you know?
- Which numbers rounded to the nearest 10/100/1,000 result in zero?
- Which place value column do you need to look at to decide which multiple to round to?
- What is the same and what is different about rounding to the nearest 10, 100 and 1,000?



Stem Sentences:

- The two multiples of 10/100/1,000 the number lies between are ____ and ____.
- ____ is closer to ____ than ____.
- ____ rounded to the nearest 10/100/1,000 is ____.

Key Vocabulary:

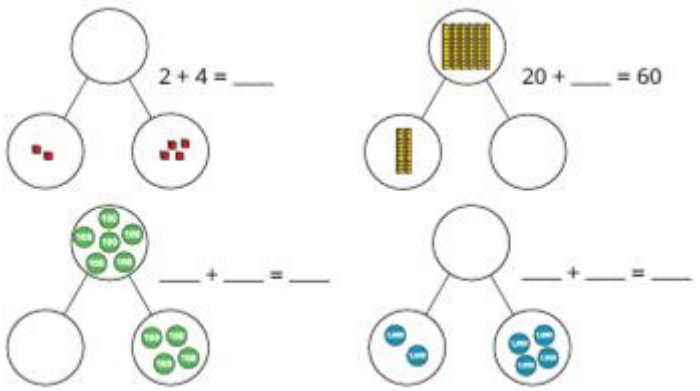
nearest 10
nearest 100
nearest 1,000
columns
same
different
rounding
place value
previous
next
multiple
accuracy
after
before
closer to
zero

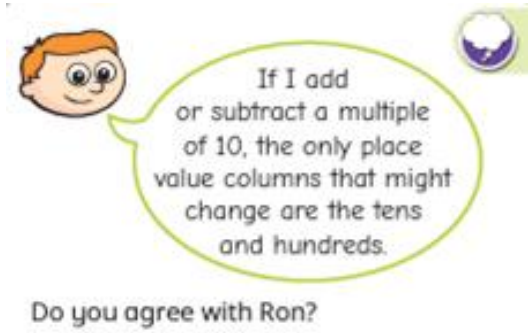
Maths – Addition and Subtraction

YEAR 4
Term 1

Small Steps:

1. Add and subtract 1s, 10s, 100s and 1,000s.
2. Add up two 4-digit numbers – no exchange.
3. Add two 4-digit numbers – one exchange.
4. Add two 4-digit numbers – more than one exchange.
5. Subtract two 4-digit numbers – no exchange.
6. Subtract two 4-digit numbers – one exchange.
7. Subtract two 4-digit numbers – more than one exchange.
8. Efficient subtraction

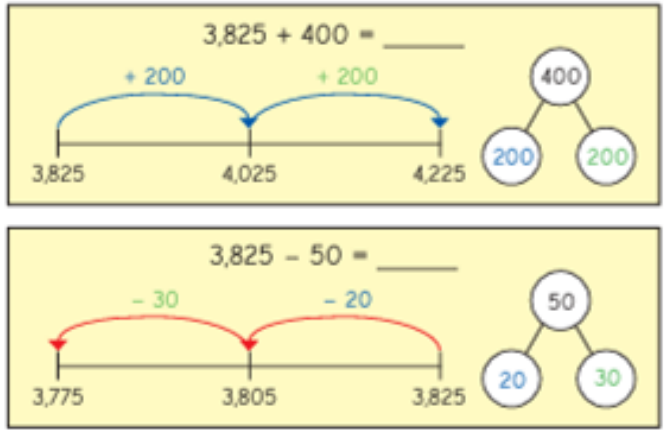




- 1,364 + 3 = ____
- 1,364 – 1 = ____
- 1,364 + 30 = ____
- 1,364 – 60 = ____
- 1,364 + 300 = ____
- 1,364 – 200 = ____
- 1,364 + 6,000 = ____
- 1,364 – 1,000 = ____

Key Questions:

If you know 2 + 4 = 6, what else do you know?
How will your partition ____? Why?
Will the value in the ones/tens/hundreds/thousands column increase or decrease? By how much?
Which place value columns have changed/stayed the same? Why?
What is the inverse of subtracting 300?



Stem Sentences:

- The next/previous multiple of 10/100/1000 is ____.
- I can partition ____ into ____ and ____ because…
- The value of the ____ column will increase/decrease by ____.

Key Vocabulary:

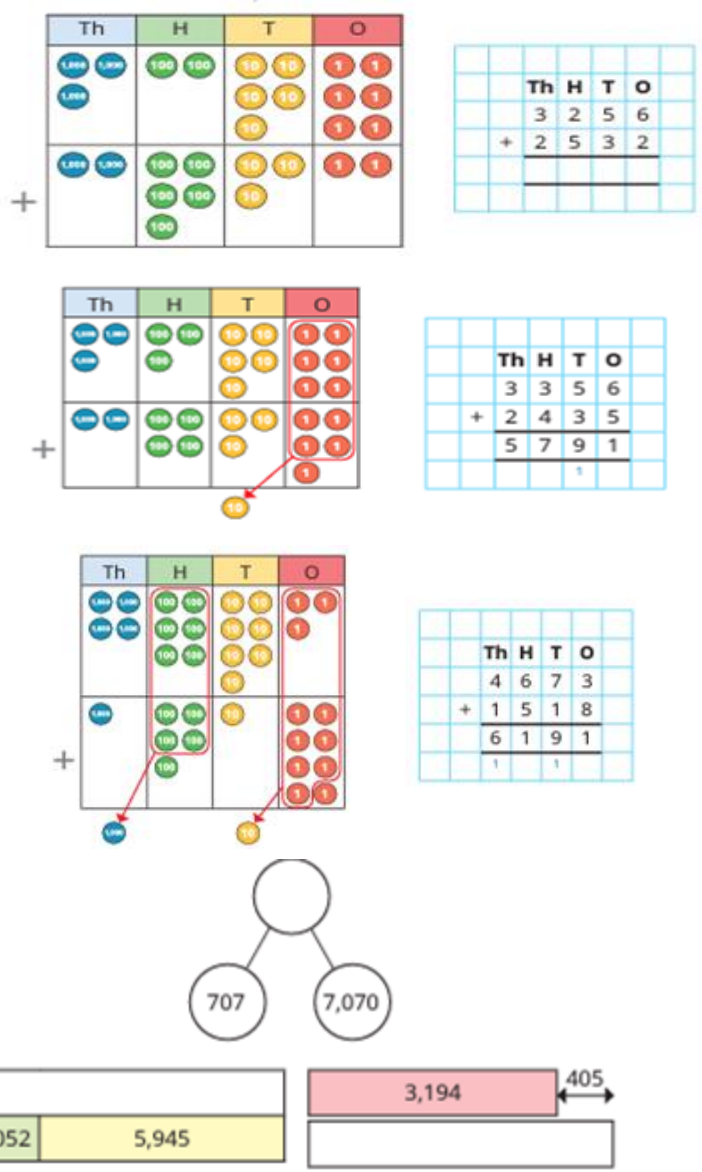
add/adding/addition
subtract/subtracting
subtraction
ones
tens
hundreds
3-digit/4-digit
mental strategy
crossing a multiple
multiples
columns
always
sometimes
never
change
exchange
partition
value
increase
decrease
place value
inverse
next
previous
partition
value

Maths – Addition and Subtraction

YEAR 4

Small Steps:

1. Add and subtract 1s, 10s, 100s and 1,000s.
2. Add up two 4-digit numbers – no exchange.
3. Add two 4-digit numbers – one exchange.
4. Add two 4-digit numbers – more than one exchange.
5. Subtract two 4-digit numbers – no exchange.
6. Subtract two 4-digit numbers – one exchange.
7. Subtract two 4-digit numbers – more than one exchange.
8. Efficient subtraction.
9.
1. s.



Key Questions:

- How can you represent the question using base 10?
- How can you put these numbers into a place value chart?
- Does it matter which columns you add together first?
- Do you have enough ones/tens/hundreds to make an exchange?
- What do you write in the tens column if there are no tens?
- How many thousands/hundreds/tens/ones are there altogether?
- What is ____ more than ____?
- When exchanging 10 hundreds, where do you out the thousand?
- How can you make an exchange in more than one column in the same addition?

Stem Sentences:

- ____ ones added to ____ ones is equal to ____ ones.
- ____ added to ____ is equal to ____.
- I have ____ ones/tens/hundreds, so I do/do not need to make an exchange.
- I can exchange 10 ____ for 1 ____.
- ____ plus _____ plus the 1 that I exchanged from the last column is equal to ____.

Key Vocabulary:

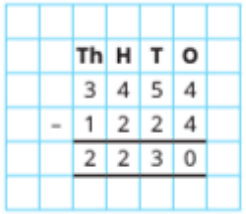
formal written method
2-digit
3-digit
exchange
4-digit
add/addition/adding
subtract/subtraction
subtracting
digits
ones
tens
hundreds
thousands
column
equal to
place value
smallest value column
more than
altogether
plus

Maths – Addition and Subtraction

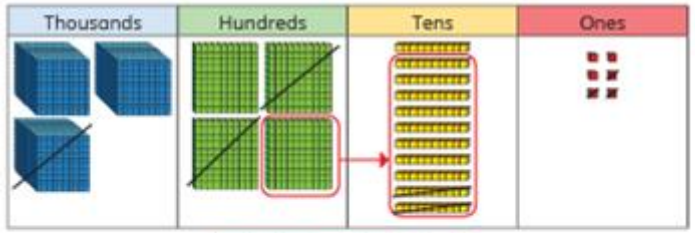
YEAR 4

Small Steps:

1. Add and subtract 1s, 10s, 100s and 1,000s.
2. Add up two 4-digit numbers – no exchange.
3. Add two 4-digit numbers – one exchange.
4. Add two 4-digit numbers – more than one exchange.
5. Subtract two 4-digit numbers – no exchange.
6. Subtract two 4-digit numbers – one exchange.
7. Subtract two 4-digit numbers – more than one exchange.

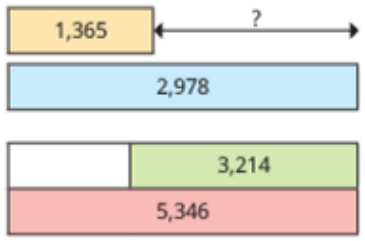


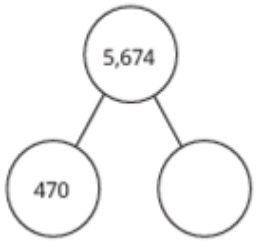
	Th	H	T	O
	3	4	5	4
−	1	2	2	4
	2	2	3	0

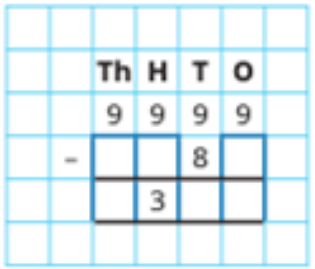


	Th	H	T	O
	3	~~4~~	1	6
−	1	2	2	3
	2	1	9	3

- Find the missing numbers.



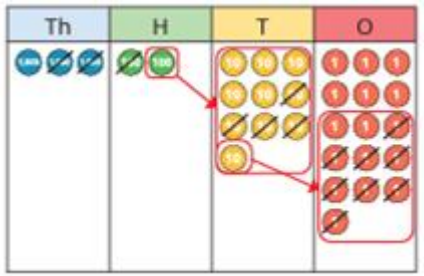




	Th	H	T	O
	9	9	9	9
−			8	
		3		

Key Questions:

- How can you show this question using place value counters?
- What is ____ less than ____?
- Does it matter which column you subtract first?
- Do you need to make an exchange?
- Do you have enough ones/tens/hundreds to subtract ____?
- How can you subtract two numbers if one of them has fewer digits than the other?
- If you cannot exchange from tens/hundreds, what do you need to do?
- Which column can you exchange from?



	Th	H	T	O
	3	~~2~~	~~9~~	6
−	2	1	4	8
	1	0	5	8

Stem Sentences:

- ____ ones/tens/hundreds subtract ____ ones/tens/hundreds is equal to ____.
- I can/cannot subtract ____ ones/tens/hundreds from ___ ones/tens/hundreds, so I do/do not need to make an exchange.

Key Vocabulary:

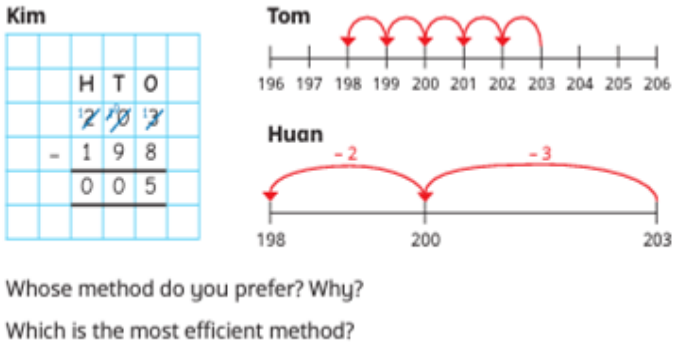
formal written method
subtract/subtraction
subtracting
2-digit
3-digit
4-digit
exchange
smallest value column
columns
ones
tens
hundreds
thousands
place value
less than
equal to
calculation
fewer
column subtraction

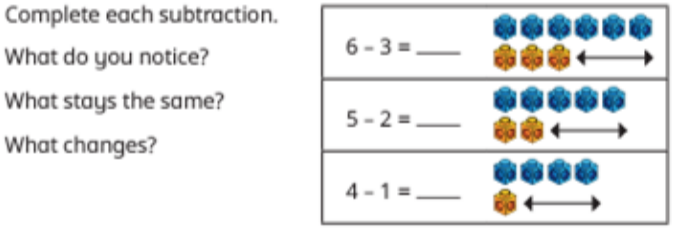
Maths – Addition and Subtraction

YEAR 4

Small Steps:

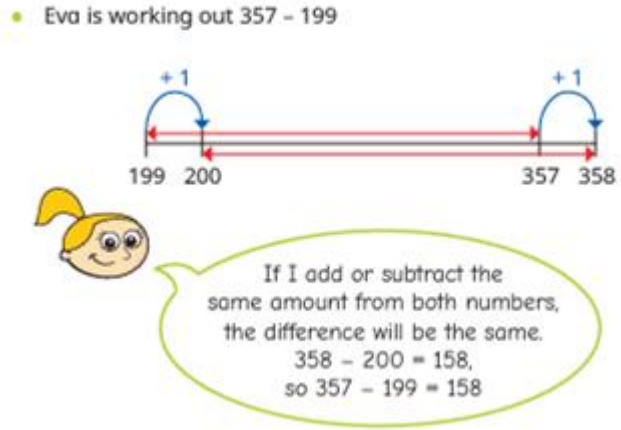
1. Add and subtract 1s, 10s, 100s and 1,000s.
2. Add up two 4-digit numbers – no exchange.
3. Add two 4-digit numbers – one exchange.
4. Add two 4-digit numbers – more than one exchange.
5. Subtract two 4-digit numbers – no exchange.
6. Subtract two 4-digit numbers – one exchange.
7. Subtract two 4-digit numbers – more than one exchange.
8. Efficient subtraction.
9. Estimate answers
10. Checking strategies.





Key Questions:

- Which method do you find easiest? Why?
- Which method is most efficient?
- Can you work this out mentally?
- What does "difference" mean?
- What does the arrow represent? What do you notice about all the arrows?
- Why does adding/subtracting ____ to/from each number make the calculation easier?



Stem Sentences:

- The jump to the next multiple of ____ is ____.
- If I add/subtract ____ to/from both numbers, the difference will be the same.

Key Vocabulary:

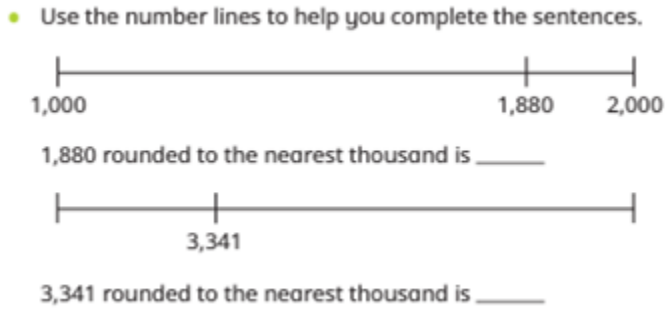
mental method
written method
subtraction
calculation
strategies
jottings
efficient
constant difference
adding
addition
add
amount
exchanges
multiple
number line
represent

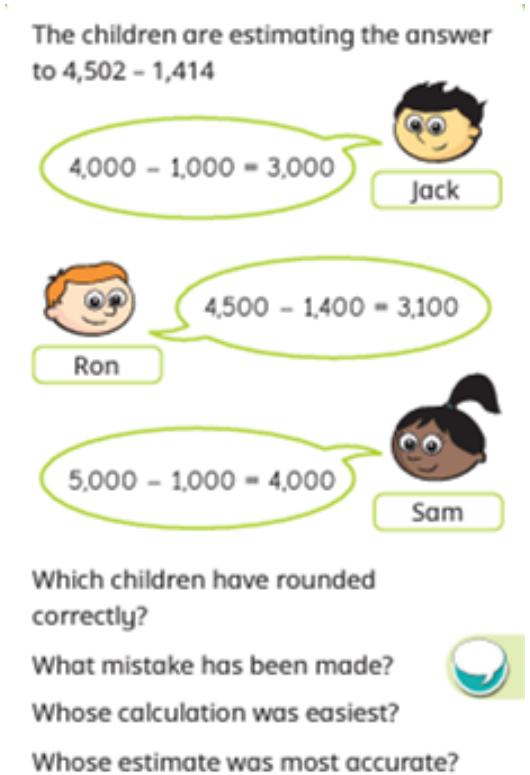
Maths – Addition and Subtraction

YEAR 4

Small Steps:

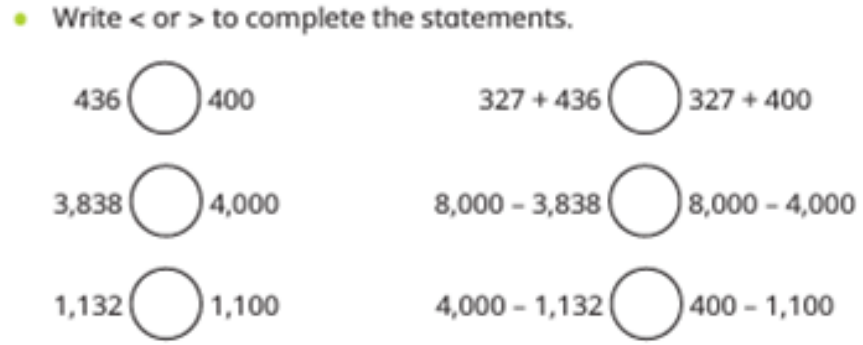
1. Add and subtract 1s, 10s, 100s and 1,000s.
2. Add up two 4-digit numbers – no exchange.
3. Add two 4-digit numbers – one exchange.
4. Add two 4-digit numbers – more than one exchange.
5. Subtract two 4-digit numbers – no exchange.
6. Subtract two 4-digit numbers – one exchange.
7. Subtract two 4-digit numbers – more than one exchange.
8. Efficient subtraction.
9. Estimate answers
10. Checking strategies.





Key Questions:

- What multiple of 10/100/1,000 comes before and after ____?
- Where would ____ be on this number line?
- Which multiple is ____ closer to?
- Which calculation is easier/quicker to perform? Why?
- Why do we use estimates?
- Is the estimate less than or greater than the actual answer? Why?



Stem Sentences:

- ____ is closer to ____ than ____.
- So ___ rounded to the nearest ____ is ____.
- The estimate will be ____ than the actual answer because…

Key Vocabulary:

estimating
estimate
rounding
rounded
nearest 10/100/1,000
number line
representation
near to
calculated
calculation
greater than
less than
previous
multiple
before
after
closer to

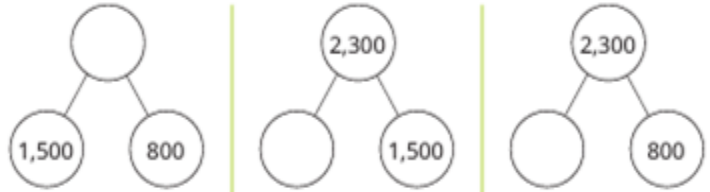
Maths – Addition and Subtraction

YEAR 4

Small Steps:

1. Add and subtract 1s, 10s, 100s and 1,000s.
2. Add up two 4-digit numbers – no exchange.
3. Add two 4-digit numbers – one exchange.
4. Add two 4-digit numbers – more than one exchange.
5. Subtract two 4-digit numbers – no exchange.
6. Subtract two 4-digit numbers – one exchange.
7. Subtract two 4-digit numbers – more than one exchange.
8. Efficient subtraction.
9. Estimate answers
10. Checking strategies.

- Complete the part-whole models and number sentences.



1,500 + 800 = _____ 2,300 – 1,500 = _____ 2,300 – 800 = _____

How could you check your answers?

- Complete the bar model for 3,582 – 2,236 = 1,346

- Use an inverse operation to check each calculation.

How many different inverse calculations can you do for each?

	Th	H	T	O
	4	5	1	9
+		7	2	3
	5	2	4	2

	Th	H	T	O
	3	4 5	1 6	4
–	1	4	8	4
	2	0	8	0

Key Questions:

- What are the parts? What is the whole?
- Given one fact, what other facts can you write?
- What does “inverse” mean?
- What is the inverse of add/subtract ____?
- Is addition/subtraction commutative?

- Which subtractions can be used to check the addition 1,574 + 3,432 = 5,006?

5,006 – 3,432 | 5,006 – 1,574 | 3,432 – 1,574 | 1,574 – 5,006

- Which additions can be used to check the subtraction 3,265 – 823 = 2,442?

3,265 + 823 | 823 + 2,442 | 3,265 + 2,442 | 2,442 + 823

Stem Sentences:

- The inverse of ____ is ____.
- If ____ is a part and ____ is a part, then ____ is the whole.
- If ____ is the whole and ____ is a part, then ____ is the other part.
- To check I have added/subtracted ____ correctly, I need to ____.

Key Vocabulary:

inverse
relationship
addition
add
subtraction
subtract
operations
commutative
bar model
part-whole model
accuracy
estimations
alternative
checking
strategy
parts
whole

Maths – Multiplication and Division A

YEAR 4
Term 2

Small Steps:

1. Multiples of 3.
2. Multiply and divide by 6.
3. 6 times-table and division facts.
4. Multiply and divide by 9.
5. 9 times-table and division facts.
6. The 3, 6 and 9 times-tables.
7. Multiply and divide by 7.
8. 7 times-table and division facts.
9. 11 times-table and division facts.
10. 12 times-table and division facts.
11. Multiply by 1 and 0.
12. Divide a number by 1 and itself.
13. Multiply three numbers.

Complete the number track.

3	6		12		18	21	24			33	36

Tiny is counting in 3s.

3, 6, 9, 13, 16, 19, 23 ...

What mistake has Tiny made?

Colour the multiples of 3 in the hundred square.

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

What do you notice?

Key Questions:

- What is the next multiple of 3?
- What is the multiple of 3 before ____?
- How many 3s are there in ____?
- How do you find the digit sum of a number?
- How can you tell if a number is a multiple of 3?
- Are the multiples of 3 odd or even?

Here are some multiples of 3

462 717 897 612 900 561

Find the digit sum of each number.

What do you notice?

Complete the statements.

- 3 lots of 3 = ____
- 4 lots of 3 = ____
- 5 lots of 3 = ____
- 10 lots of 3 = ____
- 4 lots of 3 and 2 lots of 3 = ____ lots of 3
- 7 lots of 3 = ____ lots of 3 and 5 lots of 3

Key Vocabulary:

multiplying
3s
times-table
multiples
number tracks
hundred squares
digit sum
next
before
odd
even
lots of

Stem Sentences:

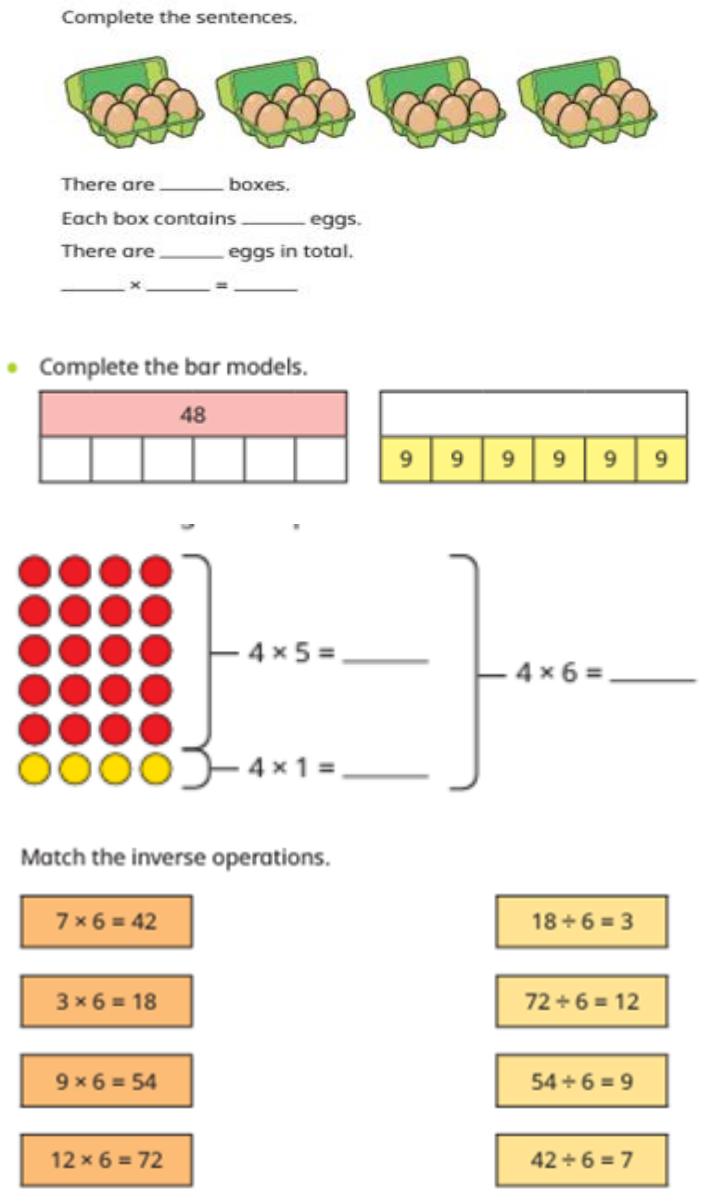
- The next multiple of 3 is ____.
- The multiple of 3 before ____ is ____.
- I know ____ is a multiple of 3 because…

Maths – Multiplication and Division A

YEAR 4

Small Steps:

1. Multiples of 3.
2. Multiply and divide by 6.
3. 6 times-table and division facts.
4. Multiply and divide by 9.
5. 9 times-table and division facts.
6. The 3, 6 and 9 times-tables.
7. Multiply and divide by 7.
8. 7 times-table and division facts.
9. 11 times-table and division facts.
10. 12 times-table and division facts.
11. Multiply by 1 and 0.
12. Divide a number by 1 and itself.
13. Multiply three numbers.



Key Questions:

- How many equal groups do you have?
- How many are there in each group?
- How many are there altogether?
- What does each number in the calculation represent?
- What does commutative mean?
- Is multiplication/division commutative?
- How can you use facts from the 3 times-table to work out facts from the 6 times-table?
- How can you use facts from the 3 times-table to work out facts in the 6 times-table?
- How can you use facts from the 5 times-table to work out facts in the 6 times-table?
- If you know a multiplication sentence, what division sentences can you find?
- What is the fact family for the calculation?

Stem Sentences:

- 6 lots of ____ is ____.
- ____ shared into 6 equal groups is ____.
- Multiplying by 6 is the same as multiplying by ____ twice.
- ____ x 6 = double ____ x 3
- 6 multiplied by ____ is equal to ____.
- ____ x 6 = double ____ x 3
- ____ x 6 = ____ x 5 + ____
- ____ x 6 = ____, so ____ ÷ 6 = ____

Key Vocabulary:

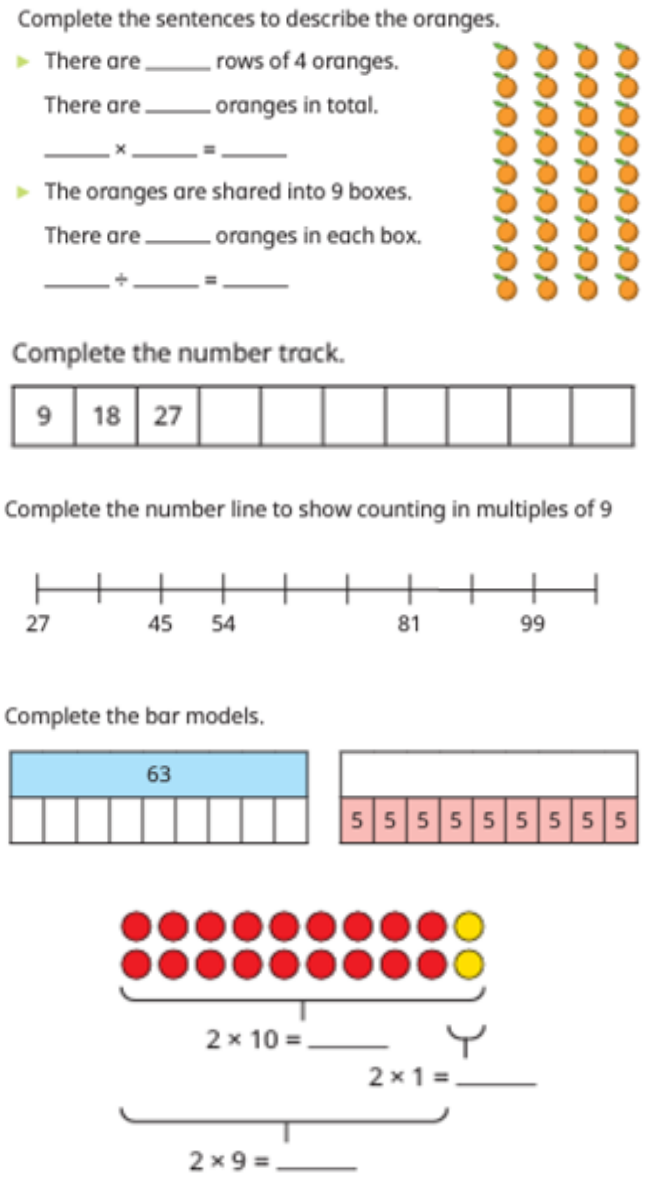
3s
times-table
6s
multiply
multiplication
fact families
double
5's
commutative
values
division
divide
inverse
equal
groups
altogether
calculation
represent
lots of
shared

Maths – Multiplication and Division A

YEAR 4

Small Steps:

1. Multiples of 3.
2. Multiply and divide by 6.
3. 6 times-table and division facts.
4. Multiply and divide by 9.
5. 9 times-table and division facts.
6. The 3, 6 and 9 times-tables.
7. Multiply and divide by 7.
8. 7 times-table and division facts.
9. 11 times-table and division facts.
10. 12 times-table and division facts.
11. Multiply by 1 and 0.
12. Divide a number by 1 and itself.
13. Multiply three numbers.



Key Questions:

- How many equal groups are there?
- How many are there in each group?
- How many are there altogether?
- How can you use the 10 times-table to work out the 9 times-table?
- What does each number in the calculation represent?
- What patterns can you see in the 9 times-table?
- How could you use the 10 times-table to work out the 9 times-table?
- If you know a multiplication sentence, what division sentences can you find?
- How can you tell if a number is a multiple of 9?
- How can you use the 3 times-table to work out facts in the 9 times-table?

Stem Sentences:

- 9 lots of ____ is equal to ____.
- ____ groups of ____ is equal to ____ groups of ____.
- ____ x 10 = ____, so ____ x 9 = ____ - _____ = ____.
- ____ x 9 = ____ x 9 + _____ x 9
- ____ x 9 = ____ - ____ = ____
- ____ x 9 = ____, so ____ ÷ 9 = ____
- Multiplying by 9 is the same as multiplying by ____ and then multiplying by _____ again.

Key Vocabulary:

9s
times-table
patterns
unknown number facts
known facts
subtracting
subtract
subtraction
10s
tripling
commutative
division
divide
inverse
multiplication
multiply
equal groups
altogether
calculation
represent
lots of
equivalent
multiple
digit sum

Maths – Multiplication and Division A

YEAR 4

Small Steps:

1. Multiples of 3.
2. Multiply and divide by 6.
3. 6 times-table and division facts.
4. Multiply and divide by 9.
5. 9 times-table and division facts.
6. The 3, 6 and 9 times-tables.
7. Multiply and divide by 7.
8. 7 times-table and division facts.
9. 11 times-table and division facts.
10. 12 times-table and division facts.
11. Multiply by 1 and 0.
12. Divide a number by 1 and itself.
13. Multiply three numbers.

Here is a hundred square.

- Circle the multiples of 3 in one colour.
- Circle the multiples of 6 in another colour.
- Circle the multiples of 9 in a third colour.

What do you notice?

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

Here are three number tracks for the 3, 6 and 9 times-tables.

Complete the number tracks.

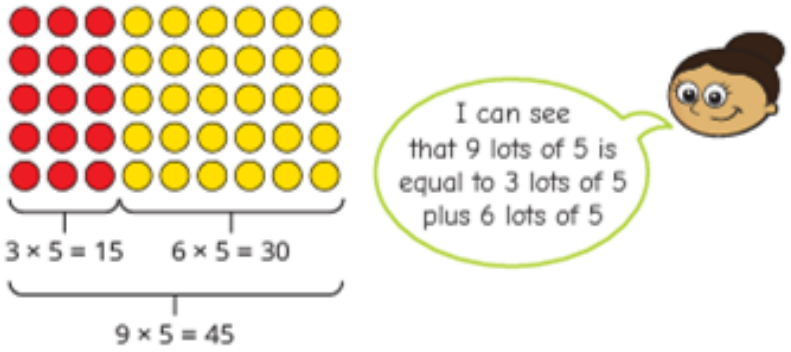
3	6	9	12							33	
6	12	18							60		
9				45							

3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
9			9			9			9			9			9		

Key Questions:

- What links can you see between the 3 and 6 times-tables?
- What links can you see between the 3 and 9 times-tables?
- What other times-tables can you use to help find the multiplication facts?
- If you know one multiplication fact, what other multiplication facts do you know? What division facts do you know?
- Ho

Dora has made an array to show 9 × 5



Stem Sentences:

- Double ____ x 3 = ____ x 6
- Triple ____ x 3 = ____ x 9
- 3 lots of ____ and 6 lots of ____ = 9 lots of ____.
- ____ x 3 x 3 = ____ x ____.

Key Vocabulary:

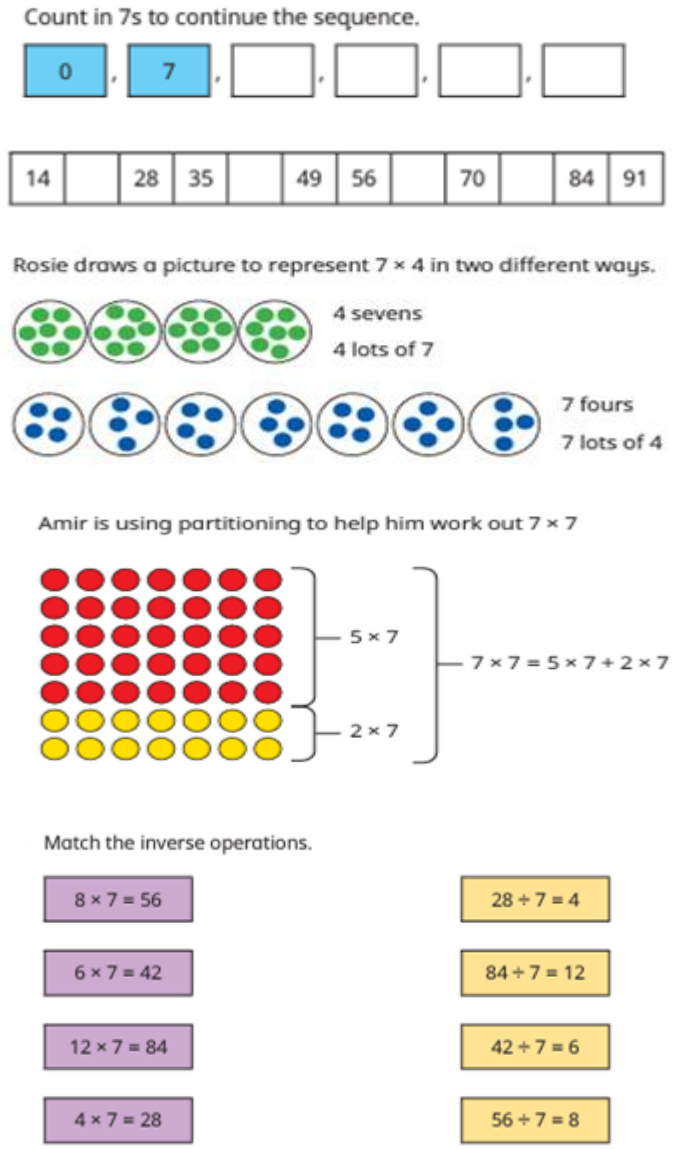
3s
6s
9s
times-tables
arrays
hundred squares
number facts
patterns
links
multiply
multiplication
facts
divide
division
multiple
double
triple
lots of

Maths – Multiplication and Division A

YEAR 4

Small Steps:

1. Multiples of 3.
2. Multiply and divide by 6.
3. 6 times-table and division facts.
4. Multiply and divide by 9.
5. 9 times-table and division facts.
6. The 3, 6 and 9 times-tables.
7. Multiply and divide by 7.
8. 7 times-table and division facts.
9. 11 times-table and division facts.
10. 12 times-table and division facts.
11. Multiply by 1 and 0.
12. Divide a number by 1 and itself.
13. Multiply three numbers.



Key Questions:

- How many equal groups are there?
- How many lots of 7 do you have?
- How many groups of 7 are there in ____?
- What can you partition ____ into to help you multiply ____ by 7?
- If you know this, what else do you know?
- How can you use the 5/6/8 times-table to find a fact in the 7 times-table?
- What is the same and what is different about the number facts?
- How does the 7 times-table help you to work out the answers?
- What strategies can you use to work out the 7 times-table fact that you do not yet know? What other times-tables can you use?

Stem Sentences:

- ____ x 7 = ____ x 7 + ____ x 7
- ____ x 7 = ____ x 8 - ____ = ____
- There are 7 groups of ____ in ____
- ____ x 7 = ____ x 5 + ____ x 2
- ____ x 7 = ____ x 8 - ____
- ____ x 7 = ____ x 6 + ____
- There are ____ groups of 7 in ____.

Key Vocabulary:

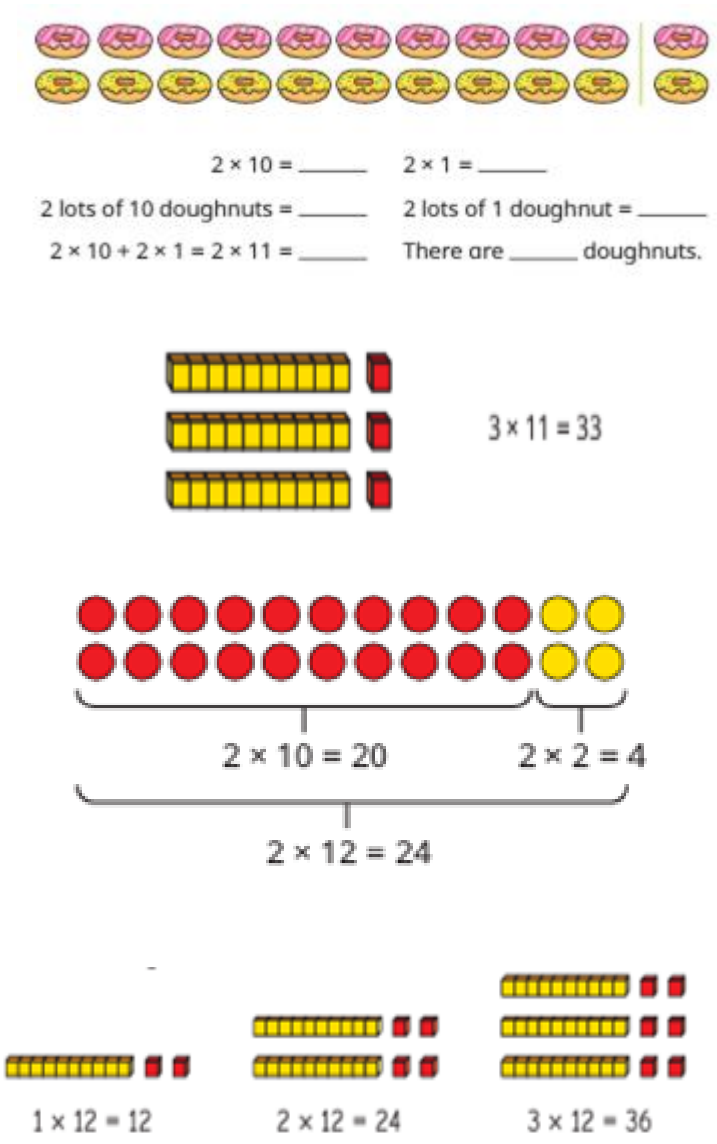
multiples
7s
link
repeated addition
multiplication
equal groups
multiplying
flexible partitioning
divided
division
divide
sharing
lots of
partition
fact
dividing
fact families
unknown facts
known facts
mental strategies
calculation
arrays
same
different

Maths – Multiplication and Division A

YEAR 4

Small Steps:

1. Multiples of 3.
2. Multiply and divide by 6.
3. 6 times-table and division facts.
4. Multiply and divide by 9.
5. 9 times-table and division facts.
6. The 3, 6 and 9 times-tables.
7. Multiply and divide by 7.
8. 7 times-table and division facts.
9. 11 times-table and division facts.
10. 12 times-table and division facts.
11. Multiply by 1 and 0.
12. Divide a number by 1 and itself.
13. Multiply three numbers.



Key Questions:

- How many equal groups are there?
- How many lots of 11 do you have?
- How many groups of 11 are there in ____?
- What can you partition 11into to help you?
- How can you use base 10 to work out ____ x 11?
- How can you use place value counters to work out ____ ÷ 11?
- How can you show this using an array?
- How many lots of 12 do you have?
- How many groups of 12 are there in ____?
- What can you partition 12 into to help you?
- How can you use base 10 to work out ____ x 12?
- How can you use place value counters to work out _____ ÷ 12?

Stem Sentences:

- ____ x 11 = ____
- ____ x 11 = x 10 + _____ x 1
- There are ____ groups of 11 in ____.
- There are 11 groups of ____ in ____.
- ____ x 12 = ____ x 1- + ____ x 2
- ____ x 12 = double ____ x 6
- There are 12 groups of ____ in ____.
- There are ____ groups of 12 in ____.

Key Vocabulary:

1s
10s
times-table
11's
partition
known facts
multiply
multiplying
multiple
links
patterns
connections
dividing
sharing
equal
groups
commutativity
lots of
base 10
array
2s
12s
doubling

Maths – Multiplication and Division A

YEAR 4

Small Steps:

1. Multiples of 3.
2. Multiply and divide by 6.
3. 6 times-table and division facts.
4. Multiply and divide by 9.
5. 9 times-table and division facts.
6. The 3, 6 and 9 times-tables.
7. Multiply and divide by 7.
8. 7 times-table and division facts.
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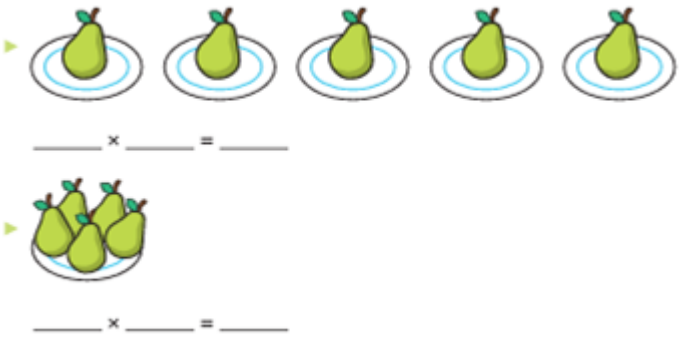
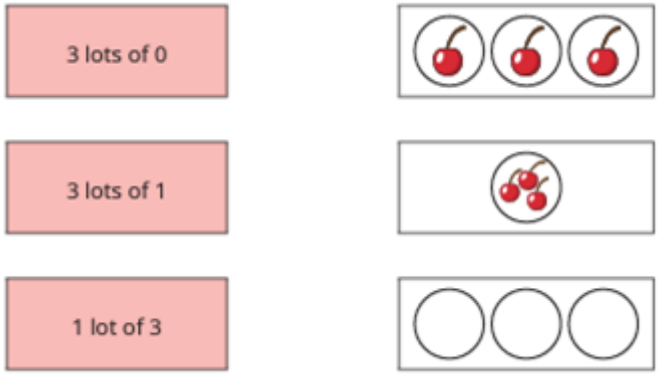
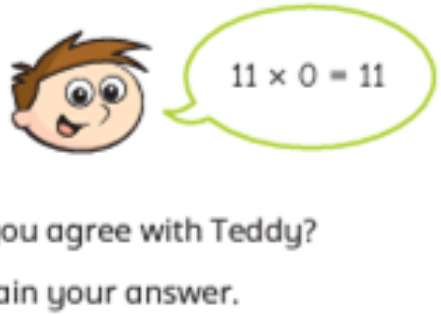
12. Divide a number by 1 and itself.
13. Multiply three numbers.

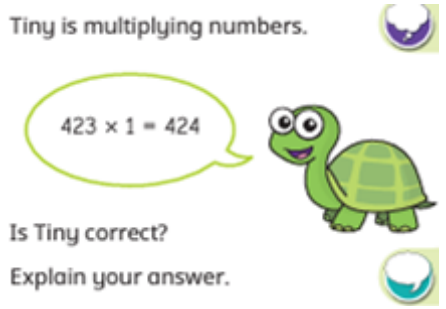




Key Questions:

- What does “zero” mean? How can you multiply by zero?
- What do you notice about the results of multiplying numbers by zero?
- What does “multiplying by 1” mean?
- What do you notice about the results of multiplying numbers by 1?
- What is the same and what is different about multiplying by 1 and multiplying by zero?





Key Vocabulary:

multiplying
zero
one
lots of
equal
same
difference
itself
groups

Stem Sentences:

- Any number multiplied by zero is equal to____.
- Any number multiplied by 1 is equal to ____.
- ____ groups of one = ____
- ____ groups of zero = ____

Maths – Multiplication and Division A

YEAR 4

Small Steps:

1. Multiples of 3.
2. Multiply and divide by 6.
3. 6 times-table and division facts.
4. Multiply and divide by 9.
5. 9 times-table and division facts.
6. The 3, 6 and 9 times-tables.
7. Multiply and divide by 7.
8. 7 times-table and division facts.
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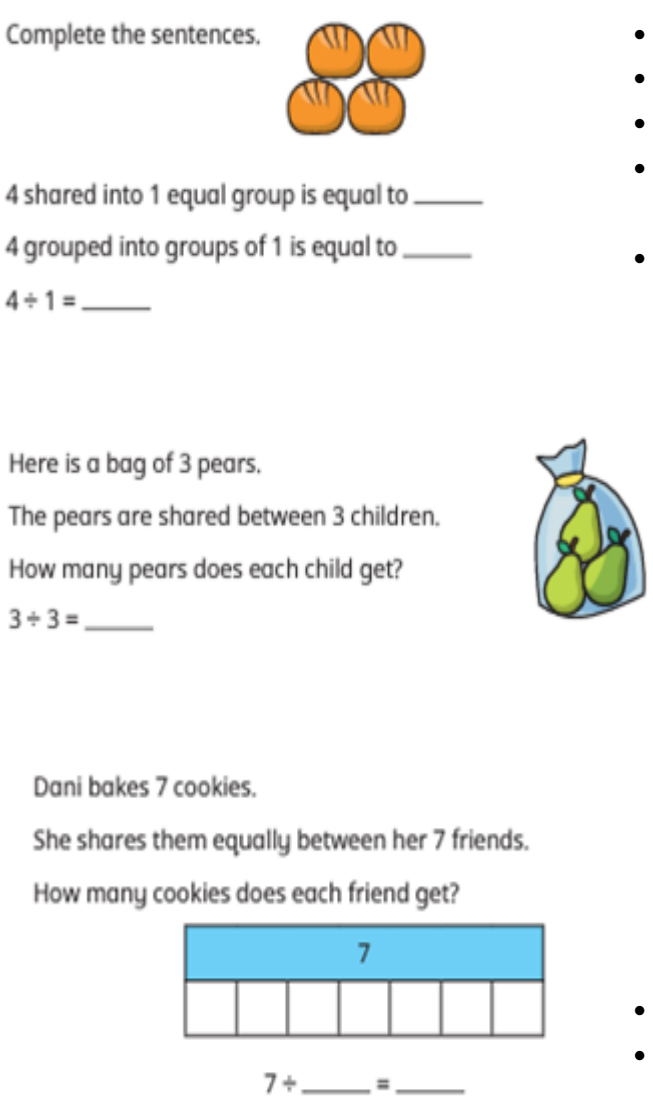
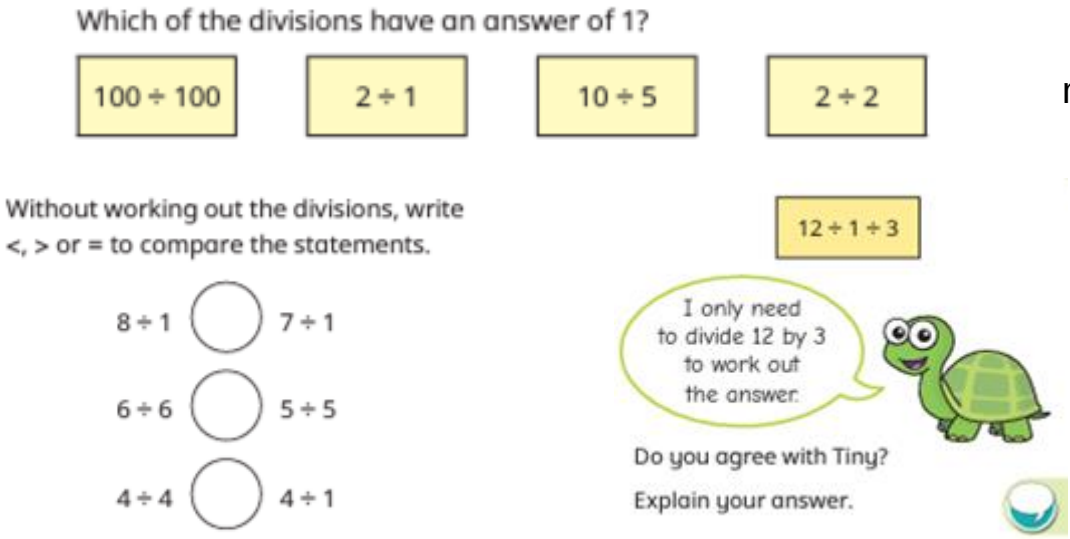
10. 12 times-table and division facts.
11. Multiply by 1 and 0.
12. Divide a number by 1 and itself.
13. Multiply three numbers.



Key Questions:

- How many equal groups of ____ can you make?
- What is ____ shared equally into 1 group?
- What is ____ grouped into groups of 1?
- What is the same and what is different about multiplying by 1 and dividing by 1?
- What is the same and what is different about dividing a number by 1 and dividing a number by itself?



Stem Sentences:

- When you divide a number by itself, the answer is…
- When you divide a number by ____, the number remains the same.
- There are ____ 1s in ____.

Key Vocabulary:

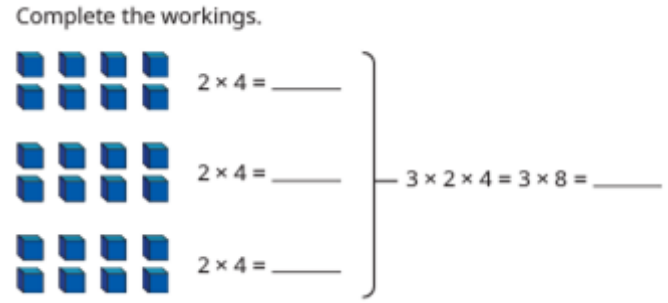
division
divide
by 1
itself
groups
grouped
equal
shared
same
different
multiplying

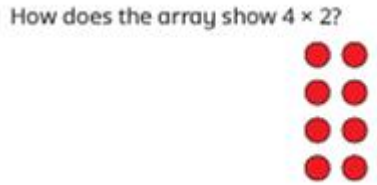
Maths – Multiplication and Division A

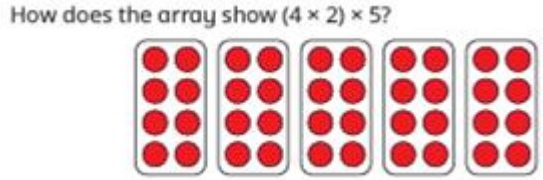
YEAR 4

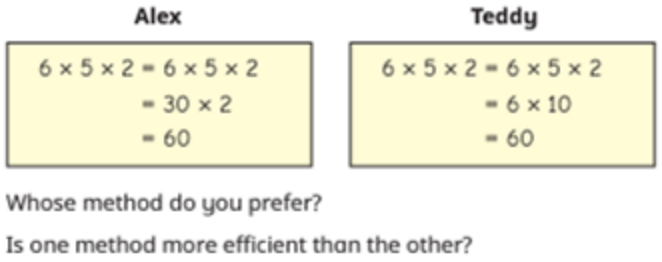
Small Steps:

1. Multiples of 3.
2. Multiply and divide by 6.
3. 6 times-table and division facts.
4. Multiply and divide by 9.
5. 9 times-table and division facts.
6. The 3, 6 and 9 times-tables.
7. Multiply and divide by 7.
8. 7 times-table and division facts.
9. 11 times-table and division facts.
10. 12 times-table and division facts.
11. Multiply by 1 and 0.
12. Divide a number by 1 and itself.
13. Multiply three numbers.



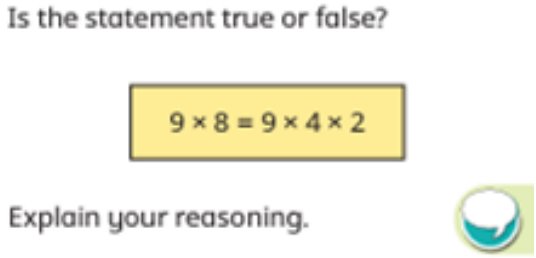






Key Questions:

- Do you have to multiply the numbers from left to right?
- Which pair(s) of numbers do you know the product of?
- How will you decide which order to do the multiplication in?
- What is the same about these calculations/arrays?
- Which order do you find easier to calculate efficiently?
- If you worked out the calculation in a different order, would you get a different answer? Why? Why not?



Stem Sentences:

- I am going to work out ____ x ____ first, because…
- To work out ____ x ____ x ____, I can first calculate ____ x ____ and then multiply the answer by ____.
- If ____ x ____ = ____, then ____ x ____ x ____ = ____

Key Vocabulary:

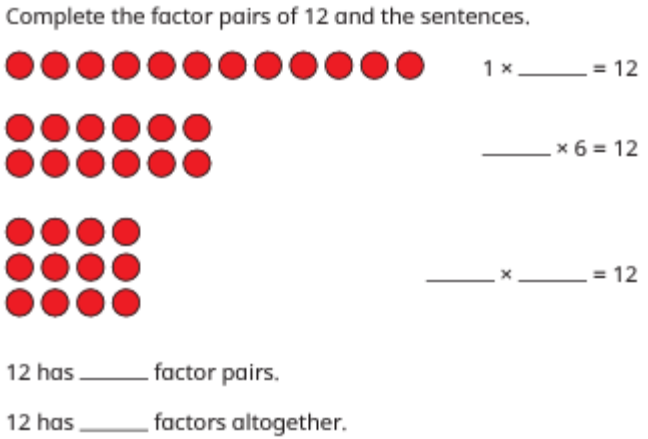
multiplication
three
associative law
commutativity
order
change
group
efficiently
counters
cubes
multiply
left
right
pairs
product
calculations
arrays

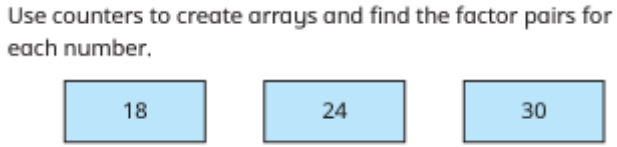
Maths – Multiplication and Division B

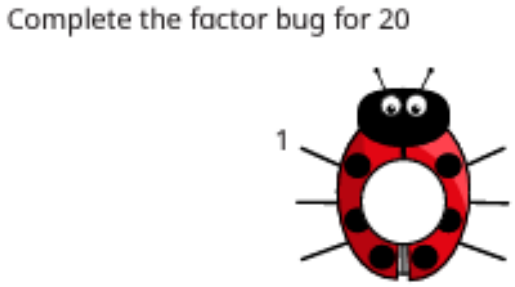
YEAR 4

Small Steps:

1. Factor pairs.
2. Use factor pairs.
3. Multiply by 10.
4. Multiply by 100.
5. Divide by 10.
6. Divide by 100.
7. Related facts – multiplication and division.
8. Informal written methods for multiplication.
9. Multiply a 2-digit number by a 1-digit number.
10. Multiply a 3-digit number by a 1-digit number.
11. Divide a 2-digit number by a 1-digit number (1).
12. Divide a 2-digit number by a 1-digit number (2).
13. Divide a 3-digit number by a 1-digit number.
14. Correspondence problems.
15. Efficient multiplication.







Key Questions:

- How can you use arrays to help you find all the factors of a number?
- How do you know that you have found all the factors of ____?
- How do arrays help you to see when a number is not a factor of another number?
- Which number is a factor of every whole number?
- Do factors always come in pairs?
- Do whole numbers always have an even number of factors?
- How does knowing the factor pairs of 8 help you to find an equivalent calculations to 7 x 8?
- For which number are you going to find the factor pairs?
- Which factor pair is the most helpful to solve the calculation?
- In what order are you going to multiply these numbers?
- Does it matter which factor pair you use?

Key Vocabulary:

factors
multiply
whole
product
factor pair
divides
exactly
arrays
multiplication
division
equivalent
calculations
easiest
mentally
times-tables

Stem Sentences:

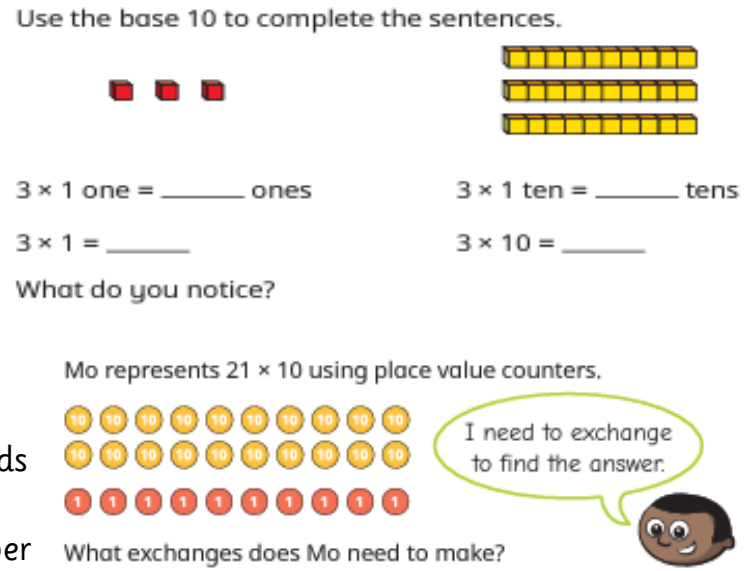
- ____= ____ x ____, so ____ and ____ are a factor pair of ____.
- ____ has ____ factors altogether.
- The factor pairs of ____ are ____.
- 12 = ____ x ____, so ____ x 12 = ____ x _____ x_____.
- I can use the factor pairs of ____ to find an equivalent calculation because….

Maths – Multiplication and Division B

YEAR 4

Small Steps:

1. Factor pairs.
2. Use factor pairs.
3. Multiply by 10.
4. Multiply by 100.
5. Divide by 10.
6. Divide by 100.
7. Related facts – multiplication and division.
8. Informal written methods for multiplication.
9. Multiply a 2-digit number by a 1-digit number.
10. Multiply a 3-digit number by a 1-digit number.
11. Divide a 2-digit number by a 1-digit number (1).
12. Divide a 2-digit number by a 1-digit number (2).
13. Divide a 3-digit number by a 1-digit number.
14. Correspondence problems.
15. Efficient multiplication.



Key Questions:

- What do you notice when multiplying by 10/100?
- What is a placeholder? When do you use placeholders?
- What happens to the digits in a number when you multiply by 10/100?
- How can you use a place value chart to show multiplying ____ by 10/100?
- What is ____ multiplied by 10?
- What is 10 lots of ____?
- How can you use multiplying by 10 to help you multiply by 100?
- What is _____ multiplied by 100?
- What is 100 lots of ____?

Stem Sentences:

- ____ x 10 = _____
- 10 x _____ = _____
- _____ is 10 times the size of _____.
- ____ x 100 = ____ x 10 x 10 = _____ x 10 = _____
- _____ x 100 = _____, so 100 x _____ = _____.
- _____ is 100 times the size of _____.

Key Vocabulary:

multiplying
ten
times the size
one
hundred
place value
digits
move
zero
placeholder
column
whole number
lots of

Maths – Multiplication and Division B

YEAR 4

Small Steps:

1. Factor pairs.
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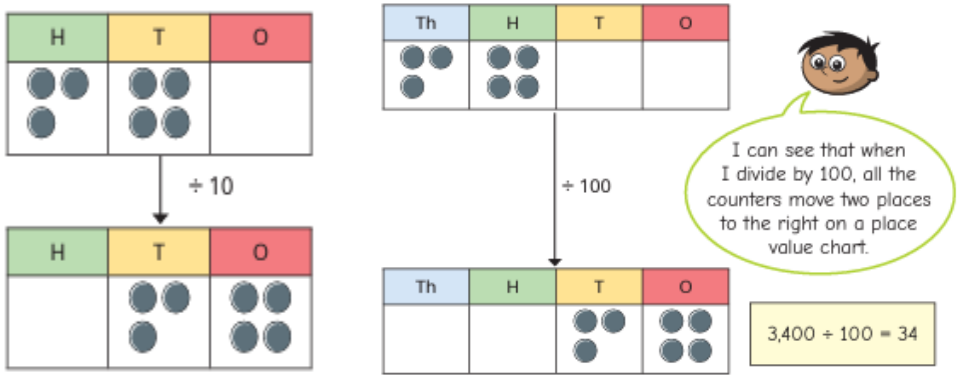
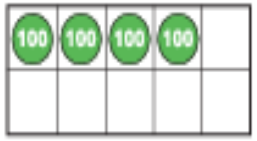


Use the ten frame and counters to complete the sentences.



There are _____ groups of 100 in 400

400 ÷ 100 = _____

Complete the calculation shown by the array.

50 = _____ groups of 10

50 ÷ 10 = _____

3,600 ÷ 10 ◯ 3,600 ÷ 100

2,700 ÷ 100 ◯ 270 ÷ 10

Key Questions:

- What do you notice when dividing by 10?
- Why does this happen?
- What happens to the digits when you divide by 10/100?
- How can you use a place value chart to show dividing ____ by 10/100?
- What is ____ divided by 10/100?
- What number is one-tenth the size of ____?
- What happens when you divide a number by 10 and then divide the answer by 10 again? How does the final answer compare to the original number?
- How can you use dividing by 10 to help you divide by 100?
- What number is one-hundredth the size of ____?

Key Vocabulary:

divide
whole numbers
ten
one-tenth
one-tenth the size
place value
digits
position
calculation
one place
column
right
multiplying
inverse
zero
hundred
one-hundredth
one-hundredth the size
two places

Stem Sentences:

- ____ ÷ 10 = ____
- ____ = ____ ÷ 10
- ____ is one-tenth the size of ____.
- ____ ÷ 100 = ____ ÷ 10 ÷ 10 = ____ ÷ 10 = ____
- ____ ÷ 100 = ____, so____ = ____ ÷ 100
- ____ is one-hundredth the size of ____.

Maths – Multiplication and Division B

YEAR 4

Small Steps:

1. Factor pairs.
2. Use factor pairs.
3. Multiply by 10.
4. Multiply by 100.
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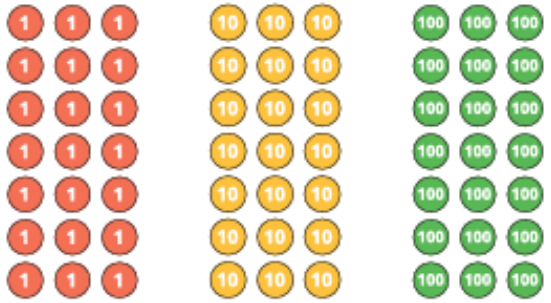
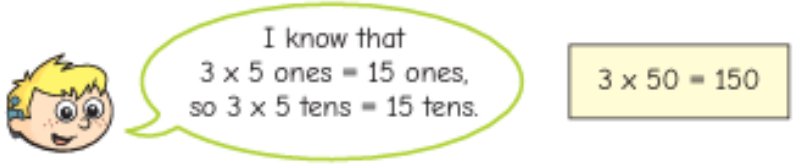
13. Divide a 3-digit number by a 1-digit number.
14. Correspondence problems.
15. Efficient multiplication.

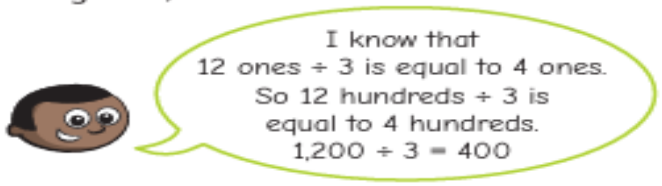
Write two multiplication facts and two division facts represented by each array.



What is the same and what is different about the arrays?



Mo is working out 1,200 ÷ 3



Key Questions:

- What is the same and what is different about the two calculations?
- How can you represent the calculation using place value counters?
- How does knowing that ____ is 10 times the size of ____ help you to complete the calculation?
- What calculation do you know that would help with this one?

Write <, > or = to compare the calculations.

72 ÷ 8 ◯ 720 ÷ 8

800 ÷ 2 ◯ 800 ÷ 4

4 × 900 ◯ 9 × 400

Is the statement true or false?

6 × 800 = 8 × 600

Explain your answer.

Stem Sentences:

- ____ x ____ ones is equal to ____ ones, so ____ x ____ tens is equal to ____ tens.
- ____ ÷ ____ is equal to ____, so ____ tens ÷ ____ is equal to ____ tens.

Key Vocabulary:

calculations
related
known facts
scaling facts
ten
hundred
relationship
division
multiplication
commutative
one
same/different
place value
10 times the size
equal to

Maths – Multiplication and Division B

YEAR 4

Small Steps:

1. Factor pairs.
2. Use factor pairs.
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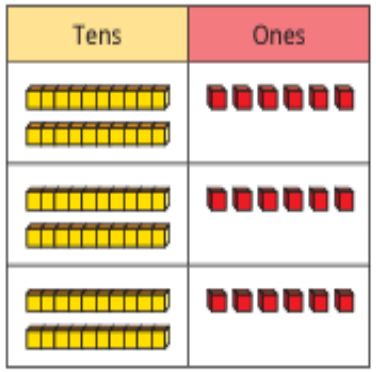
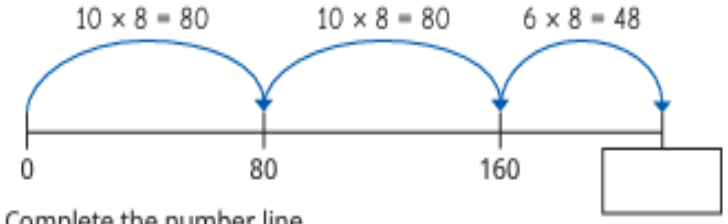


3 × 26 = 60 + 18 = 78

Use Aisha's method to work out the multiplications.

3 × 36 | 6 × 24 | 4 × 45

Teddy is using a number line to work out 8 × 26



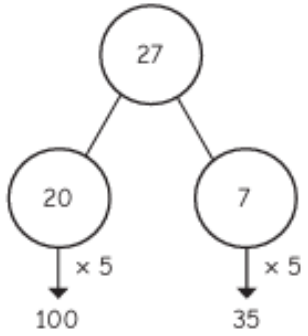
Complete the number line.

Use Teddy's method to work out the multiplications.

7 × 16 | 6 × 34 | 4 × 27

Key Questions:

- What is the same and what is different about multiplying by 1s and multiplying by 10s?
- How would you explain this method?
- What is the most efficient way to work out ____ x ____?
- How could you use a number line to work out this calculation?
- How could you use a part-whole model to partition into tens and ones?



27 × 5 = 100 + 35 = 135

Use Ron's method to work out the multiplications.

24 × 8 | 36 × 4 | 56 × 3

Stem Sentences:

- ____ partitioned into tens and ones is ____ and ____.
- ____ x ____ = ____ tens x ____ + ____ ones x ____ = ____ tens + ____ ones = ____.

Key Vocabulary:

informal
written method
2-digit
multiply
number
1-digit
place value
multiples
repeated addition
partition
tens
ones
part-whole model
number lines
same/different
efficient
calculation

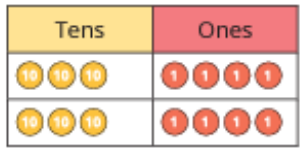
Maths – Multiplication and Division B

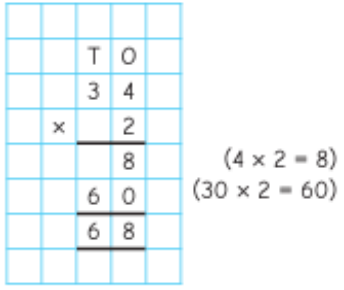
YEAR 4

Small Steps:

1. Factor pairs.
2. Use factor pairs.
3. Multiply by 10.
4. Multiply by 100.
5. Divide by 10.
6. Divide by 100.
7. Related facts – multiplication and division.
8. Informal written methods for multiplication.
9. Multiply a 2-digit number by a 1-digit number.
10. Multiply a 3-digit number by a 1-digit number.
11. Divide a 2-digit number by a 1-digit number (1).
12. Divide a 2-digit number by a 1-digit number (2).
13. Divide a 3-digit number by a 1-digit number.
14. Correspondence problems.
15. Efficient multiplication.

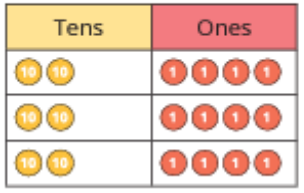
Dora uses place value counters alongside the written multiplication to work out 34 × 2

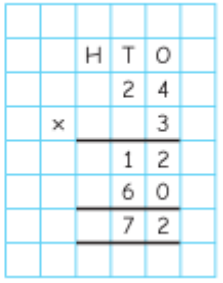




(4 × 2 = 8)
(30 × 2 = 60)

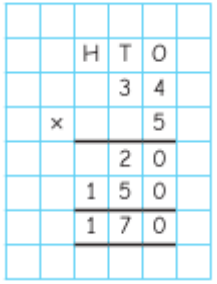
Jo uses place value counters to work out 24 × 3





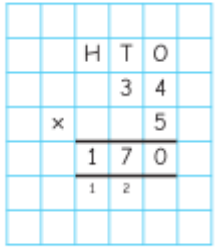
(4 × 3)
(20 × 3)

Brett



(4 × 5)
(30 × 5)

Scott

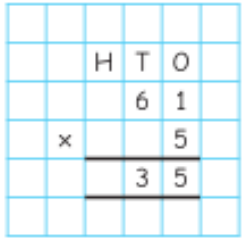


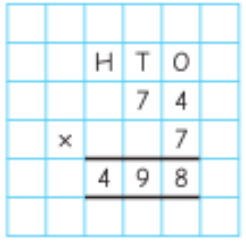
- What is the same about their methods?
- What is different about their methods?
- Whose method is more efficient?

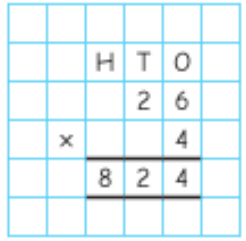
Key Questions:

- What is the same and what is different about multiplying by 1s and multiplying by 10s?
- How does the written method match the representation?
- Which column should you start with?
- What is the same and what is different about the different methods?

Here are three incorrect multiplications.







What mistakes have been made?

Complete the calculations correctly.

Stem Sentences:

- _____ ones x _____ = _____ ones
- _____ tens x _____ x _____ tens.
- To multiply a 2-digit number by _____, you multiply the _____ by _____ and the _____ by _____.
- _____ tens multiplied by _____ plus the ten I exchange is equal to _____ tens.

Key Vocabulary:

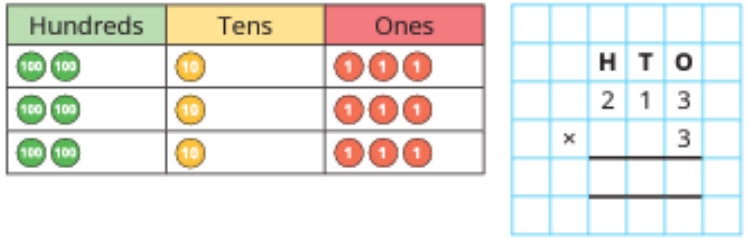
multiplying
informal written methods
formal written methods
short multiplication method
expanded form
formal short single-line form
calculations
exchanges
place value
same/different
ones
tens
column
equal

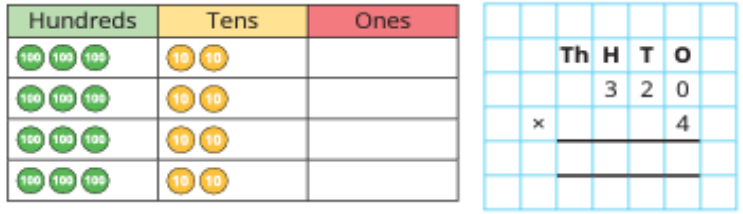
Maths – Multiplication and Division B

YEAR 4

Small Steps:

1. Factor pairs.
2. Use factor pairs.
3. Multiply by 10.
4. Multiply by 100.
5. Divide by 10.
6. Divide by 100.
7. Related facts – multiplication and division.
8. Informal written methods for multiplication.
9. Multiply a 2-digit number by a 1-digit number.
10. Multiply a 3-digit number by a 1-digit number.
11. Divide a 2-digit number by a 1-digit number (1).
12. Divide a 2-digit number by a 1-digit number (2).
13. Divide a 3-digit number by a 1-digit number.
14. Correspondence problems.
15. Efficient multiplication.

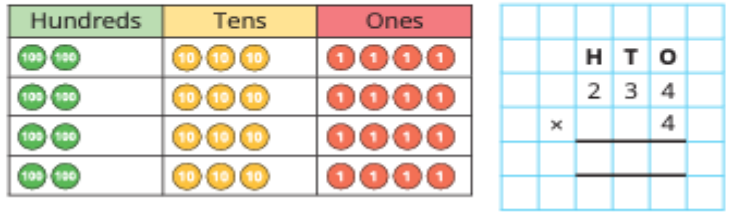




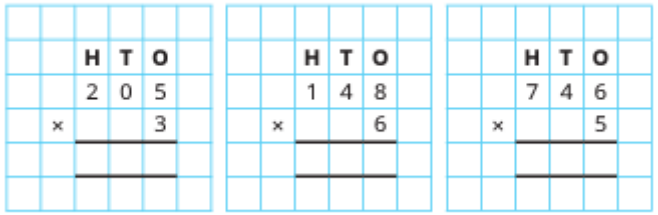
A school has 4 house teams.

There are 234 children in each house team.

How many children are there altogether?

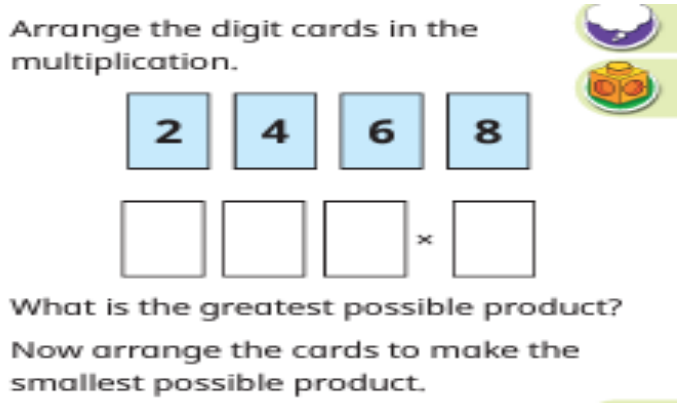


Complete the calculations.



Key Questions:

- How could you use counters to represent the multiplication?
- How does the written method match the representation?
- Which column should you start with?
- Do you need to make an exchange? What exchange can you make?
- What is the same and what is different about multiplying a 3-digit number by a 1-digit number and multiplying a 2-digit number by a 1-digit number?



Stem Sentences:

- _____ ones x _____ = _____ ones
- _____ tens x _____ = _____ tens
- _____ hundreds x _____ = _____ hundreds.
- _____ tens/hundreds multiplied by _____ plus the ten/hundred from the exchange is equal to _____.

Key Vocabulary:

formal written method
multiplying
3-digit number
1-digit number
short multiplication
columns
place value
exchanges
tens
ones
hundreds
thousands
expanded method
same/different
equal to

Maths – Multiplication and Division B

YEAR 4

Small Steps:

1. Factor pairs.
2. Use factor pairs.
3. Multiply by 10.
4. Multiply by 100.
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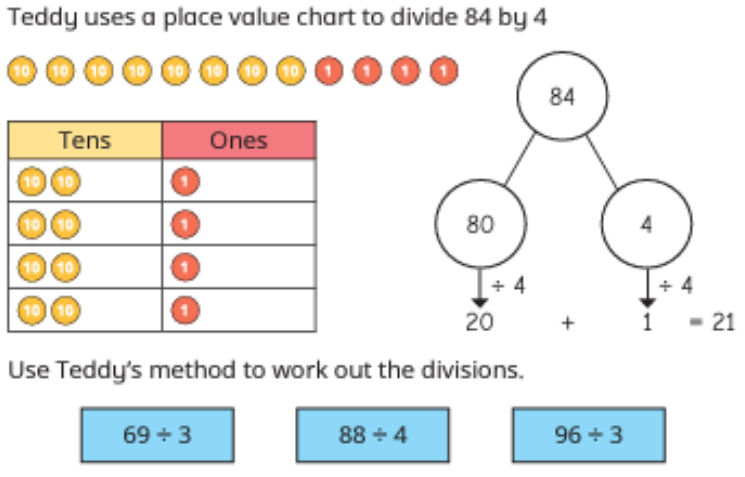
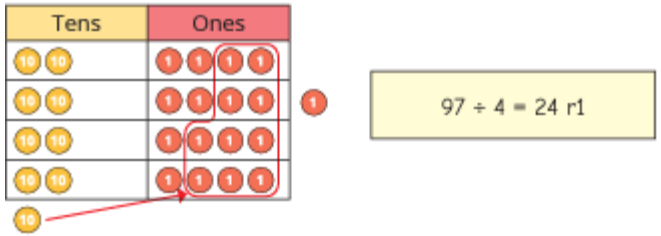
15. Efficient multiplication.



Complete the calculations.

- 46 ÷ 2 = _____ tens ÷ 2 and _____ ones ÷ 2
  = _____ tens and _____ ones
  = _____
- 63 ÷ 3 = _____ tens ÷ 3 and _____ ones ÷ 3
  = _____ tens and _____ ones
  = _____



Key Questions:

- How do you partition a 2-digit number into tens and ones? How else can you partition a 2-digit number?
- Which is the most efficient way to partition the number so you can divide both parts by _____?
- If you cannot share all of the tens equally, what do you need to do?
- How can you represent the division using a part-whole model?
- Can the counter be shared equally? If not, how many are left over?
- What does "remainder" mean?
- What is the greatest remainder you can have when you are dividing by ____?
- How can you partition a 2-digit number?
- If you cannot share all the tens equally, what do you need to do?
- If you cannot share all the ones equally, what happens?
- How do you know that 43 ÷ 2 will have a remainder?

Stem Sentences:

- _____ tens divided by _____ = _____ tens each.
- _____ ones divided by _____ = _____ ones each.
- I cannot share all of the tens equally, so I need to...
- If I am dividing by _____, then the greatest possible remainder is _____.

Key Vocabulary:

division
dividing
2-digit
1-digit
tens
ones
remainders
exchange
place value
formal short division
part-whole model
partition
efficient
equally
calculation
greater
left over
share

Maths – Multiplication and Division B

YEAR 4

Small Steps:

1. Factor pairs.
2. Use factor pairs.
3. Multiply by 10.
4. Multiply by 100.
5. Divide by 10.
6. Divide by 100.
7. Related facts – multiplication and division.
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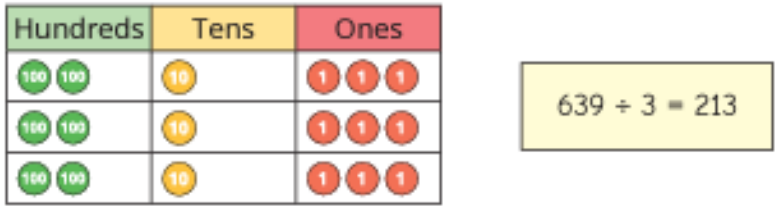
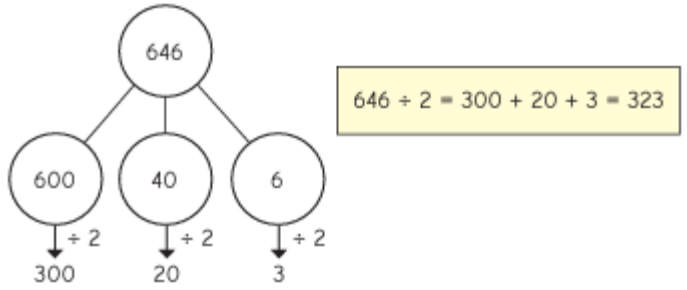
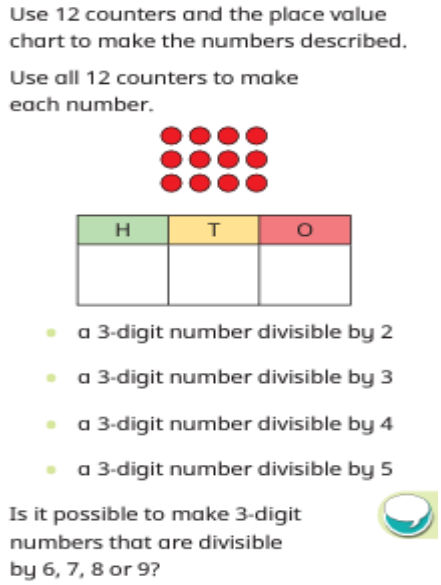
14. Correspondence problems.
15. Efficient multiplication.

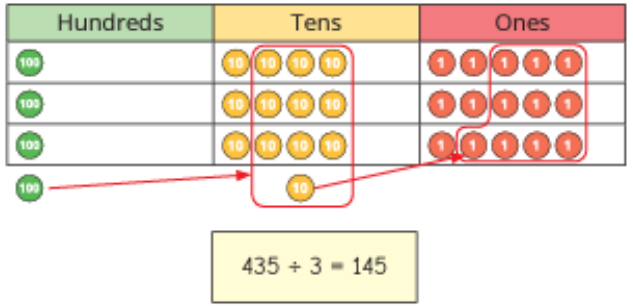






Key Questions:

- How do you partition a 3-digit number into hundreds, tens and ones?
- How else can you partition a 3-digit number?
- What is the best way to partition the number to help you work out the division?
- If you cannot share all of the hundreds/tens equally, what do you need to do?
- How can you represent the division using a part-whole model?



Stem Sentences:

- _____ hundreds divided by _____ = _____ hundreds
- _____ tens divided by _____ = _____ tens
- _____ ones divided by _____ = _____ ones.
- There is _____ left over, so I need to exchange it for_____.

Key Vocabulary:

division
2-digit
3-digit
place value
calculations
exchanges
part-whole model
flexible partitioning
multiples
remainder
formal written method
hundreds
tens
ones
equally
left over

Maths – Multiplication and Division B

YEAR 4

Small Steps:

1. Factor pairs.
2. Use factor pairs.
3. Multiply by 10.
4. Multiply by 100.
5. Divide by 10.
6. Divide by 100.
7. Related facts – multiplication and division.
8. Informal written methods for multiplication.
9. Multiply a 2-digit number by a 1-digit number.
10. Multiply a 3-digit number by a 1-digit number.
11. Divide a 2-digit number by a 1-digit number (1).
12. Divide a 2-digit number by a 1-digit number (2).
13. Divide a 3-digit number by a 1-digit number.
14. Correspondence problems.
15. Efficient multiplication.

A cafe has 4 flavours of ice cream and 2 choices of toppings.

Ice cream flavours	Toppings
vanilla chocolate strawberry lemon	sauce wafer

- Complete the table to show the 8 possible combinations of flavours and toppings.

	Sauce	Wafer
Vanilla		VW
Chocolate		
Strawberry		SW
Lemon	LS	

Esther is choosing what to wear on a snowy day.

Hat	Scarf	Gloves
		

- How many different ways can Esther choose a hat and a scarf?
- How many different ways can Esther choose a hat and a pair of gloves?
- How many different ways can Esther choose a hat, a scarf and a pair of gloves?

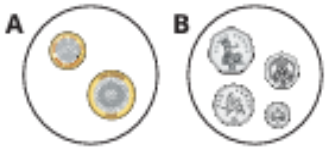
How can you check your answers?

Key Questions:

- How can you use a table to help you find the possible combinations?
- How can you be sure that you have listed all the possibilities?
- How could you use a code to help you list the combinations?
- What do you notice about the number of choices for each item and the total number of combinations?
- How can you check your answer?
- Does the order in which you make your choices matter?

Huan has two piles of coins.

He chooses one coin from each pile.



- List all the possible combinations of coins Huan could choose.
- How many different combinations of coins are there?
- List all the possible total amounts of money Huan can make.
- How many different total amounts of money are there?

Stem Sentences:

- For every ____, there are ____ _____
- Altogether, there are ____ x ____ = _____ possible combinations.

Key Vocabulary:

multiplication
combinations
sets
times-tables
possibilities
total
table
code
choices
altogether

Maths – Multiplication and Division B

YEAR 4

Small Steps:

1. Factor pairs.
2. Use factor pairs.
3. Multiply by 10.
4. Multiply by 100.
5. Divide by 10.
6. Divide by 100.
7. Related facts – multiplication and division.
8. Informal written methods for multiplication.
9. Multiply a 2-digit number by a 1-digit number.
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13. Divide a 3-digit number by a 1-digit number.
14. Correspondence problems.
15. Efficient multiplication.

Here are four different ways of working out 15 × 8 mentally.

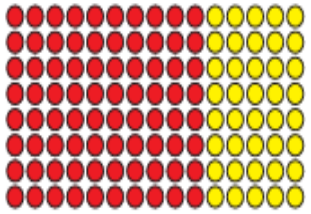
Complete the calculation in each method.

Method 1

15 × 8 = 10 × 8 + 5 × 8

= 80 + _____

= _____

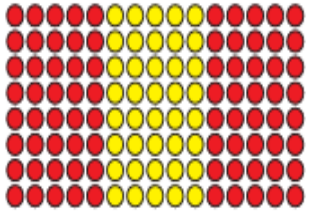


Method 2

15 × 8 = 3 × 5 × 8

= 3 × _____

= _____

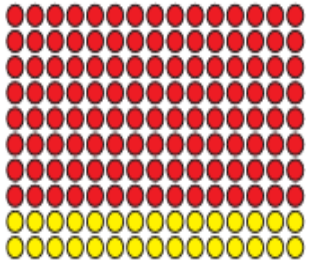


Method 3

15 × 8 = 15 × 10 – 15 × 2

= _____ – _____

= _____



Method 4

15 × 8 = 30 × 8 ÷ 2

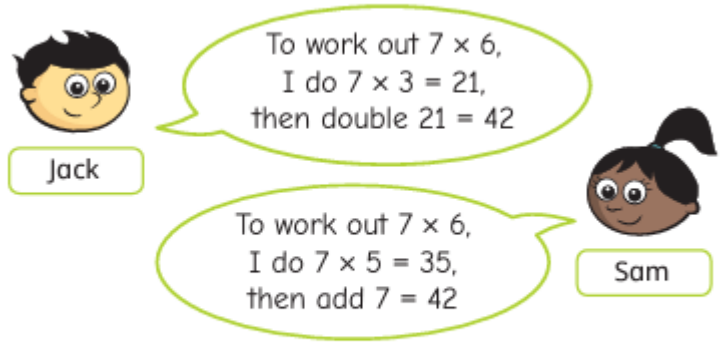
= _____ ÷ 2

= _____

Key Questions:

- Which method do you find most efficient? Explain how this method works?
- What is the most efficient way to work out _____ x _____?
- What happens if you double one factor and halve the other?
- How could you use factor pairs to help you calculate?

Jack and Sam are working out 7 × 6



- Use Jack's method to work out 8 × 6
- Use Sam's method to work out 9 × 6

Stem Sentences:

- _____ x _____ = _____ x _____ + _____ x _____
- _____ x _____ = _____ x _____ - _____ x _____
- _____ x _____ = _____ x _____ x 2
- _____ x _____ = _____ x _____ ÷ 2

Key Vocabulary:

multiplication
efficient
methods
times-tables
unknown facts
strategies
multiplying
2-digit
1-digit
arrays
multiplicative structure
associative law
distributive law
double
factor
halve
factor pairs

Maths – Fractions

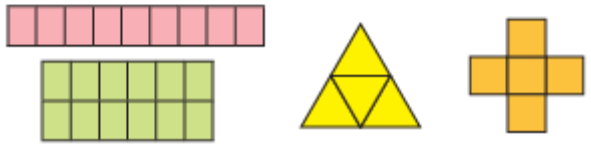
YEAR 4

Small Steps:

1. Understand the whole.
2. Count beyond 1.
3. Partition a mixed number.
4. Number lines with mixed numbers.
5. Compare and order mixed numbers.
6. Understand improper fractions.
7. Convert mixed numbers to improper fractions.
8. Convert improper fractions to mixed numbers.
9. Equivalent fractions on a number line.
10. Equivalent fraction families.
11. Add two or more fractions.
12. Add fractions and mixed numbers.
13. Subtract two fractions.
14. Subtract from whole amounts.
15. Subtract from mixed numbers.

Which shapes have been split into equal parts?

Complete the sentences for each shape.



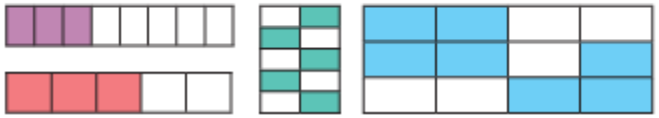
The whole is divided into _____ equal parts.

Each part is worth $\frac{1}{\square}$

What fraction of each diagram is shaded in each colour?

What fraction of each diagram represents the whole?

Shade the shapes to make one whole.



Complete the sentences for each diagram.

To make 1 whole, I shaded _____ equal parts.

The fraction I shaded was _____

Key Questions:

- Has the whole been divided into equal parts? How do you know?
- In this diagram, how many equal parts has the whole been divided into?
- How many equal parts has the whole been divided into for 1/5?
- Is this a large or small part of the whole? How do you know?
- How many more parts are needed to make the whole? What fraction would this be?

Complete the additions.

- $\frac{3}{4} + \frac{\square}{\square} = 1$
- $\frac{3}{7} + \frac{\square}{\square} = 1$
- $1 = \frac{\square}{\square} + \frac{3}{10}$

Use the information in the table to draw each whole.

1 part	Number of parts in the whole
	5
	4
	3

Stem Sentences:

- The whole has been divided into ____ equal parts.
- _____ has been shaded.
- To make 1 whole, I need to shade ____ equal parts.
- This is ____.

Key Vocabulary:

whole
part-whole
equal parts
shape
more
denominator
divided
small/large

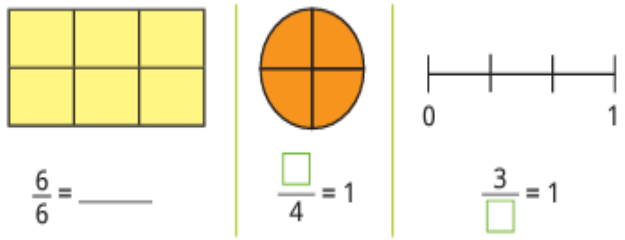
Maths – Fractions

YEAR 4

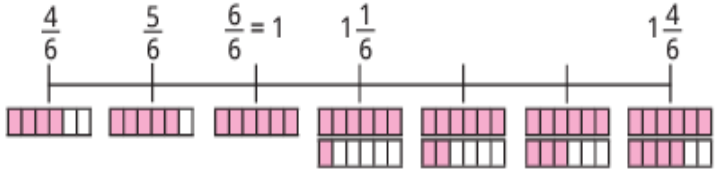
Small Steps:

1. Understand the whole.
2. Count beyond 1.
3. Partition a mixed number.
4. Number lines with mixed numbers.
5. Compare and order mixed numbers.
6. Understand improper fractions.
7. Convert mixed numbers to improper fractions.
8. Convert improper fractions to mixed numbers.
9. Equivalent fractions on a number line.
10. Equivalent fraction families.
11. Add two or more fractions.
12. Add fractions and mixed numbers.
13. Subtract two fractions.
14. Subtract from whole amounts.
15. Subtract from mixed numbers.

Fill in the missing numbers.



Complete the number line, counting in sixths.



Complete the number lines.

Key Questions:

- What fraction comes next after 4/7, 5/7, 6/7? How do you know?
- What fraction comes before ____? How do you know?
- What do you know about a fraction with the same numerator and denominator?
- What is 1 whole plus another 1/3? How could you draw that as a bar model?
- What is 3 and 5/5 the same as?
- What is the sequence counting forwards/backwards in?

Complete the number tracks.

$\frac{5}{7}$	$\frac{6}{7}$			$1\frac{2}{7}$
$1\frac{3}{5}$	$1\frac{2}{5}$			
$2\frac{2}{4}$	$2\frac{3}{4}$			

$6\frac{1}{2}$	6			
$2\frac{1}{9}$	$2\frac{4}{9}$			
$1\frac{3}{5}$	$1\frac{1}{5}$			

Stem Sentences:

- There are ____ _____s in 1.
- The sequence is counting forwards/backwards in ____s.

Key Vocabulary:

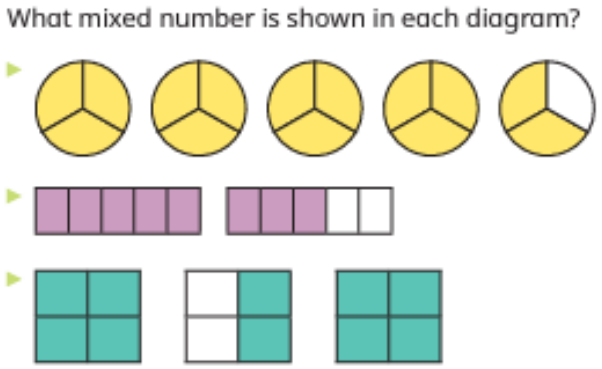
whole
greater than 1
one
forwards/backwards
fractions
within 1
number lines
bar models
unit fractions
numerator
denominator
non-unit fractions
mixed numbers
equal
equivalent
add/plus
same as
next/before
sequence
counting

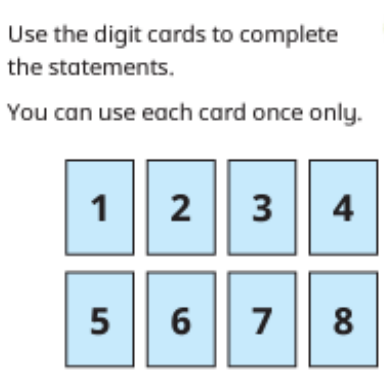
Maths – Fractions

YEAR 4

Small Steps:

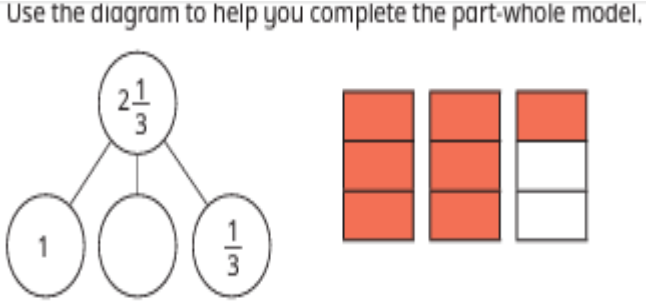
1. Understand the whole.
2. Count beyond 1.
3. Partition a mixed number.
4. Number lines with mixed numbers.
5. Compare and order mixed numbers.
6. Understand improper fractions.
7. Convert mixed numbers to improper fractions.
8. Convert improper fractions to mixed numbers.
9. Equivalent fractions on a number line.
10. Equivalent fraction families.
11. Add two or more fractions.
12. Add fractions and mixed numbers.
13. Subtract two fractions.
14. Subtract from whole amounts.
15. Subtract from mixed numbers.

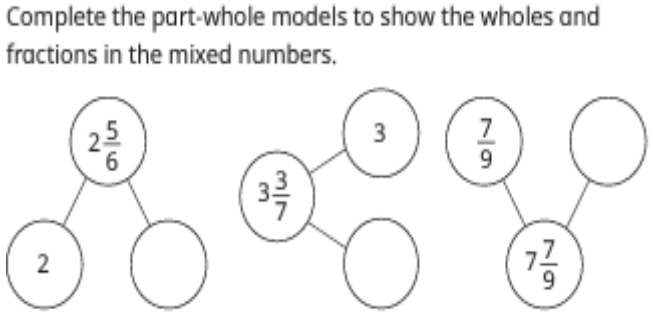




Key Questions:

- What is a mixed number?
- What does each part of a mixed number represent?
- How many wholes are there in the mixed number ____?
- What is the fractional part of ____?
- How can you partition the mixed number into wholes and a fraction?
- How many other ways could you partition the mixed number?





Stem Sentences:

- There are ____ wholes.
- There are ☐/☐
- The mixed number is ____ ☐/☐
- ____ can be partitioned into _____ wholes and ☐/☐

Key Vocabulary:

mixed numbers
partitioning
whole
fractional parts
part-whole models
bar models
fraction

Maths – Fractions

YEAR 4

Small Steps:

1. Understand the whole.
2. Count beyond 1.
3. Partition a mixed number.
4. Number lines with mixed numbers.
5. Compare and order mixed numbers.
6. Understand improper fractions.
7. Convert mixed numbers to improper fractions.
8. Convert improper fractions to mixed numbers.
9. Equivalent fractions on a number line.
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11. Add two or more fractions.
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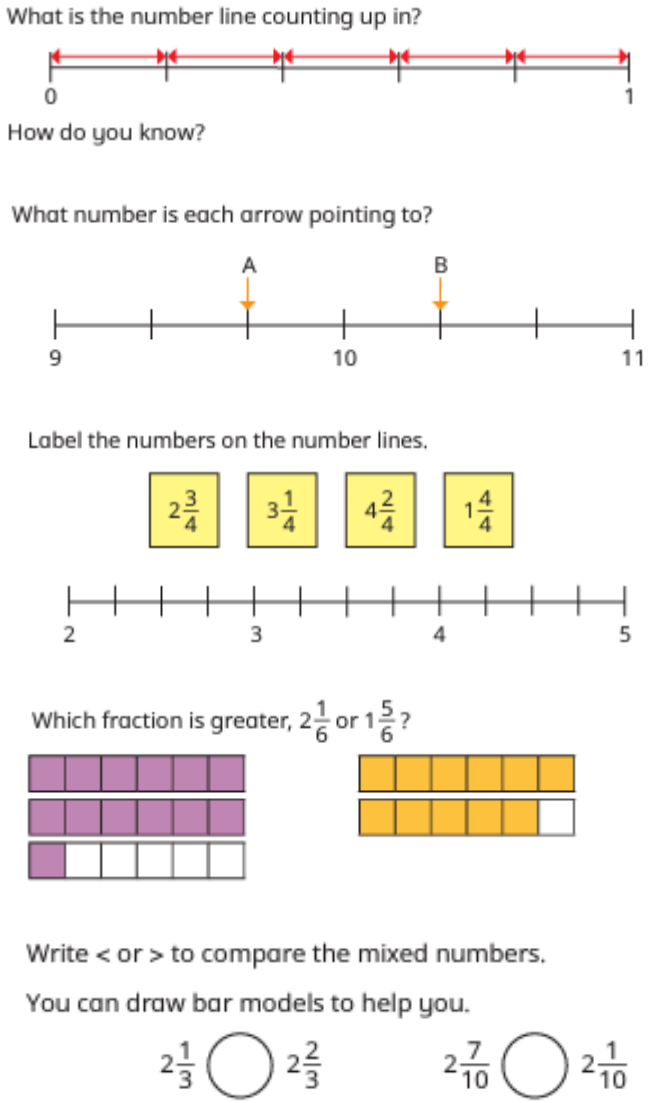

Key Questions:

- On the number line, how many intervals are there between these two consecutive whole numbers, _____ and _____?
- What is each interval worth on the number line?
- Is it more efficient to count on from the previous whole number or back from the next whole number when labelling _____?
- What is the whole number before and after _____?
- Is _____ closer to the previous or the next whole number? How do you know?
- How is comparing mixed numbers similar to comparing proper fractions? How is it different?
- Are the whole numbers the same? Which is the greater whole?
- If the whole numbers are the same? What do you need to compare? Which is the greater fraction? How do you know?
- How do you know the mixed numbers are in order?

Stem Sentences:

- The difference between the start and end of the number line is _____.
- There are _____ intervals.
- Each interval is worth _____.
- _____ is closer to _____ than _____.
- First, I will compare the _____. If the are the same, I will compare the _____.
- If the denominator is the same, the _____ the numerator, the _____ the fraction.

Key Vocabulary:

mixed numbers
number line
label
fractions
intervals
worth
whole
divisions
consecutive
integers
quarters
estimate
positions
closer to
halfway
either side
efficient
previous/next
before/after
difference
start/end
compare/order
denominators/numerator
same
greater

Maths – Fractions

YEAR 4

Small Steps:

1. Understand the whole.
2. Count beyond 1.
3. Partition a mixed number.
4. Number lines with mixed numbers.
5. Compare and order mixed numbers.
6. Understand improper fractions.
7. Convert mixed numbers to improper fractions.
8. Convert improper fractions to mixed numbers.
9. Equivalent fractions on a number line.
10. Equivalent fraction families.
11. Add two or more fractions.
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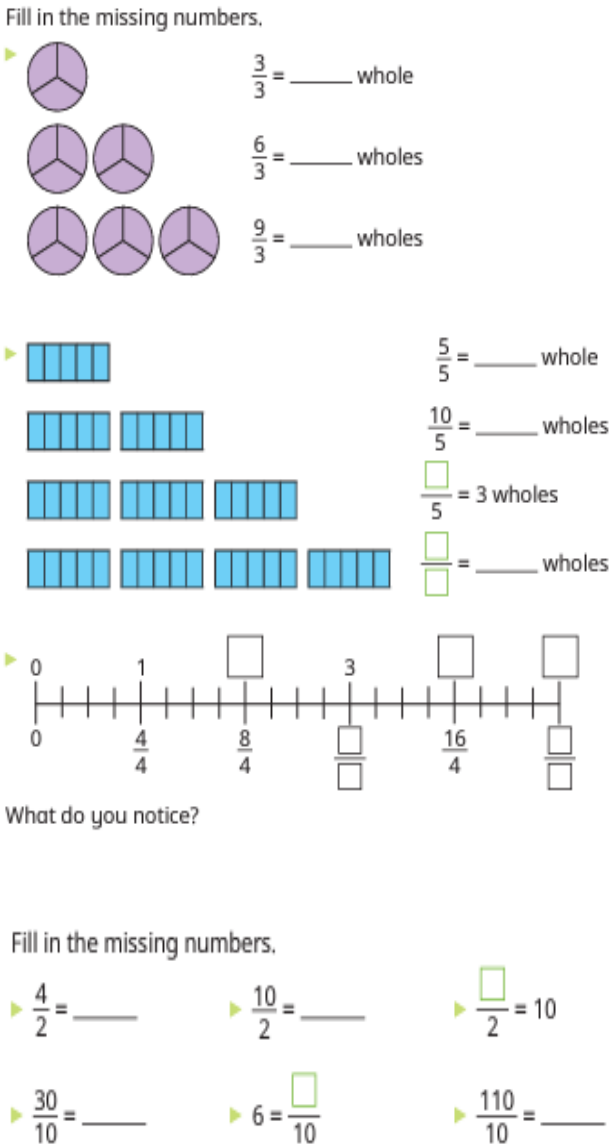
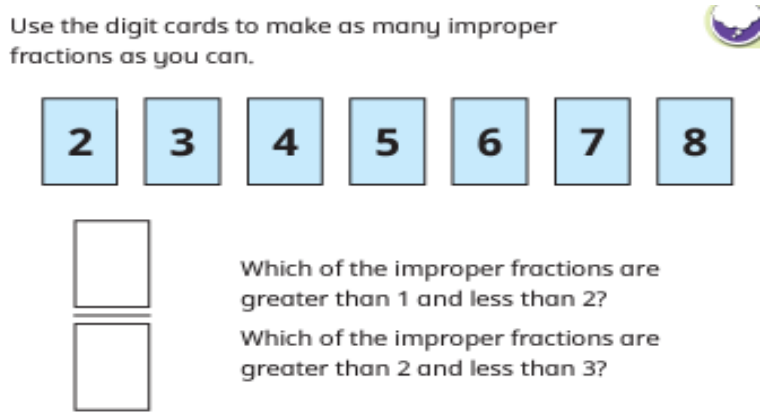


Key Questions:

- How many ____ (for example, thirds) are there in 1 whole?
- So how many ____ (for example, thirds) will there be in 2/3/4 wholes?
- What do you think comes next in this count: 3 fifths, 4fifths, 5fiiths?
- What is the same and mixed numbers and improper fractions? What is different?
- If there are 10 tenths in 1 whole, how many tenths are there ins 1 whole and 1/10?
- Which of these are improper fractions? How do you know?



Stem Sentences:

- An improper fraction is a fraction where the numerator is ____ the denominator.
- There are ____ ____ in 1 whole, so there are ____ _____ in 2/3/4 wholes.

Key Vocabulary:

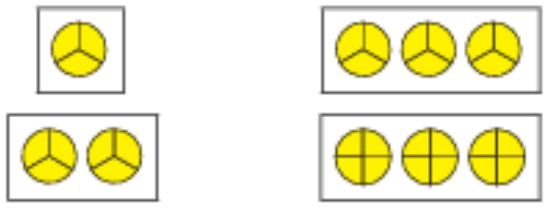
fractions
greater than 1
mixed numbers
improper fractions
numerator
greater than
equal to
denominator
whole
integers
bar model
number lines
next
same/different

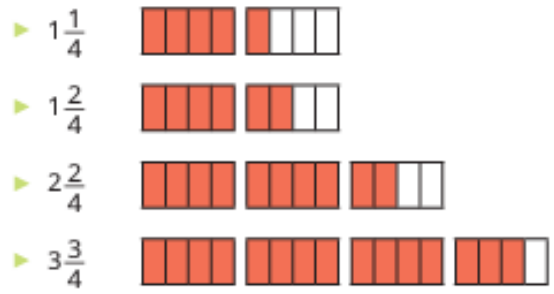
Maths – Fractions

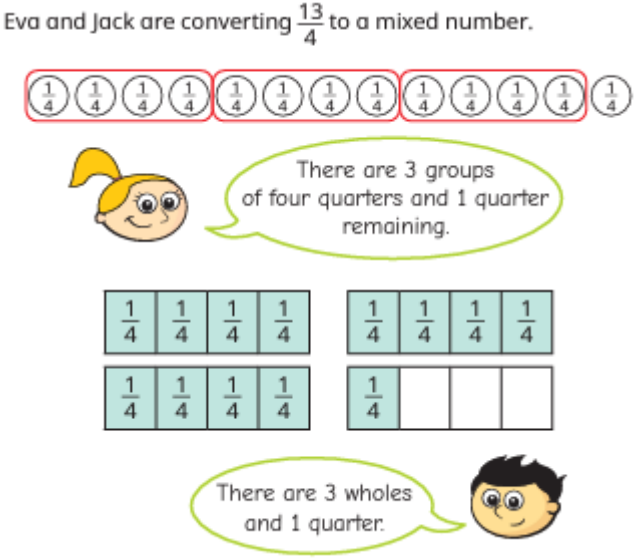
YEAR 4

Small Steps:

1. Understand the whole.
2. Count beyond 1.
3. Partition a mixed number.
4. Number lines with mixed numbers.
5. Compare and order mixed numbers.
6. Understand improper fractions.
7. Convert mixed numbers to improper fractions.
8. Convert improper fractions to mixed numbers.
9. Equivalent fractions on a number line.
10. Equivalent fraction families.
11. Add two or more fractions.
12. Add fractions and mixed numbers.
13. Subtract two fractions.
14. Subtract from whole amounts.
15. Subtract from mixed numbers.







Key Questions:

- What is the integer in the mixed number ____?
- What is the fractional part of the mixed number ____?
- How do you know if a fraction is improper?
- How many fifths are there in 2/3/4 wholes? What do you notice?
- If there are 8 quarters in 2, how many more quarters do you need to add for the mixed number 2 ¾?
- What do you noticed about the improper fraction equivalences of $2\frac{2}{9}, 2\frac{3}{9}, 2\frac{4}{9}$ / $2\frac{2}{9}, 3\frac{2}{9}, 4\frac{2}{9}$?
- How do you know ____ is an improper fraction?
- How many quarters are there in 15/4?
- How many quarters are there in 1/2/3 wholes?
- How many groups of 4 are there in 15? What is the remainder?
- How can you write that as a mixed number?

Stem Sentences:

- Each whole is worth ____ _____.
- All the wholes are worth ____ _____.
- Adding the fractional part means that altogether there are ____ ____.
- There are ____ ____ in 1 whole?
- There are ____ groups of ____ and ____ remaining.
- So $\frac{\square}{\square}$ as a mixed number is ____.

Key Vocabulary:

mixed number
improper fractions
convert
bar models
number lines
times-table
equivalent
integer
adding
fractional parts
worth
altogether
division
groups of
remainder

Maths – Fractions

YEAR 4

Small Steps:

1. Understand the whole.
2. Count beyond 1.
3. Partition a mixed number.
4. Number lines with mixed numbers.
5. Compare and order mixed numbers.
6. Understand improper fractions.
7. Convert mixed numbers to improper fractions.
8. Convert improper fractions to mixed numbers.
9. Equivalent fractions on a number line.
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11. Add two or more fractions.
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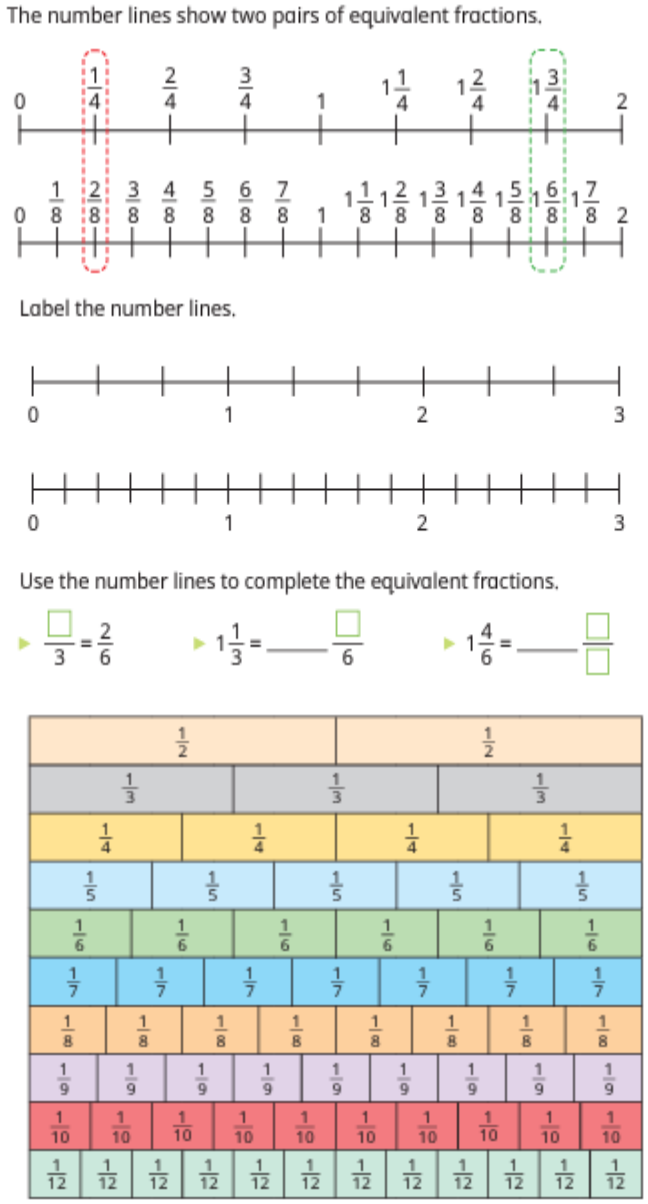


Key Questions:

- What are equivalent fractions?
- What unit fraction is the number like counting in?
- How do you know that ____ is equivalent to ____?
- Why do the integers have to be in line with each other?
- How do you know that 2 and 1/3 cannot be equivalent to 4 and 2/6?
- What is ____ as a mixed number/improper fraction?
- How can you split each section into 2/3/4 equal smaller parts?
- How many other ways could you split each part?
- If you split each part into ____ equal smaller parts, what fraction does each part now represent?
- Why do you need to split all of the existing parts? Why do they need to be equal in size?
- Are there any fractions on the fraction wall that do not have any equivalent fractions shown? Does this mean they do not have any equivalent fractions?

Key Vocabulary:

number lines
equivalent fractions
equal in value
integer
mixed numbers
improper fractions
unit fraction
intervals
consecutive
within 1
greater than 1
bar models
equally
fraction wall
equivalent fraction families
smaller parts
split
divide

Stem Sentences:

- There are ____ equal intervals between consecutive integers, so the number line is counting in ____s.
- I know that ____ is equivalent to ____ because…
- To split the number line into ____, I need to split each interval into ____ equal sections.
- If I divide each part into ____ equal parts, then they will each represent ☐.
- I can divide each part into ____ equal parts to show that ____ is equival☐ to ☐ ____.

Maths – Fractions

YEAR 4

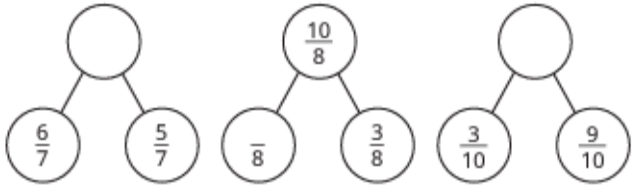
Small Steps:

1. Understand the whole.
2. Count beyond 1.
3. Partition a mixed number.
4. Number lines with mixed numbers.
5. Compare and order mixed numbers.
6. Understand improper fractions.
7. Convert mixed numbers to improper fractions.
8. Convert improper fractions to mixed numbers.
9. Equivalent fractions on a number line.
10. Equivalent fraction families.
11. Add two or more fractions.
12. Add fractions and mixed numbers.
13. Subtract two fractions.
14. Subtract from whole amounts.
15. Subtract from mixed numbers.

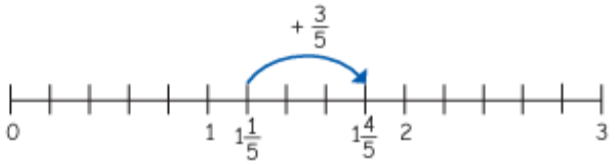
Huan and Scott use bar models to represent $\frac{2}{5} + \frac{2}{5} = \frac{4}{5}$

Are their methods the same or different?

Complete the part-whole models.



Amir uses a number line to add fractions.



What calculation is Amir working out? What is the answer?

Tommy works out an addition.

$$4\frac{3}{5} + \frac{2}{5} = 4\frac{5}{5}$$

Do you agree with Tommy?

Explain your answer.

Key Questions:

- Are the denominators the same? Why is this important?
- How can you show the addition in a diagram/bar model?
- How could a number line help you?
- If you answer greater or smaller than 1? How do you know?
- How do you convert an improper fraction to a mixed number?
- How is adding three fractions different from adding two fractions?
- How would you explain how to add fractions to someone who does not understand?
- Are the denominators the same? Why is this important?
- How is adding two fractions different from adding a fraction and a whole number? How is it different from adding a fraction and a mixed number?
- Do you prefer to use a bar model or a number line? Why?
- How could you partition the fraction to help you work out the answer?
- Do you have an improper fraction in your answer? How should you write the mixed number?

Key Vocabulary:

add
fractions
denominator
same/different
proper fractions
mixed numbers
equal parts
bar models
counting on
number line
greater than 1
total
within 1
convert
greater/smaller
difference/different
crossing a whole
partitioning
whole number

Stem Sentences:

- When the denominators are the same, to add the fractions add the _____.
- $\frac{\square}{\square}$ is the same as ____ (for example, 5/4 is the same as 1¼).
- I can partition ____ into ____ and ____.

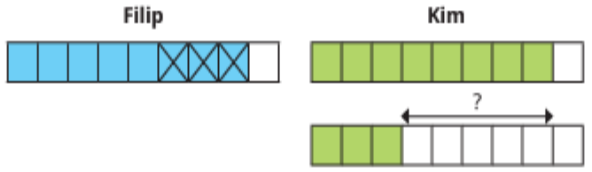
Maths – Fractions

YEAR 4

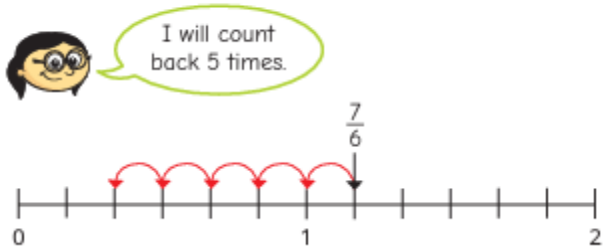
Small Steps:

1. Understand the whole.
2. Count beyond 1.
3. Partition a mixed number.
4. Number lines with mixed numbers.
5. Compare and order mixed numbers.
6. Understand improper fractions.
7. Convert mixed numbers to improper fractions.
8. Convert improper fractions to mixed numbers.
9. Equivalent fractions on a number line.
10. Equivalent fraction families.
11. Add two or more fractions.
12. Add fractions and mixed numbers.
13. Subtract two fractions.
14. Subtract from whole amounts.
15. Subtract from mixed numbers.

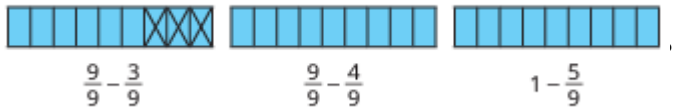
Filip and Kim use bar models to work out $\frac{8}{9} - \frac{3}{9} = \frac{5}{9}$



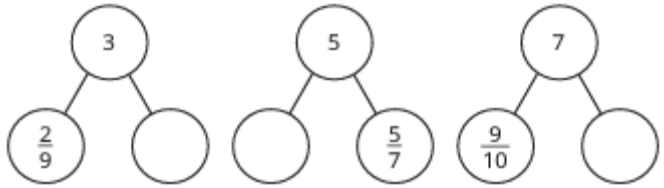
Annie is using a number line to show that $\frac{7}{6} - \frac{5}{6} = \frac{2}{6}$



Use the diagrams to work out the subtractions.



Complete the part-whole models.



Key Questions:

- Are the denominators the same? Why is this important?
- How could you represent the subtraction in a diagram/bar model?
- How would a number line help you?
- If your answer greater or smaller than 1? How do you know?
- What is the same when you adding or subtracting fractions with the same denominator? What is different?
- How would you explain how to subtract fractions to someone who does not understand?
- How many ____ are equal to 1 whole/2 wholes/5 wholes?
- What is the connection between the numerator in the question and the numerator in the answer when you subtract a fraction from 1?
- How can you show the problem using a bar model/number line?
- How many of the wholes are affected when you subtract a fraction?

How can you partition the whole number to help with subtracting?

Stem Sentences:

- If the denominators are the same, to subtract the fractions I need to subtract the ____.
- ____ minus ____ is equal to ____.
- 1 - $\frac{\square}{\square}$ = $\frac{\square}{\square}$, so 2 - $\frac{\square}{\square}$ - 1 $\frac{\square}{\square}$
- 1 whole is equal to $\frac{\square}{\square}$, so the wholes are equal to $\frac{\square}{\square}$

Key Vocabulary:

subtract
fractions
same/different
denominator
numerators
bar models
taking away
partitioning
difference
proper/improper
whole numbers
mixed numbers
greater/smaller
minus
equal to
equal parts
equivalent

Maths – Fractions

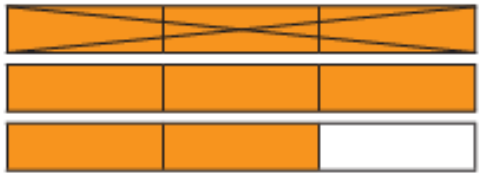
YEAR 4

Small Steps:

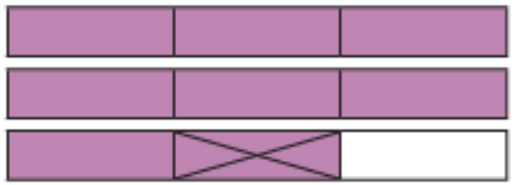
1. Understand the whole.
2. Count beyond 1.
3. Partition a mixed number.
4. Number lines with mixed numbers.
5. Compare and order mixed numbers.
6. Understand improper fractions.
7. Convert mixed numbers to improper fractions.
8. Convert improper fractions to mixed numbers.
9. Equivalent fractions on a number line.
10. Equivalent fraction families.
11. Add two or more fractions.
12. Add fractions and mixed numbers.
13. Subtract two fractions.
14. Subtract from whole amounts.
15. Subtract from mixed numbers.

Aisha uses a bar model to show that $2\frac{2}{3} - 1 = 1\frac{2}{3}$

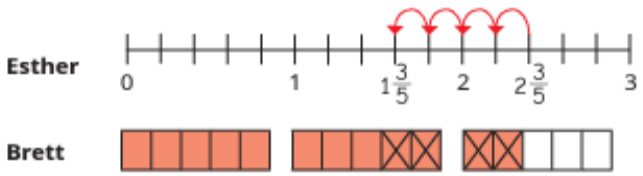
What do you notice?



Ron uses a bar model to show that $2\frac{2}{3} - \frac{1}{3} = 2\frac{1}{3}$

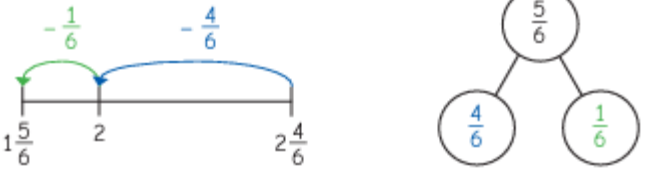


Esther and Brett are working out $2\frac{2}{5} - \frac{4}{5} = 1\frac{3}{5}$



What is the same about the methods? What is different?

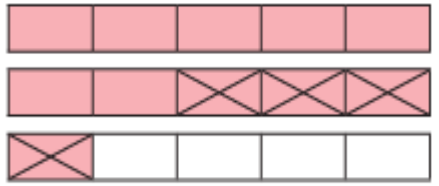
Jack has partitioned $\frac{5}{6}$ to work out $2\frac{4}{6} - \frac{5}{6}$



Key Questions:

- How is subtracting from a mixed number different from subtracting from wholes or fractions? How is it the same?
- How can you show the subtraction as a bar model?
- Will you subtract whole bars or parts of bars?
- How can you show the subtraction on a number line?
- How can you partition the mixed number/fraction to help you solve the calculation?
- If you subtracted back to the previous whole number, why would this help?

What subtraction does the bar model show?



How do you know?

A piece of ribbon is $3\frac{1}{4}$ m long.

Tom and Alex cut off $\frac{3}{4}$ m of ribbon each.

Nijah needs 2 m of ribbon to complete an art project.

Is there enough ribbon left for Nijah?

Explain your answer.

Key Vocabulary:

subtract
mixed numbers
whole
bar models
number lines
cross a whole
fractions
same/different
partition
calculation
previous
denominators

Stem Sentences:

If the denominators are the same, to subtract the fractions I need to subtract the _____.

I can partition _____ into _____ and _____.

When I subtract a whole number from a mixed number, the _____ stays the same.

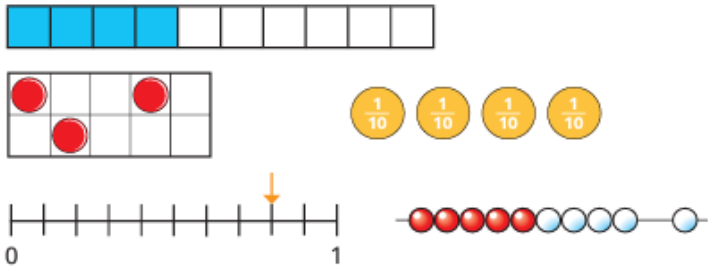
Maths – Decimals

YEAR 4

Small Steps:

1. Tenths as fractions.
2. Tenths as decimals.
3. Tenths on a place value chart.
4. Tenths on a number line.
5. Divide a 1-digit number by 10.
6. Divide a 2-digit number by 10.
7. Hundredths as fractions.
8. Hundredths as decimals.
9. Hundredths on a place value chart.
10. Divide a 1- or 2-digit number by 100.

What fraction does each picture show?



Scott is counting up in tenths.

Continue Scott's counting until you reach 1

Complete the number line counting in tenths.

Complete the table.

Picture	Words	Fraction	Decimal
0.1	one tenth	$\frac{1}{10}$	0.1
0.1 0.1 0.1 0.1 0.1 0.1			
			0.9

Key Questions:

- What is a fraction/decimal?
- What is a tenth?
- If a whole is divided into 10 equal parts, what is the value of each part?
- How can you represent the fraction/decimal ____ using a model?
- When you are counting up in tenths, what comes before/after ____?
- When you are counting up in tenths, what comes after 9/10?
- How are tenths similar to ones?
- How are decimals similar to fractions?
- How can you convert between tenths as fractions and tenths as decimals?
- How is 1/10 similar to 0.1? How is it different?

Key Vocabulary:

unit fractions
non-unit fractions
compare/order
dividing
hundred
equal parts
number line
tenths
fraction
whole
split
value
before/after
similar
decimal numbers
decimal point
tenths column
place value
same/different

Stem Sentences:

- When a whole is split into ____ equal parts, one of those parts is worth _____.
- When counting in tenths, the number before/after ____ is _____.
- If a whole is split into 10 equal parts, then each part is worth ____.
- Zero point ____ is equal to ____ tenths.
- ____ as a fraction/decimal is _____.

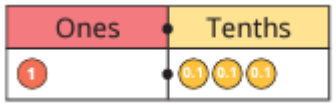
Maths – Decimals

YEAR 4

Small Steps:

1. Tenths as fractions.
2. Tenths as decimals.
3. Tenths on a place value chart.
4. Tenths on a number line.
5. Divide a 1-digit number by 10.
6. Divide a 2-digit number by 10.
7. Hundredths as fractions.
8. Hundredths as decimals.
9. Hundredths on a place value chart.
10. Divide a 1- or 2-digit number by 100.

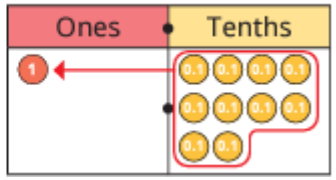
Teddy uses place value counters and a place value chart to represent the number 1.3



There is 1 whole and 3 tenths.
The number is 1.3

Mo is counting up in tenths.

When he gets to 10 tenths, he exchanges them to make 1 one.

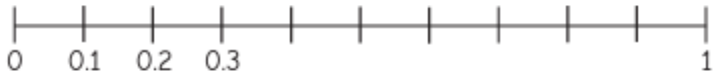


Complete the number tracks.

	0.7		0.9		1.1	1.2

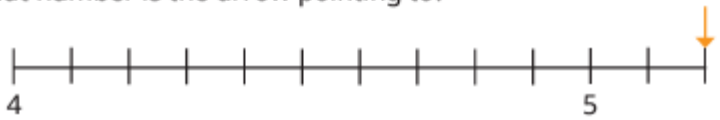
2.2	2.4		2.8		3.2

Dani is counting in tenths on a number line.



Finish labelling Dani's number line.

What number is the arrow pointing to?



Key Questions:

- What is a tenth?
- What is a decimal point?
- If you have ___ in the tenths column, what number do you have?
- How many tenths make 1 whole?
- If you have 10 in the tenths column, can you make an exchange?
- How many wholes/tenths are in the number ____?
- How can you show these numbers on a number line?
- If there are 10 intervals between two whole numbers, what is each interval worth?
- How can you work out he missing number in the sequence?
- What intervals does the number line go up in?
- How do you count in 0.1s past a whole number?

Stem Sentences:

- There are ____ tenths in 1 whole.
- 1 whole is equivalent to ___ tenths.
- There is/are ____ whole/wholes and ____ tenths.
- The number is ____.
- The start point is ____.
- The end point is ____.
- The number line is counting up in ____.
- The missing number is ____ because...

Key Vocabulary:

tenths
column
place value
greater than 1
equivalent
whole
forwards/backwards
decimal point
exchange
number line
decimal numbers
sequence
value
intervals
crossing the whole
greater than 1
mixed numbers
worth
start/end

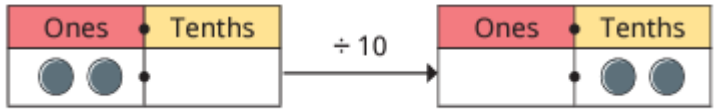
Maths – Decimals

YEAR 4

Small Steps:

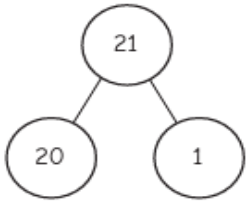
1. Tenths as fractions.
2. Tenths as decimals.
3. Tenths on a place value chart.
4. Tenths on a number line.
5. Divide a 1-digit number by 10.
6. Divide a 2-digit number by 10.
7. Hundredths as fractions.
8. Hundredths as decimals.
9. Hundredths on a place value chart.
10. Divide a 1- or 2-digit number by 100.

Dora uses a place value chart to work out that 2 ÷ 10 = 0.2



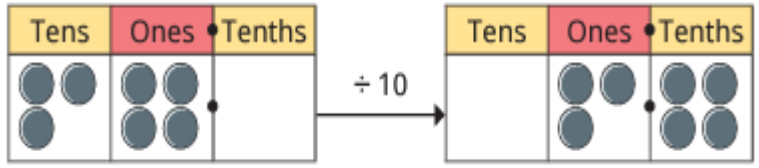
Kim knows that to divide a number by 10, she must split it into 10 equal groups.

She uses partitioning to divide 21 by 10



20 ÷ 10 = 2
1 ÷ 10 = 0.1
So 21 ÷ 10 = 2 + 0.1 = 2.1

Filip uses a place value chart to find that 34 ÷ 10 = 3.4



Jack uses a Gattegno chart to work out that 23 ÷ 10 = 2.3

10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9

Key Questions:

- What number is represented on the place value chart?
- When divided a number by 10, how many equal parts is the number split into?
- How many tenths are there in 1 whole/2 wholes/3 wholes?
- How can you use counters and a place value chart to show divided a number by 10?
- What is the same and what is different before and after a 1-digit number is divided by 10?
- How can you show this 2-digit number on a place value chart/in a part-whole model?
- When divided a number by 10, how many equal parts are you splitting it into?
- How can you use a part-whole model to help you divide a 2 digit number by 10?
- What could a 2 digit number look like once it has been divided by 10?
- What happens to a number when you divide it by 10?

Stem Sentences:

- _____ is 10 times the size of _____.
- _____ is one-tenth the size of _____.
- _____ divided by 10 is equal to _____.

Key Vocabulary:

divide/dividing
1-digit
ten
decimal number
1 decimal place
equal parts
shared
exchanging
place value
worth
move
one place
right
tenths
same/different
10 times the size
one-tenth the size
2-digit
direction
splitting

Maths – Decimals

YEAR 4

Small Steps:

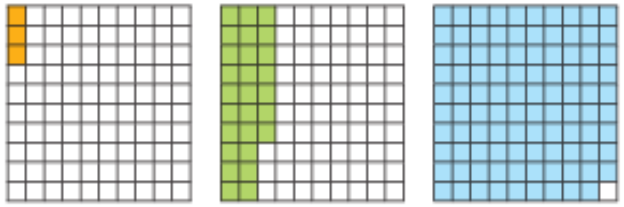
1. Tenths as fractions.
2. Tenths as decimals.
3. Tenths on a place value chart.
4. Tenths on a number line.
5. Divide a 1-digit number by 10.
6. Divide a 2-digit number by 10.
7. Hundredths as fractions.
8. Hundredths as decimals.
9. Hundredths on a place value chart.
10. Divide a 1- or 2-digit number by 100.

Do you agree with Tiny?

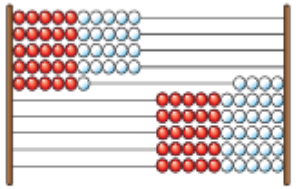
Explain your answer.

Each part of a hundred square is worth $\frac{1}{100}$

What fraction of each hundred square is shaded?



This Rekenrek is made up of 100 beads.



If the Rekenrek represents 1 whole, what fraction is shown on the left?

What fraction is shown on the right?

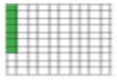
Annie makes 0.23 using place value counters.

What numbers do these counters represent?

Give your answers as decimals.

Key Questions:

- How many hundredths are there in 1 whole?
- How is a hundredth similar to/different from a tenth?
- How can you represent hundredths in a hundred square?
- How many hundredths are equivalent to 1 tenth?
- How can you use base 10 to represent both tents and hundredths?
- How can you partition ____ into tenths and hundredths?
- How is a decimal similar to/different from a fraction?
- how can you write 1 hundredth as a decimal number?
- Are 1/100 and 0.01 the same or different?
- Is ____ greater or smaller than ____?
- How many hundredths are equivalent to 1 tenth?

Picture	Words	Fraction	Decimal
	fifty-six hundredths		
		$\frac{17}{100}$	
			

Stem Sentences:

- There are ____ hundredths in ____ tenths.
- _____ hundredths is equivalent to ____ tenths and ____ hundredths.
- ____ hundredths as a decimal is ____.
- There are _____ hundredths in 1 tenth.
- ____ hundredths can be partitioned into ____ tenths and ____ hundredths.

Key Vocabulary:

tenths
hundredths
whole
equal parts
number lines
place value
partition
similar/same
different
hundred square
equivalent
base 10
decimal number
flexible partitioning
fractions
greater/smaller

Maths – Decimals

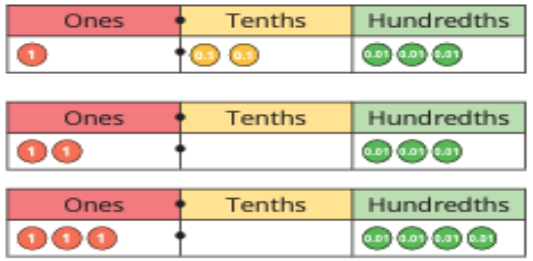
YEAR 4

Small Steps:

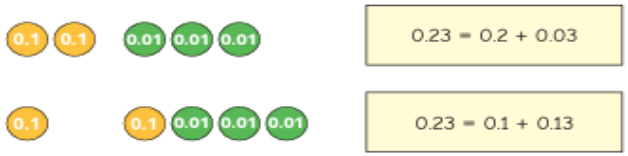
1. Tenths as fractions.
2. Tenths as decimals.
3. Tenths on a place value chart.
4. Tenths on a number line.
5. Divide a 1-digit number by 10.
6. Divide a 2-digit number by 10.
7. Hundredths as fractions.
8. Hundredths as decimals.
9. Hundredths on a place value chart.
10. Divide a 1- or 2-digit number by 100.

Write the decimal numbers shown in the place value charts.

How many ones, tenths and hundredths are there in each number?



Brett uses place value counters to partition 0.23



Use Brett's method to help you partition the numbers in three different ways.

0.34	0.68	0.92	0.51

Use a place value chart and counters to make the numbers.

0.34	2.15	0.03	1.01

Complete the sentences to describe each number.

There are _____ ones.

There are _____ tenths.

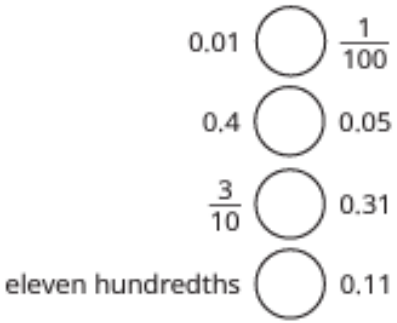
There are _____ hundredths.

The number represented is _____

Key Questions:

- What is a hundredth?
- How many hundredths are equivalent to 1 tenth?
- How many hundredths are equivalent to 1 whole?
- Is ____ greater/smaller than ____?
- How can you represent this decimal number on a place value chart?
- How is the hundredths column on a place value chart similar to/different from the ____ column?

Write <, > or = to complete the statements.



Is the statement always true, sometimes true or never true?

A number with 5 in the hundredths column is smaller than a number with 6 in the tenths column.

Explain your answer.

Stem Sentences:

- _____ is equal to ____ ones, ____tenths and ____ hundredths.

Key Vocabulary:

hundredths
decimals
column
place value
tenth
exchanging
counters
greater/less than/smaller
flexibly partition
zero placeholder
equivalent
similar to/different
equal to
ones

Maths – Decimals

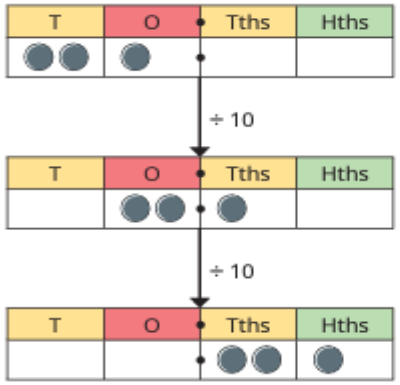
YEAR 4

Small Steps:

1. Tenths as fractions.
2. Tenths as decimals.
3. Tenths on a place value chart.
4. Tenths on a number line.
5. Divide a 1-digit number by 10.
6. Divide a 2-digit number by 10.
7. Hundredths as fractions.
8. Hundredths as decimals.
9. Hundredths on a place value chart.
10. Divide a 1- or 2-digit number by 100.

Rosie uses a place value chart to divide 21 by 100

She divides it first by 10, and then by 10 again.



21 ÷ 10 = 2.1
2.1 ÷ 10 = 0.21
So 21 ÷ 100 = 0.21

Fill in the missing numbers.

62 ÷ _____ = 0.62

_____ ÷ 100 = 0.62

_____ ÷ 10 = 6.2

_____ ÷ 10 = 2.4

_____ ÷ 10 = 0.24

_____ ÷ 100 = 0.24

What patterns can Ron see?

Is the statement true or false?

When you divide any whole 2-digit number by 100, there will be a zero in the ones column.

Explain your answer.

Key Questions:

- What exchanges can you make?
- How can you use a place value chart to show dividing a number by 100?
- How is dividing by 100 similar to/different from dividing by 10?
- What happens to a number when you divide it by 100?
- Does the decimal point ever move?
- If you divide by 10 twice, what do you notice?

Write <, > or = to complete the statements.

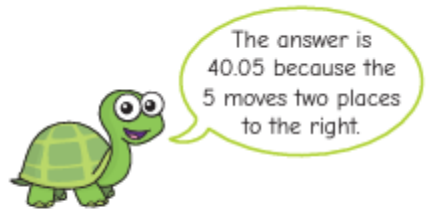
99 ÷ 100 ◯ 100 ÷ 100

86 ÷ 100 ◯ 26 ÷ 10

4 ÷ 10 ◯ 50 ÷ 100

24 ÷ 6 ◯ 40 ÷ 100

Tiny is working out 45 ÷ 100



Do you agree with Tiny?

Explain your answer.

Stem Sentences:

- To divide something by _____, split into _____ equal parts.
- When dividing a number by 100, move all the digits _____ places to the _____.

Key Vocabulary:

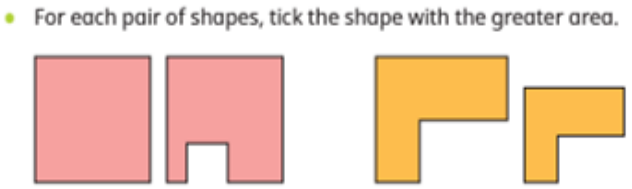
multiplication
division
1-digit
2-digit
hundred
place value
counters
exchanges
dividing
moves
two places
right
similar to/different from
decimal point
twice
split
equal parts

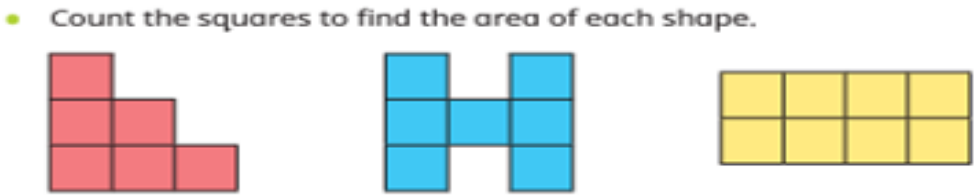
Maths – Measurement - Area

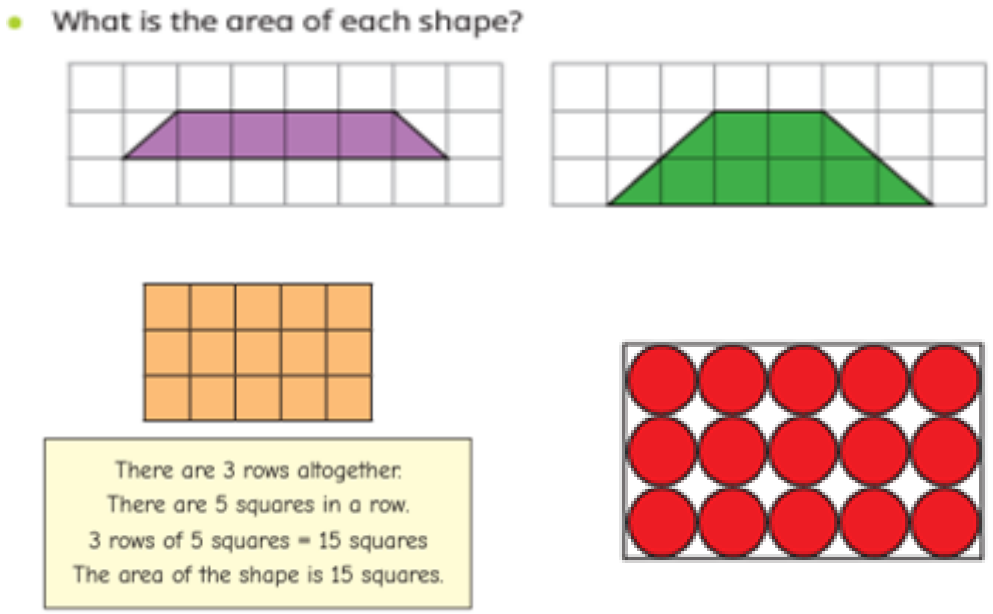
YEAR 4
Term 2

Small Steps:

1. What is area?
2. Count squares.
3. Make shapes.
4. Compare areas.







Key Questions:

- How can you measure area?
- Which item has the greatest/smallest area?
- Why would you not use sticky notes to find the area of the playground? What could you use instead?
- Why are sticky notes not useful for finding the area of a circle?
- What do you think the area of ____ might be?
- What happens if you use a different unit of measure to find the area?
- What can you do to make sure you do not count a square twice?
- How can you make sure you do not miss a square?
- Does your knowledge of times-tables help you to find the area?
- Can you use arrays to find the area of any shape?
- Which method is easier? Why?
- What can you do if the squares are not full squares?

Stem Sentences:

- The area of ____ is ____.
- Area is the amount of ____ taken up by a 2-D shape or surface.
- Area can be measured using ____.
- There are ____ squares inside the shape. This means that the area of the shape is ____ squares.
- There are ____ squares and ____ half squares inside the shape. This means that the area of the shape is ____ squares.
- There are ____ rows. Each row has ____ squares. There are ____ squares in total.

Key Vocabulary:

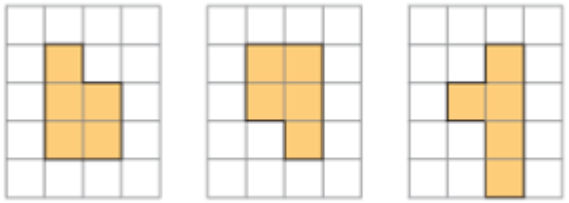
area
space
amount
2-D
two-dimensional
shape
surface
counting squares
formal calculation
half squares
accuracy
complex shapes
arrays
properties
squares
rectangles
measure
greatest
smallest
circle
times-table
method

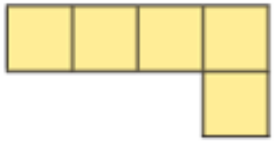
Maths – Measurement - Area

YEAR 4
Term 2

Small Steps:

1. What is area?
2. Count squares.
3. Make shapes.
4. Compare areas.





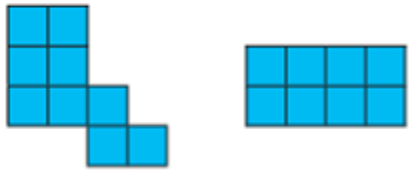
Add 7 more squares to the shape to make a rectangle.

Is there more than one possible answer?

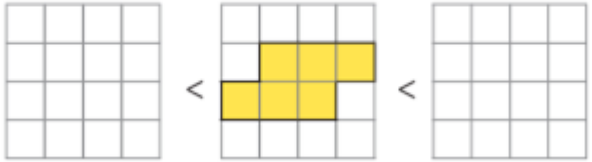
Is the statement true or false?

There is only one possible way to make a rectangle with an area of 12 squares.

- Which shape has the smaller area?



Draw two shapes to complete the comparison.



Key Questions:

- How many different shapes can you make with four squares?
- How can you work systematically?
- Should you overlap the squares when making your shapes?
- How many of these shapes are rectilinear? Explain why?
- Is it possible to make a rectangle with an odd number of squares?
- Is it possible to make a square with an odd number of squares?
- How can you find out which shape has the greater area?
- How much greater/smaller is the area of the first/second shape?
- What is different about the numbers of squares covered by the two shapes?
- What is the difference in area between the shapes?
- How can you order the shapes?

Stem Sentences:

- There are ____ squares inside the shape.
- This means that the area of the shape is ____ squares.
- The area of the shape is ____ squares.
- I can make the shape different by ____.
- The area of shape A is ____ squares and the area of shape B is ____ squares.
- I know shape ____ has a greater area because it has ____ more squares than shape ____.
- The more squares inside a shape, the ____ the area.

Key Vocabulary:

area
rectilinear
shapes
squares
straight
sides
right
angles
corners
rectangles
overlap
odd
compare
marking
noting
accuracy
complex shapes
symbols
inequality
size order
efficient
method
greater
smaller
difference

Maths – Length and Perimeter

YEAR 4

Small Steps:

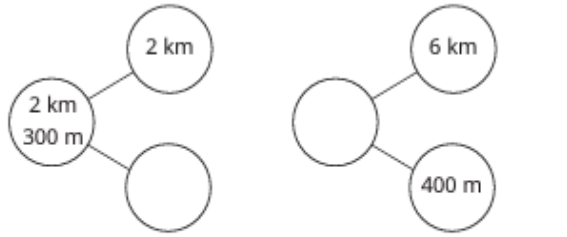
1. Measure in kilometres and metres.
2. Equivalent lengths (kilometres and metres).
3. Perimeter on a grid.
4. Perimeter of a rectangle.
5. Perimeter of rectilinear shapes.
6. Find missing lengths in rectilinear shapes.
7. Calculate perimeter of rectilinear shapes.
8. Perimeter of regular polygons.
9. Perimeter of polygons.

Sort the cards into the table to show the appropriate unit of measurement.

height of a door frame	length of a room
how far a plane travels	length of a garden
distance from one city to another	length of a table
distance from the bottom to the top of a mountain	

Measured in kilometres	Measured in metres

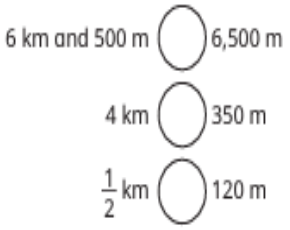
Complete the models.



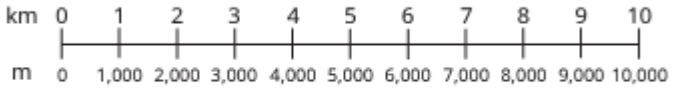
3 km 300 m	
km	300 m

1 km 280 m	
m	1 km

Write <, > or = to compare the lengths.



Use the double number line to complete the number sentences.



- 1,000 m = _____ km
- 3,000 m = _____ km
- _____ m = 4 km
- _____ m = 10 km

Key Questions:

- What unit of measurement would you use to measure the length of a _____? Why?
- What unit of measurement would you use to measure _____? Why?
- Which is the greater length, 1km or 1m?
- Which is greater, _____ km and _____ m or _____ km and _____ m ? How do you know?
- Which is greater, _____ km or _____ m? how do you know?
- How many kilometres and metres are there in _____ km _____ m?
- How many metres are there in 1km? So how many metres are there in _____km?
- How can you work out how many metres is equivalent to half a kilometre? What other fractions of a kilometre can you convert to metres?
- What is the same and what is different about converting metres to centimetres and converting kilometres to metres?

Stem Sentences:

- _____km _____m = _____km + _____m
- _____km and _____m is greater than _____km and _____m.
- _____km and _____m is less than _____km and _____m.
- There are _____m in 1km, so there are _____m in _____km.
- Each kilometre is _____m, so _____km is the same as _____m.
- Every 1,000m is _____km, so _____m is the same as _____km.
- _____km and _____m is the same as _____m.

Key Vocabulary:

measure
kilometres (km)
lengths
metres
centimetres
greater
distances
partition
measurements
addition
bar model
part-whole model
units
less than
convert
equal
thousand
related facts
ten thousand
place value
double number lines
multiply
divide
ten
hundred
equivalent

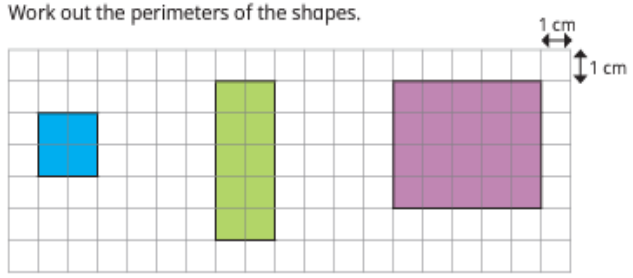
Maths – Length and Perimeter

YEAR 4

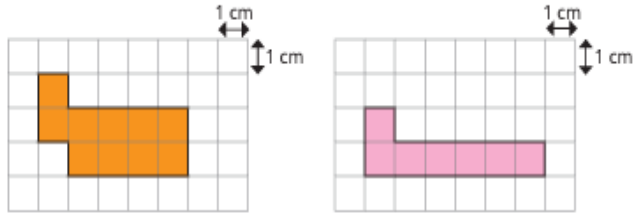
Small Steps:

1. Measure in kilometres and metres.
2. Equivalent lengths (kilometres and metres).
3. Perimeter on a grid.
4. Perimeter of a rectangle.
5. Perimeter of rectilinear shapes.
6. Find missing lengths in rectilinear shapes.
7. Calculate perimeter of rectilinear shapes.
8. Perimeter of regular polygons.
9. Perimeter of polygons.

Work out the perimeters of the shapes.



Two recilinear shapes are drawn on centimere squared paper.



- Are the perimeters of the shapes the same or different?

  How do you know?
- Draw a shape with a perimeter that is greater than each of the shapes.

Key Questions:

- What does "perimeter" mean?
- What is the length of each square? How do you know?
- What is the length of each side? How do you know?
- What unit is used for the perimeter of your shape?
- How can you make sure you do not include one side twice?
- Which shape has the greater/greatest perimeter? How do you know?
- Can two different shapes have the same perimeter? How do you know? Can you draw an example to support your answer?
- How can you use the length of each side to calculate the perimeter?
- If you know the length and width of a rectangle, do you need to measure/label every side?
- How did you work out the perimeter of the rectangle? How could you have done it a different way?
- How many different ways can you find the perimeter of this rectangle?

Key Vocabulary:

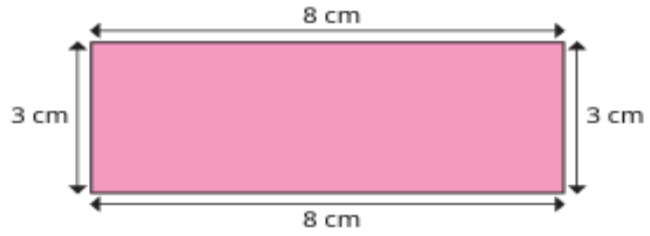
perimeter
measuring
calculating
lengths
rectilinear
shapes
right angles
label
add
compare
greater/greatest
cm
width
rectangles
double
sum

Is the statement always true, sometimes true or never true?

When the sides of a rectangle are all odd numbers, the perimeter is an even number.

Explain your answer.

Work out the perimeter of the rectangle.



How many different ways can you work out the perimeter?

Stem Sentences:

- Perimeter = _____cm + _____cm + _____cm + _____cm = _____cm.
- The width is _____cm and the length is _____cm.
- The perimeter of the shape is _____cm because....
- 2 x _____ cm + 2 x _____cm = _____cm.
- 2 x (_____cm + _____cm) = _____cm

Maths – Length and Perimeter

YEAR 4

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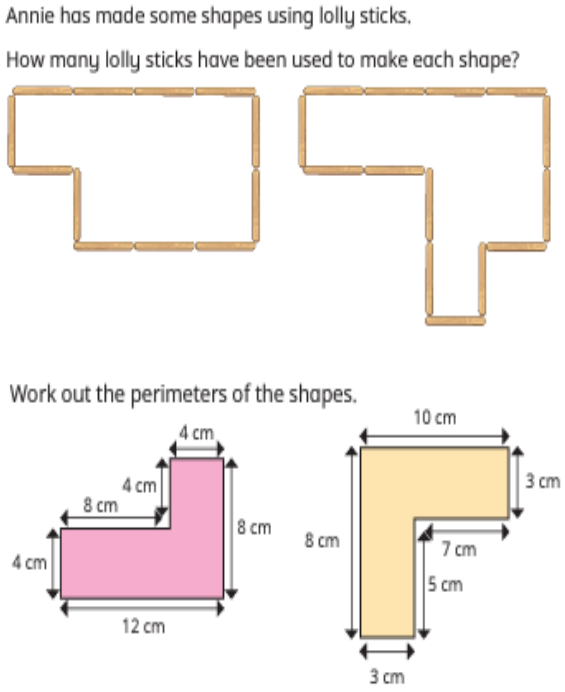
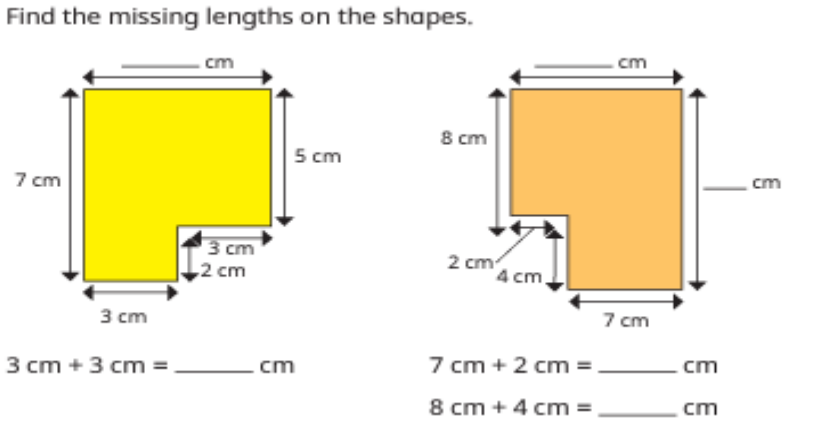
6. Find missing lengths in rectilinear shapes.
7. Calculate perimeter of rectilinear shapes.
8. Perimeter of regular polygons.
9. Perimeter of polygons.





Key Questions:

- What is a rectilinear shape?
- How many sides does the shape have?
- Are any of the sides equal in length?
- What strategies can you use to find the perimeter?
- How can you be sure you have included all the sides?
- How can you check your answer?
- How many rectilinear shapes can you draw with a perimeter of ____cm?
- What lengths do you know? What lengths do you need to find out?
- What is the total horizontal/vertical length of the shape?
- Which sides add together to give the same total?
- Do you need to add or subtract to find the missing length? How do you know?
- Are you finding a part or a whole?
- What is the missing length on the shape?
- How many missing lengths are there on the shape?

Key Vocabulary:

perimeter
rectilinear
shapes
straight lines
right angles
measure
duplication
omission
lengths
width
equal
addition
subtraction
operations
part-whole model
opposite
horizontal/vertical
calculating
equivalent

Stem Sentences:

- The calculation I need to do to work out the perimeter is…
- The shapes has ____ sides, so I need to add together ____ lengths to find the perimeter.
- The perimeter of the shape is ____mm/cm/m.
- ____ + ____ = ____
- ____ = ____ - ____
- The missing side length is ____ because…
- The side measuring ____ and the side measuring ___ are equal to the side measuring ____.
- To workout the unknown length, I need to ____ because…
- There are ____sides, so I need to add together ____ lengths to find the perimeter.

Maths – Length and Perimeter

YEAR 4

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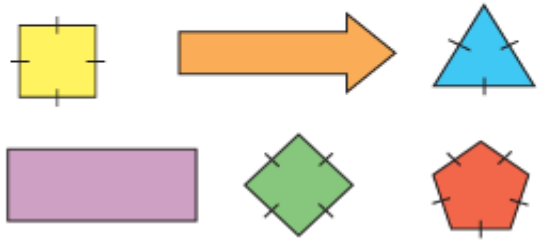
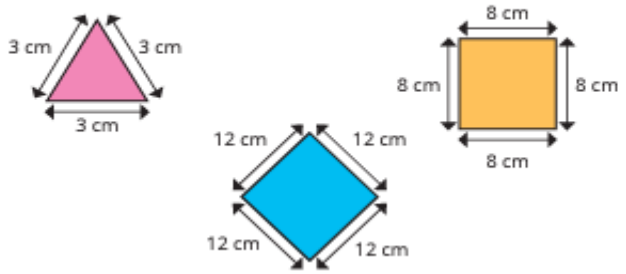
9. Perimeter of polygons.

A polygon is regular if all its sides are equal in length and all its angles are equal in size.

Which of these polygons are regular?

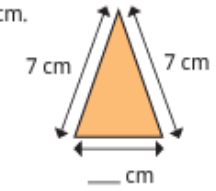


Work out the perimeters of the regular polygons.



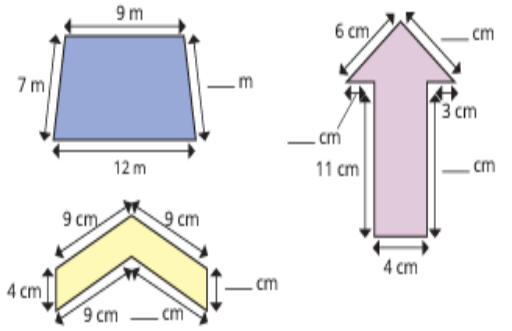
The perimeter of this triangle is 19 cm.

Work out the unknown length.



All the shapes have one line of symmetry.

Work out the perimeters of the shapes.



The perimeter of a rectangle is 22 cm.

The length of the rectangle is 8 cm.

Work out the width of the rectangle.

Key Questions:

- What is a polygon?
- How do you know if a polygon is regular?
- If one side is ____cm, what is the length of each of the sides of the shape? How can you find the perimeter?
- Is an equilateral triangle a regular shape?
- Is a rectangle a regular shape?
- If you know the perimeter of a regular polygon, how can you work out the length of each side?
- What is the difference between a regular and an irregular polygon?
- Is the shape irregular? How do you know?
- How can you work out the perimeter of the shape?
- Are any of the sides the same length?
- What is the length of each side?
- How can you work out the perimeter more efficiently?
- If the shape is symmetrical, how can this help you to work out some of the missing side lengths?

Stem Sentences:

- Each side is ____cm.
- There are ____ sides, so the perimeter of the polygon is ____ x ____ cm = ____ cm.
- _____cm + ____ cm + _____ cm = 3 x ____ cm = _____ cm.
- The shape is regular/irregular because...
- There are ____ sides, so I need to add together ____ lengths to work out the perimeter.
- The c`alculation I need to do to work out the perimeter is...

Key Vocabulary:

regular polygon
equal
length
angles
size
repeated addition
multiplication facts
division
perimeter
straight
equilateral triangle
irregular
difference
symmetrical