

Year 5

Place Value



Base 10 or dienes blocks:

100 thousand, 10 thousand, thousands, hundred, tens,

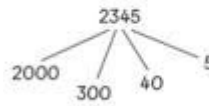


2 thousands + 3 hundreds + 4 tens + 5 ones

Partitioning:

Partitioning:

$$2345 = 2000 + 300 + 40 + 5$$

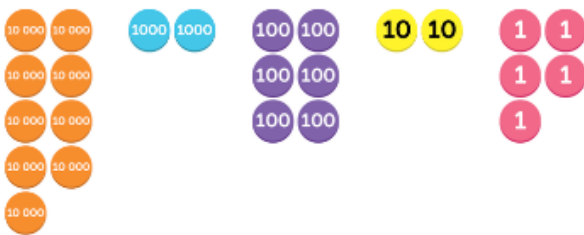


2345 is a 4-digit number.



We write 2345 as two thousand, three hundred and forty-five.

Value of digits:



ten thousands	thousands	hundreds	tens	ones
9	2	6	2	5

Place value cards:



The **9** has a value of **90 000** or **90 thousands**.
It is in the **ten-thousands** place.

The **2** has a value of **2000** or **2 thousands**.
It is in the **thousands** place.

The **6** has a value of **600** or **6 hundreds**.
It is in the **hundreds** place.

The **2** has a value of **20** or **2 tens**.
It is in the **tens** place.

The **5** has a value of **5** or **5 ones**.
It is in the **ones** place.

$$92625 = 90\,000 + 2000 + 600 + 20 + 5$$

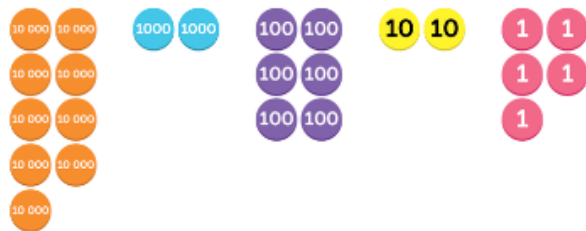
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Place Value

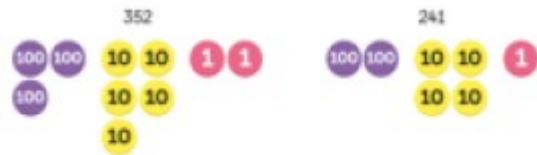


Place value counters:

Use place-value counters to show 92 625.

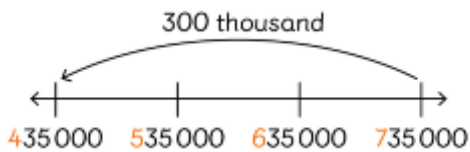


Comparing numbers:

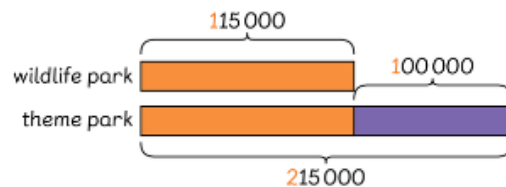


352 is more than 241
352 is greater than 241
 $352 > 241$

Number lines:



Comparing numbers (bar model):



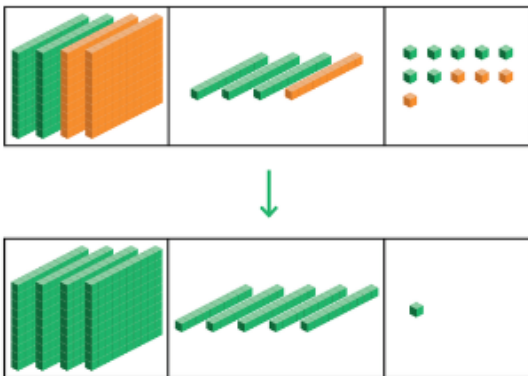
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Addition

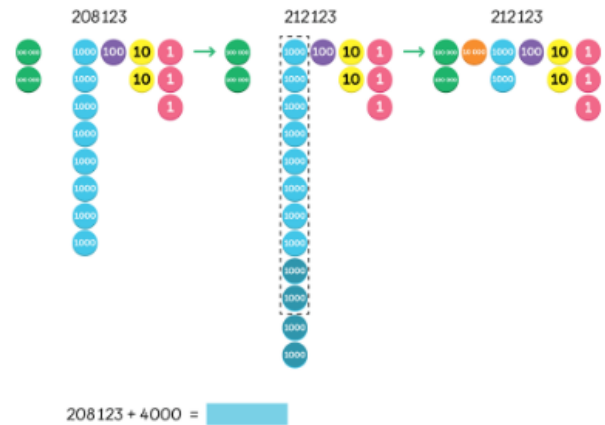


Base 10 method:

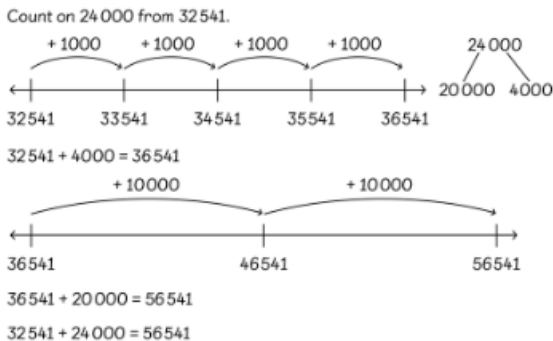
$$237 + 214 = \square$$



Counters method:



Number line:



Inverse calculations:

Commutative	Inverse
$1415 + 12 = 1427$	$1427 - 12 = 1415$
$12 + 1415 = 1427$	$1427 - 1415 = 12$

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Addition

Bar model:



Column addition:

$29806 + 43751 =$

$$\begin{array}{r} 1 \\ 29806 \\ + 43751 \\ \hline 557 \end{array}$$

8 hundreds + 7 hundreds = 15 hundreds



15 hundreds = 1 thousands + 5 hundreds

$$\begin{array}{r} 11 \\ 29806 \\ + 43751 \\ \hline 3557 \end{array}$$

1 thousand + 9 thousands + 3 thousands = 13 thousands



$$\begin{array}{r} 11 \\ 29806 \\ + 43751 \\ \hline 73557 \end{array}$$

13 thousands = 1 ten thousand + 3 thousands

$29806 + 43751 = 73557$

$$\begin{array}{r} 14000 \\ + 25000 \\ \hline 39000 \end{array}$$

Estimation:

$$\begin{aligned} 31249 + 58155 &\approx 30000 + 60000 \\ &= 90000 \end{aligned}$$

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Subtraction

Counters method:

$55\,400 - 13\,700 =$

Rename 1 thousand as 10 hundreds.

Subtract 7 hundreds from 14 hundreds.

Subtract the thousands.

$$\begin{array}{r} \overset{4}{5} \overset{14}{\cancel{4}} 00 \\ - 13\,700 \\ \hline 1\,700 \end{array}$$

Subtract the ten thousands.

$$\begin{array}{r} \overset{4}{5} \overset{14}{\cancel{4}} 00 \\ - 13\,700 \\ \hline \overset{4}{4} 1\,700 \end{array}$$

Number line method:

Count back 300 000 from 453 672.

100 thousand less

$453\,672 - 300\,000 =$

Count back 30 000 from 153 672.

Inverse calculations:

Commutative	Inverse
$1728 - 4 = 1724$	$1724 + 4 = 1728$
$1728 - 1724 = 4$	$4 + 1724 = 1728$

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Subtraction

Missing number problems:

$$\begin{array}{r} \square \quad 3 \quad 2 \quad 7 \quad 6 \\ - \quad 2 \quad \square \quad 1 \quad 8 \quad \square \\ \hline 2 \quad 0 \quad \square \quad 8 \quad 8 \end{array}$$

Column subtraction:

$$\begin{array}{r} \overset{9}{7} \overset{10}{\cancel{0}} \overset{11}{\cancel{1}} \overset{12}{\cancel{2}} \overset{13}{\cancel{3}} \\ - \quad 7 \quad 9 \quad 6 \quad 5 \quad 4 \\ \hline \quad \quad \quad 4 \quad 6 \quad 9 \end{array}$$

$$80123 - 79654 = 469$$

Bar modelling:



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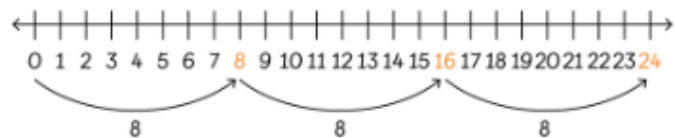


Multiplication

Bar model:



Number line method:



Array method:



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Multiplication

Multiplying by 10, 100 and 1000:

<p>11 packets: $11 \times 10 = 11 \times 1$ ten = 11 tens = 110</p> <p>11 packets will have 110 beads.</p>	
<p>11 bags: $11 \times 100 = 11 \times 1$ hundred = 11 hundreds = 1100</p> <p>11 bags will have 1100 beads.</p>	
<p>11 boxes: $11 \times 1000 = 11 \times 1$ thousand = 11 thousands = 11 000</p> <p>11 boxes will have 11 000 beads.</p>	

Long and short multiplication:

$$\begin{array}{r} 356 \\ \times \quad 5 \\ \hline 30 \quad \rightarrow 5 \times 6 = 30 \\ 250 \quad \rightarrow 5 \times 50 = 250 \\ + 1500 \quad \rightarrow 5 \times 300 = 1500 \\ \hline 1780 \end{array} \quad \begin{array}{l} 5 \times 356 = 1780 \end{array}$$

$$\begin{array}{r} 2541 \\ \times \quad 3 \\ \hline 7623 \end{array}$$

Counters method:

$$£14 \times 5 = \square$$

10	1	1	1	1
10	1	1	1	1
10	1	1	1	1
10	1	1	1	1
10	1	1	1	1

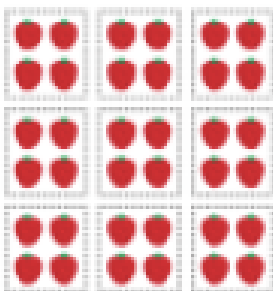
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Division



Division by grouping:

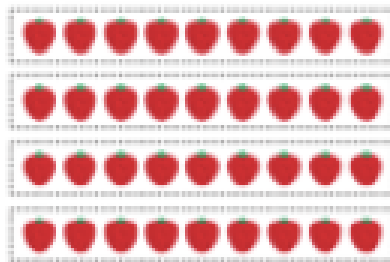
Placing into 9 equal groups



$$36 \div 9 = 4$$

Each group has 4 strawberries.

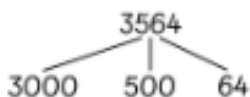
Placing in groups of 9



$$36 \div 9 = 4$$

There are 4 groups.

Dividing by 10, 100 and 1000:



$$3000 \div 100 = 30$$

$$500 \div 100 = 5$$

$$3500 \div 100 = 35$$

$$35 \text{ hundreds} + 1 \text{ hundred} = 35$$

1 thousand = 10 hundreds



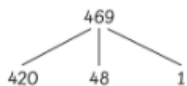
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Division



Divide with remainders:

$$469 \div 6 = \text{[]}$$



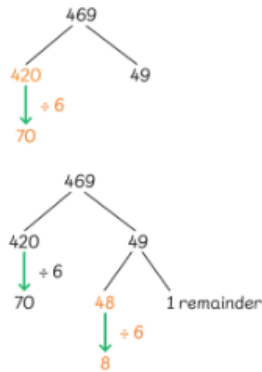
$$6 \overline{) 469}$$



$$6 \overline{) 468}$$

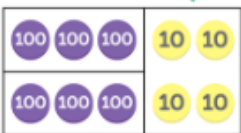
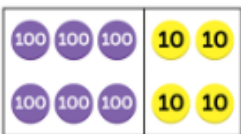


$$6 \overline{) 468} \text{ remainder } 1$$



Divide without remainders:

$$640 \div 2 = \text{[]}$$



$$600 \div 2 = 300$$



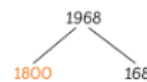
$$40 \div 2 = 20$$

$$640 \div 2 = 320$$

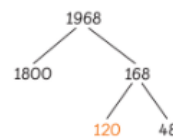
$$\begin{array}{r} \boxed{300} \\ 2 \overline{) 640} \\ \underline{- 600} \\ 40 \end{array}$$

$$\begin{array}{r} \boxed{20} \\ 2 \overline{) 640} \\ \underline{- 600} \\ 40 \\ \underline{- 40} \\ 0 \end{array}$$

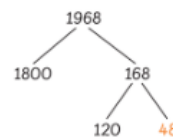
$$1968 \div 6 = \text{[]}$$



$$\begin{array}{r} \boxed{300} \\ 6 \overline{) 1968} \\ \underline{- 1800} \\ 168 \end{array}$$



$$\begin{array}{r} \boxed{20} \\ 6 \overline{) 1968} \\ \underline{- 1800} \\ 168 \\ \underline{- 120} \\ 48 \end{array}$$



$$\begin{array}{r} \boxed{320} \\ 6 \overline{) 1968} \\ \underline{- 1800} \\ 168 \\ \underline{- 120} \\ 48 \\ \underline{- 48} \\ 0 \end{array}$$

$$1968 \div 6 = 328$$