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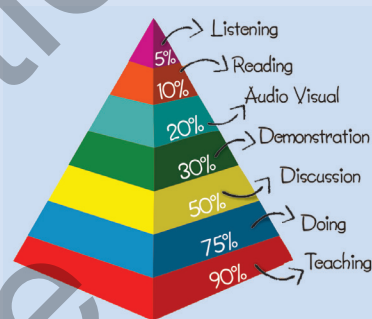
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Preface

HANDS ON series from **SAAR** has been developed for pre-primary and primary course structure for all subjects. It is a comprehensive work to make the child conceptualise, act, reflect, apply & establish the knowledge shared during the course of teaching the subject.

The **HANDS ON** series gets its stimulus from the BSCS's 5E Instructional Model, Bloom's Taxonomy and Kolb's Cycle to create a book completely based on Experiential Learning. It is based on the research 'How People Learn?'

Research has shown that children learn: 10% of what they READ, 20% of what they HEAR, 30% of what they SEE, 50% of what they HEAR & READ, 75% of what they DO and 90% of what they TEACH!



So, **SAAR** believes in imparting knowledge that is transferrable to daily life, is fun to learn and helps acquire values. The core structure focuses on both scholastic and co-scholastic activities. The main objective of the **HANDS ON** Mathematics series for classes 1 to 5 is to arouse educated awareness among students; and develop them as **Inquirers, Thinkers, Communicators & Risk - takers** with tasks based on-

- **Conceptualisation** (Knowledge & Understanding)
- **Reflection** (Observation & Review)
- **Application** (Relate to real life)
- **Connection** (Transfer knowledge across subjects)

The course structure assists in sensitising children to be self aware and develop positive attitude towards life & environment. The students can be evaluated according to the following skills:

- **Life Skill** : Thinking Social Emotional
- **Attitude towards** : Schoolmates Teachers Environment
- **Values** : Discipline Care & Share Respect Open Minded Nature
- **Inter Curriculum Approach** - Extended activities and questions across subjects.
- **Interactive Glossary** - The important words with meaning and picture are picked from an in-built dictionary that is common to all subjects in the series.
- **Summary** - Explanation of the lesson ends with a Mind Map activity to have a quick recap.
- **Tests & Assessments** - Handy worksheets for assessments relieve the teacher's burden.

Every lesson has been supported by a **lesson plan** in the Teacher's Guide for effective conduction of the same. The books also have **Model Paper** for term end examination.

A Walkthrough of the HANDS ON Series

HANDS ON is a primary school level academic programme governed by the principles of **Experiential Learning**. These learnings have been addressed in the following way:

Hands On Mathematics Book 3A

1 Large Numbers

Let's Get Started
Which is the smallest 2-digit number? Which is the greatest 2-digit number? What do we get when we add 1 to the greatest 2-digit number? Which is the smallest 3-digit number? Which is the greatest 3-digit number? What do we get when we add 1 to the greatest 3-digit number?

Key Words
face value : the face value of a digit is the value of the digit itself irrespective of the place it occupies
predecessor : a predecessor is a number that comes just before the given number
successor : a successor is a number that comes just after the given number

3-digit Numbers
You have learnt about numbers. Do you know what comes after 99? 99 is the greatest 2-digit number. If we add 1 to the greatest 2-digit number, we get 100. We read 100 as 'one hundred'. 100 is the smallest 3-digit number. 999 is the greatest 3-digit number. We read 999 as nine hundred and ninety-nine. Hence, we now introduce 'hundreds' next to 'tens' and 'ones'.

T	O
1	0
9	9

H	T	O
1	0	0
9	9	9

1 ten 10 tens or 1 hundred

$99 + 1 = 100$

Let's Get Started
warm up activity to establish the known

Key Words
understand meaning of new words

Did You Know?
interesting number facts



SUPPORT COMPONENTS

- Interactive Content Book
- Worksheets
- PPTs as Teaching Aid
- Answer Key for Content Book
- Teacher's Guide
- Assessments
- Tips and Ideas
- Videos

Mental Math
for quick computation

HOTS
to encourage lateral thinking

Hands On Mathematics Book 3A

Did You Know?

Tim Cranmer is the person who invented the Cranmer abacus. It is the adapted version of the abacus used by people without sight. A piece of soft fabric or rubber is placed behind the beads to keep them in place while the user feels or manipulates them.
 

Mental Math
 1. Add the following numbers:
 a. $2961 + 1392 =$ _____
 b. $1463 + 6291 =$ _____
 c. $1287 + 321 =$ _____
 d. $1330 + 1492 =$ _____
 e. $82 + 32 =$ _____
 f. $57 + 38 =$ _____

HOTS
 Think and find out what is missing.
 1.
$$\begin{array}{r} 3 \square 4 \square \\ + 5 7 \square 6 \\ \hline \square 8 8 8 \end{array}$$
 2.
$$\begin{array}{r} 2 \square 3 5 \\ + 3 6 5 \square \\ \hline \square 7 \square 9 \end{array}$$
 3. In your colony there are 335 people from the South, 1345 people from the North and East and 645 people from the West. How many people are staying in your colony? Who are they? (Critical Thinking: We are proud to say that they are all Indians).
 4. Our Government is thinking of joining some rivers. Two rivers are 800 km and 390 km long respectively. They are joined by 50 km long canal. What is the total length now?

Let's Try
Form the smallest and the greatest 4-digit numbers using the digits 8, 4, 1 and 6.
____ < ____ < ____ < ____
Therefore, the smallest number is ____
And the greatest number is ____

Let's Do
Graph Work
On a graph paper, make a 4x4 grid.
1. In the first row, write a 4-digit number with its first digit and last digit having the highest one-digit number. Middle two digits have no value at all.
2. In the second row, write a 4-digit number having all odd digits, first being the highest and rest in descending order of the digits.
3. In the third row, write a 4-digit number having all even digits, first digit being the smallest and rest all in ascending order of the digits.
4. In the fourth row, write a 4-digit number having the thousands digit as the 1st odd number and rest as successors of previous numbers.

Let's Answer
1. Arrange in ascending order.
a. 462, 361, 3216, 921 _____
b. 1432, 3241, 6213, 2341 _____
c. 1900, 1990, 1909, 1901 _____

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Let's Try
intext questions

Let's Do
learning by doing

Let's Answer
revision exercises

Let's Answer
2. Arrange in descending order.
a. 1011, 101, 100, 1001 _____
b. 921, 9231, 92, 831 _____
c. 6322, 6325, 6326, 6332 _____

3. Write the smallest and the greatest numbers possible by using the digits below. Do not repeat any digit.

	Smallest	Greatest
a. 6, 7, 8, 9	_____	_____
b. 2, 3, 4, 6	_____	_____
c. 0, 1, 3, 5	_____	_____

Values and Life Skills
Write the numbers and the number names of the following.
a. The year you were born
b. The current year
c. The year you started going to school

Weblinks
interesting internet links

Weblinks
Visit the following links to access a worksheet on the number system:
www.helpsteaching.com/tests/338991/number.system
www.slideshare.net/.../mathsnumbersystem

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Values and Life Skills
to hone co-scholastic abilities and inculcate values in children

SAAR stresses on the development of visual based learning cycle and therefore you will find real life images to support text throughout the book, making it a pleasure for the learner.

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1

Large Numbers



Let's Get Started

Which is the smallest 2-digit number? Which is the greatest 2-digit number? What do we get when we add 1 to the greatest 2-digit number? Which is the smallest 3-digit number? Which is the greatest 3-digit number? What do we get when we add 1 to the greatest 3-digit number?

Key Words

face value : the face value of a digit is the value of the digit itself irrespective of the place it occupies

predecessor : a predecessor is a number that comes just before a given number

successor : a successor is a number that comes just after a given number

3-digit Numbers

You have learnt about numbers. 10 is the smallest 2-digit number.

99 is the greatest 2-digit number.

Do you know what comes after 99?

If we add 1 to the greatest 2-digit number, we get 100.

$$99 + 1 = 100$$

We read 100 as 'one hundred'.

100 is the smallest 3-digit number.

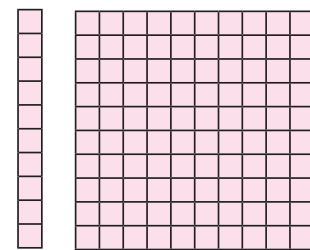
999 is the greatest 3-digit number.

We read 999 as nine hundred ninety-nine.

Hence, we now introduce 'hundreds' next to 'tens' and 'ones'.



10 ones = 1 ten



10 tens = 1 hundred

T	O
1	0
9	9

H	T	O
1	0	0
9	9	9



4-digit Numbers

If we add 1 to the greatest 3-digit number, 999 we get 1000, which is the smallest 4-digit number.

We read 1000 as 'one thousand'.

$$999 + 1 = 1000$$

1000 is the smallest 4-digit number.

9999 is the greatest 4-digit number.

We read 9999 as 'nine thousand nine hundred ninety-nine'.

Now, we introduce 'thousands' next to 'hundreds', 'tens' and 'ones'.

H	T	O
1	0	0
9	9	9

Th	H	T	O
1	0	0	0
9	9	9	9



Quick Tip

We write 'H' for hundreds and 'Th' for thousands.

Th	H	T	O	Read as	Write as
5	3	2	4	5 thousand 3 hundred 24	five thousand three hundred twenty-four
7	4	7	2	7 thousand 4 hundred 72	seven thousand four hundred seventy-two
9	2	1	2	9 thousand 2 hundred 12	nine thousand two hundred twelve



Let's Try

Complete the table:

Numbers				Number Names
Th	H	T	O	
2	3	2	6	
	2	9	9	
				three hundred fifty-six
				seven thousand twenty-one

Exercise 1(a)

1. Write the number names for the following numbers.

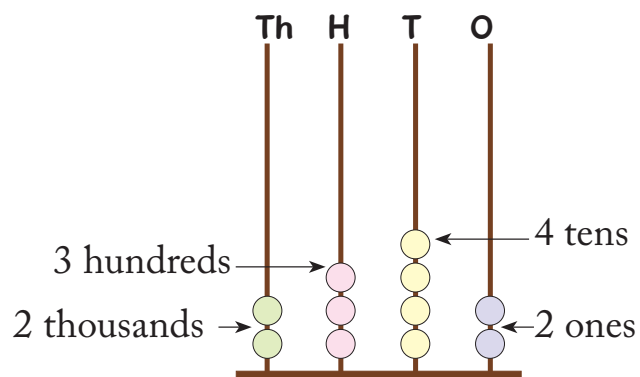
a. 1246 _____

b. 3259 _____

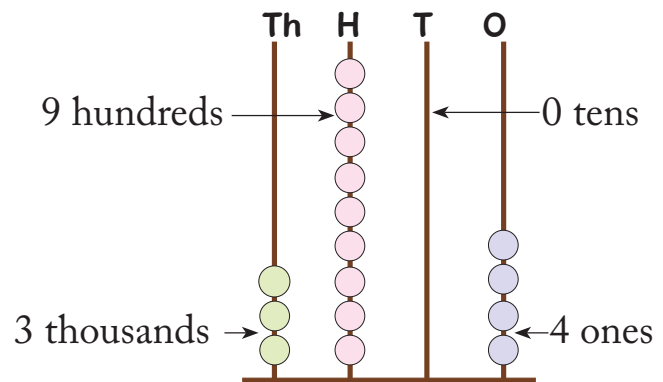
Thousands on the Abacus

To represent 4-digit numbers on the abacus, we need 4 rods. The 4th rod represents the thousands place.

Example: 2342



Example: 3904





Quick Tip

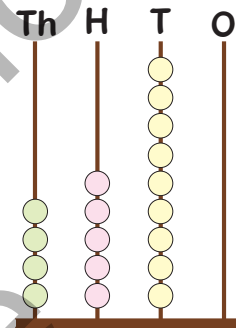
To represent 'zero' on the abacus, we do not add any beads to that rod. We leave it empty.

Exercise 1(b)

1. Look at the abacus and write the number and its number name.

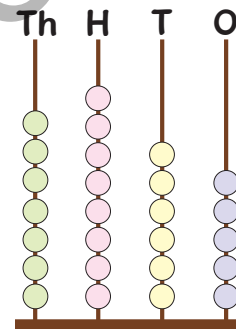
a.

Th	H	T	O



b.

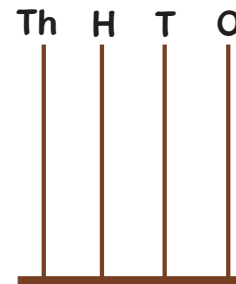
Th	H	T	O



2. Represent the following numbers on the abacus.

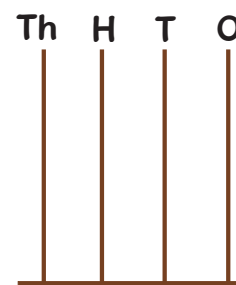
a.

Th	H	T	O
2	0	2	5



b.

Th	H	T	O
5	9	3	2



Place Value and Face Value

The **place value** of a digit depends on the place or position it occupies in the number.

Face value is the value of the digit itself.

In the number 5932, the digit 5 is in the thousands place. Therefore, its place value is 5 thousands or 5000.

Example:

	Th	H	T	O
	5	9	3	2
Face value	5	9	3	2
Place value	5000	900	30	2

	Th	H	T	O
	5	5	5	5
Face value	5	5	5	5
Place value	5000	500	50	5

Expanded Form of a Number

Observe the table given here:

Consider the number 924.

924 has 9 hundreds + 2 tens + 4 ones.

Therefore, $924 = 900 + 20 + 4$

Now, consider the number 3265.

3265 has 3 thousands + 2 hundreds + 6 tens + 5 ones.

Therefore, $3265 = 3000 + 200 + 60 + 5$

When a number is written by breaking it down according to the place value of each digit, the number is said to be in its **expanded form**.

Example: Write the expanded form of 5032.

$$5032 = 5 \text{ thousands} + 0 \text{ hundreds} + 3 \text{ tens} + 2 \text{ ones}$$

or

$$5000 + 0 + 30 + 2$$



Let's Try

Use place value cards to write the expanded form of the following:

1. $6542 =$ _____ thousands + _____ hundreds + _____ tens + _____ ones

or

_____ + _____ + _____ + _____

2. $1751 =$ _____ thousand + _____ hundreds + _____ tens + _____ one

or

_____ + _____ + _____ + _____

Example: Give the short form of

$3000 + 900 + 20 + 1 = 3921$



Let's Try

Give the short form of: (Use place value cards)

1. $7000 + 800 + 10 + 0 =$ _____ 2. $5000 + 900 + 50 + 9 =$ _____

Exercise 1(c)

1. Write the place value of the underlined digits. (Use place value cards)

a. $7\underline{3}21$ _____

d. $56\underline{2}2$ _____

b. $429\underline{1}$ _____

e. $3\underline{9}27$ _____

c. $\underline{9}009$ _____

f. $90\underline{8}1$ _____

2. Circle the number which shows the correct place value.

a. 8 thousands 3298 8921 3398

b. 4 hundreds 2940 2468 2004

- c. 5 tens 7351 2905 5009
 d. 7 ones 8327 7932 1729

3. Write the face value and the place value of 8 in each of the following numbers. The first one has been done for you. (Use place value cards)

Number	Face value of 8	Place value of 8
7830	8	800
9832		
1782		
8001		
7328		
9281		



Let's Do

With the help of an adult, make flashcards from 1 to 9. Pick any 4 flashcards at random and form a 4-digit number. Write its expanded form in your notebook. You can also play this game with a friend and take turns in writing the expanded form of the numbers.



Let's Try

Write the face value and the place value of the given numbers.

1. 4562

	Th	H	T	O
	4	5	6	2
Face value				
Place value				

2. 1759

	Th	H	T	O
	1	7	5	9
Face value				
Place value				



Let's see some more examples.

- Find the face value and the place value of all the digits in 7932.

Digits	Face value	Place value
7	7	7 thousands = 7000
9	9	9 hundreds = 900
3	3	3 tens = 30
2	2	2 ones = 2

Exercise 1(d) (Complete the exercise with the help of place value cards)

- Expand the following numbers.

- 2135 _____
- 1629 _____
- 4402 _____

- Give the short form of the following numbers.

- $9000 + 700 + 90 + 9 =$ _____
- $8000 + 200 + 0 + 1 =$ _____
- $7000 + 800 + 10 + 3 =$ _____

- Write the numbers.

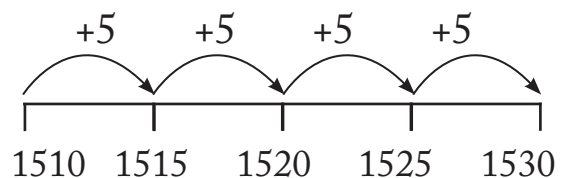
- 4 thousands + 3 hundreds + 0 tens + 9 ones _____
- 6 thousands + 5 hundreds + 2 tens + 0 ones _____
- 7 thousands + 0 hundreds + 5 tens + 3 ones _____

Skip Counting

When we increase a given number by a **particular value each time**, it is called 'skip counting'.

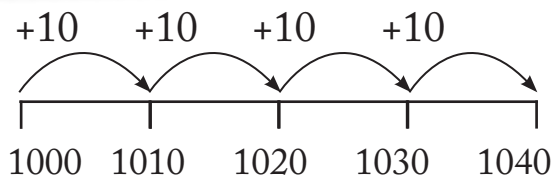
Example: Skip count by 5.

1510, 1515, 1520, 1525, 1530

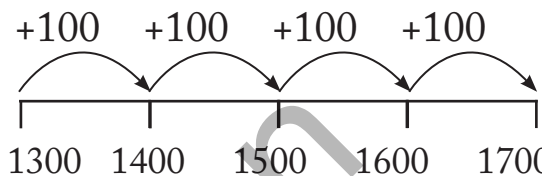


Here, we have to increase the number by 5 each time.

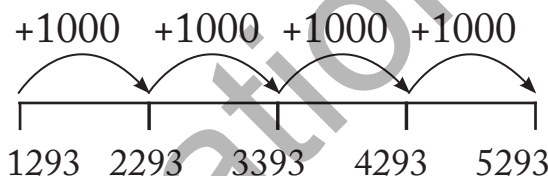
Example: Skip count by 10.
1000, 1010, 1020, 1030, 1040



Example: Skip count by 100.
1300, 1400, 1500, 1600, 1700



Example: Skip count by 1000.
1293, 2293, 3293, 4293, 5293



Quick Tips

For skip counting by 10, keep adding 1 to the digit in the tens place.
For skip counting by 100, keep adding 1 to the digit in the hundreds place.
For skip counting by 1000, keep adding 1 to the digit in the thousands place.



Let's Try

Use the number string to explain the following:

210	220					Skip 10
1231						Skip 5
292						Skip 100
1120						Skip 1000

Exercise 1(e)

Fill in the blanks using skip counting. (Use number string)

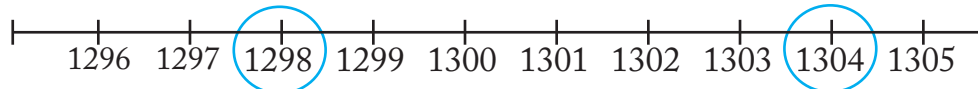
- 1290, 1300, 1310, _____, _____, _____
- 2151, 2156, 2161, _____, _____, _____
- 1932, 1934, 1936, _____, _____, _____
- 2001, 3001, 4001, _____, _____, _____



Comparing Numbers

Example: Compare 1298 and 1304

Method 1: Using the **number line**.



We can see that the number 1304 comes later on the number line than the number 1298.

Therefore, $1304 > 1298$ (1304 is greater than 1298)

Method 2: Using **place value**. To compare numbers start from the digit on the left.

Th	H	T	O
1	2	9	8

Th	H	T	O
1	3	0	4

Here, the digits in the thousands places of the numbers are the same, so we compare the digits in the hundreds places. The number with the greater digit in the same place is bigger.

Here $2 < 3$ (in hundreds place) hence, $1298 < 1304$

Example: Compare 2569 and 2576

Th	H	T	O
2	5	6	9

Th	H	T	O
2	5	7	6

Here, the digits in the thousands and hundreds places of both the numbers are the same. So, we compare the digits in the tens places.

Here $6 < 7$ (comparing the digits in the tens places) therefore, $2569 < 2576$

Example: Compare 2231 and 223

Th	H	T	O	Th	H	T	O
2	2	3	1		2	2	3

The number with more digits is the greater number. The number with fewer digits is the smaller number.

Here, the first number has 4 digits and the second number has 3 digits.

Therefore, $2231 > 223$

\downarrow \downarrow
 4 digits 3 digits



Quick Tip

Start comparing from left to right. The number with the greater digit in the same place is the greater number.

Exercise 1(f)

Fill in the boxes with $<$, $>$ or $=$.

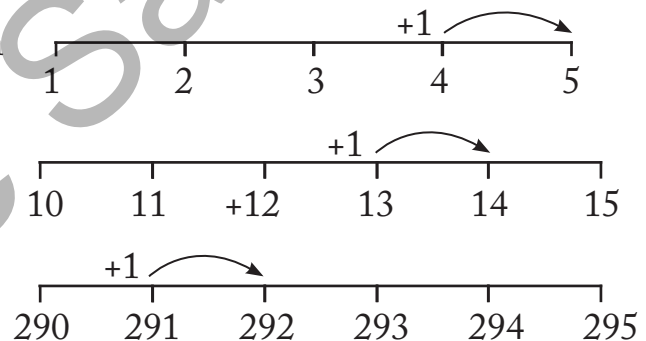
- 2193 2104
- 4968 593
- 7181 7180
- 3962 3934
- 644 392
- 2018 198
- $4000 + 20 + 2$ 422
- $7000 + 900 + 10$ 7900
- 299 two hundred ninety-nine
- $300 + 30 + 3$ $3000 + 300 + 3$

Successor and Predecessor

The number that comes just after a given number is called its **successor**.

Example:

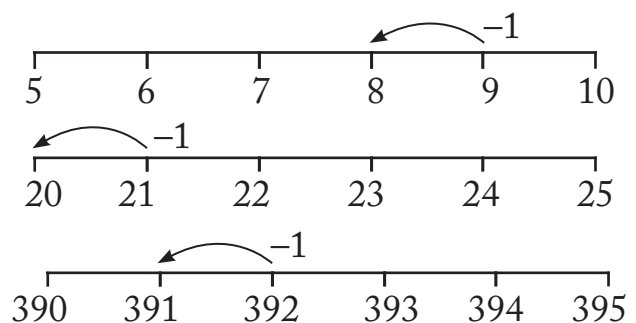
Number	Successor
4	5
13	14
291	292



The number that comes just before a given number is called its **predecessor**.

Example:

Number	Predecessor
9	8
21	20
392	391



Quick Tip

Successor = Number + 1,

Predecessor = Number - 1



Exercise 1(g)

Complete the given table.

Predecessor	Number	Successor
	299	
	3001	
	547	
	394	

Number Arrangements

Ascending and Descending Orders

Ascending order is arranging numbers from the smallest to the greatest.

Descending order is arranging numbers from the greatest to the smallest.

Let us look at an example.

Example: Arrange the following numbers in ascending and descending orders.

392, 4628, 22, 9

Here, the number with more digits is the greater number.

Therefore, $9 < 22 < 392 < 4628$

\downarrow \downarrow \downarrow \downarrow
 1 digit 2 digits 3 digits 4 digits

Ascending order is 9, 22, 392, 4628.

Descending order is 4628, 392, 22, 9.



Let's Try

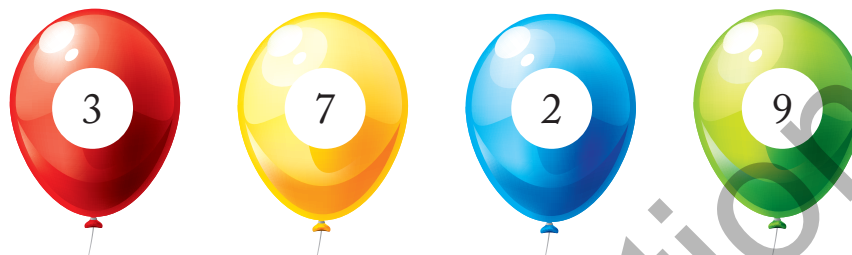
1. 3922, 4638, 5900, 2913.

Ascending order: _____, _____, _____, _____,

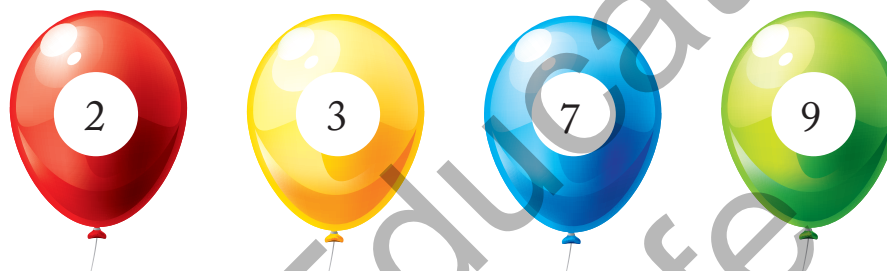
Descending order: _____, _____, _____, _____,

Formation of Smallest and Greatest Numbers

In which way would you arrange these balloons to build the smallest and the greatest numbers?



To make the smallest number, we arrange the digits in ascending order.



Our smallest number would be 2379.

To form the greatest number, we arrange the digits in descending order.



Our greatest number would be 9732.

Example:

Form the smallest and the greatest 4-digit numbers using the digits 3, 2, 6, 0.

The descending order of the above digits is 6, 3, 2, 0.

Therefore, the greatest number is 6320.

The ascending order of the above digits is 0, 2, 3, 6. **But, if we place '0' at the beginning of a number, it has no value and will become a 3-digit number.**

So, we begin with the next smallest digit and place '0' in the second place.

So, the smallest number is 2036.



Let's Try

Form the smallest and the greatest 4-digit numbers using the digits 8, 4, 1 and 6.

_____ < _____ < _____ < _____

Therefore, the smallest number is _____

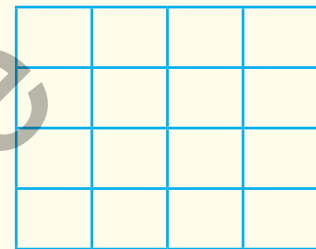
And the greatest number is _____



Let's Do

Graph Work

On a graph paper, make a 4×4 grid.



1. In the first row, write a **4-digit** number with its first digit and last digit having the highest one-digit number. Middle two digits have no value at all.
2. In the second row, write a **4-digit** number having all odd digits, first being the highest and rest in descending order of the digits.
3. In the third row, write a **4-digit** number having all even digits, first digit being the smallest and rest all in ascending order of the digits.
4. In the fourth row, write a **4-digit** number having the thousands digit as the 1st odd number and rest as successors of previous numbers.

Exercise 1(h)

1. Arrange in ascending order.

a. 462, 361, 3216, 921 _____, _____, _____, _____

b. 1432, 3241, 6213, 2341 _____, _____, _____, _____

c. 1900, 1990, 1909, 1901 _____, _____, _____, _____



Example: Round off 38 to the nearest ten.

The rounding digit is 3. As we are rounding off to the nearest ten. The digit to the right of 3 is 8, which is more than 5. So, we add 1 more to the rounding digit, 4. Thus, 38 rounded to the nearest ten is 40.

Rounding off to the nearest hundred

Example: Round off 127 to the nearest 100. The rounding digit is 1 as we are rounding off to the nearest hundred. The digit to the right of 1 is 2, which is less than 5. So, we leave the rounding digit 1 as it is.

Thus, 127 rounded to the nearest hundred is 100.

Example: Round off 261 to the nearest hundred. The rounding digit is 2 as we are rounding off to the nearest hundred. The digit to the right of 2 is 6, which is more than 5. So, we add 1 more to the rounding digit 2

Thus, 261 rounded to the nearest hundred is 300.

Rounding off to the nearest thousand

Example: Round off 2500 to the nearest thousand. The rounding digit is 2, as we are rounding off to the nearest thousand. The digit to the right of 2 is 5. So, we add 1 more to the rounding digit, 2.

Thus, 2500 rounded to the nearest thousands is 3000.

Example: Round off 5189 to the nearest thousand. The rounding digit is 5 as we are rounding off to the nearest thousand. The digit to the right of 5 is 1, which is less than 5. So, we leave the rounding digit 5 as it is. Thus, 5189 rounded to the nearest thousand is 5000.

Exercise 1(i)

- Round off the following numbers to the nearest ten
 - 99
 - 52
 - 75
- Round off the following numbers to the nearest hundred.
 - 548
 - 984
 - 650
- Round off the following numbers to the nearest thousand.
 - 3515
 - 1932
 - 4377



Values and Life Skills

Write the numbers and the number names of the following.

- The year you were born
- The current year
- The year you started going to school



Weblinks

Visit the following links to access a worksheet on the number system:

www.helpteaching.com/tests/338991/number.system

www.slideshare.net/.../mathsnumbersystem

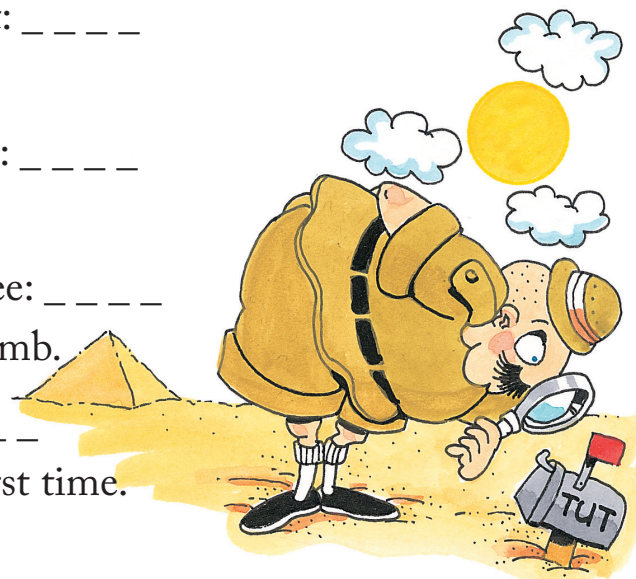
Fun Time

Count It Out

Write each number in digit form and you'll make some interesting discoveries.



- A. one thousand four hundred ninety-two: _____
Christopher Columbus discovered the New World.
- B. one thousand five hundred nineteen: _____
Magellan discovered a route that circumnavigated the globe.
- C. one thousand six hundred eighty-seven: _____
Sir Isaac Newton published what he learned about gravity.
- D. one thousand seven hundred fifty-two: _____
Benjamin Franklin invented the lightning rod.
- E. one thousand eight hundred forty-eight: _____
John Sutter found gold in California.
- F. one thousand eight hundred ninety-five: _____
The X-ray was discovered.
- G. one thousand nine hundred twenty-three: _____
Archaeologists discovered King Tut's tomb.
- H. one thousand nine hundred thirty: _____
Pluto was observed in the sky for the first time.



2

Addition



Let's Get Started

What is the symbol for addition? How can we add two numbers? What is a carry over?

If a shirt costs ₹ 549 and a tie costs ₹ 389, what is the total cost?

Key Words

- abacus** : a simple device for calculating, consisting of a frame with rows of wires or grooves along with beads that can slide
- carrying over** : to transfer (an amount) to the previous column
- rounding off** : making a number simpler but keeping its value close to what it actually is
- estimation** : a rough calculation of the value, number, quantity, or extent of something

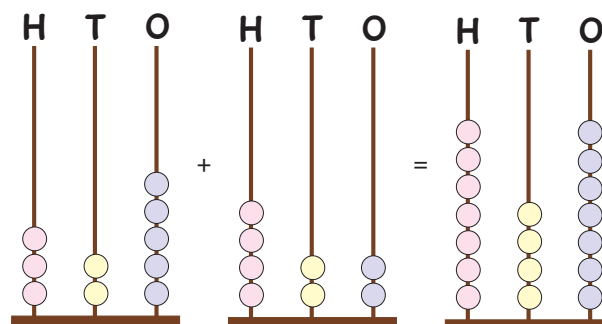
Addition


Using an Abacus

Example: Add 325 and 422

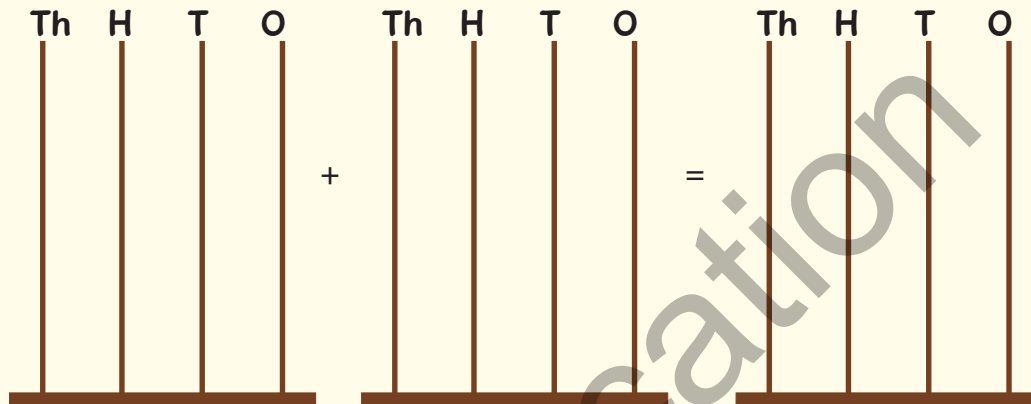
- Put the beads of ones together.
 $5 + 2 = 7$
- Put the beads of tens together.
 $2 + 2 = 4$
- Put the beads of hundreds together.
 $3 + 4 = 7$

Therefore, $325 + 422 = 747$
(seven hundred forty-seven)



 **Let's Try**

1. $2753 + 7215 = \underline{\hspace{2cm}}$



Addition of 4-digit Numbers without Carry Over

Example: Add 1324 and 1562

Arrange the numbers as per their place values.

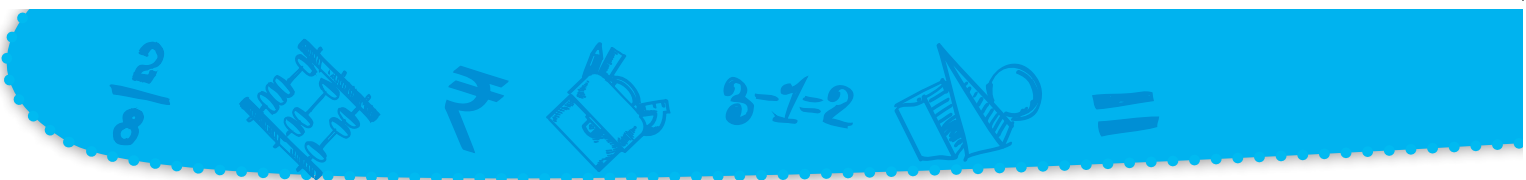
Th	H	T	O
1	3	2	4
+ 1	5	6	2

1. Add the ones

2. Add the tens

Th	H	T	O
1	3	2	4
+ 1	5	6	2
			6

Th	H	T	O
1	3	2	4
+ 1	5	6	2
		8	6



3. Add the hundreds

Th	H	T	O
1	3	2	4
+ 1	5	6	2
	8	8	6

4. Add the thousands

Th	H	T	O
1	3	2	4
+ 1	5	6	2
2	8	8	6

Thus, $1324 + 1562 = 2886$ (two thousand eight hundred eighty-six)

Example: Add 1326 and 243

Arrange the two numbers according to their place values.

Note: Here, one number is a 3-digit number and the other is a 4-digit number. Be careful while arranging them!

Th	H	T	O
1	3	2	6
+ 2	4	3	

The wrong way

Th	H	T	O
1	3	2	6
	2	4	3

The right way

Th	H	T	O
1	3	2	6
+	2	4	3
1	5	6	9

Step 1: Add all ones
 $6 + 3 = 9$

Step 2: Add all tens
 $2 + 4 = 6$

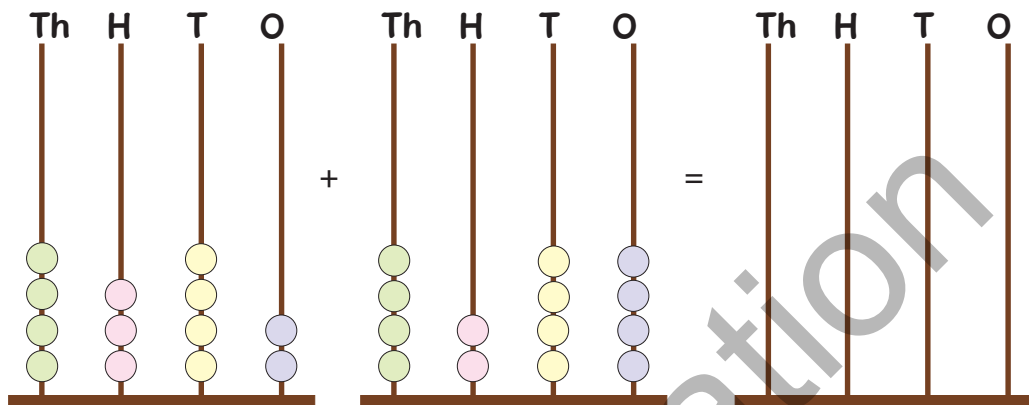
Step 3: Add all hundreds $3 + 2 = 5$

Step 4: Add all thousands
 $1 + 0 = 1$

Thus, $1326 + 243 = 1569$

Exercise 2(a)

1. Add using the abacus beads.



2. Add the following using Dienes blocks.

a.

Th	H	T	O
4	3	2	1
+ 2	1	6	2

b.

Th	H	T	O
3	2	6	4
+ 6	2	1	5

Addition of 4-digit Numbers with Carry Over

Example: Add 2369 and 1533. Arrange according to the place values.

Step 1: Add the ones

Add 9 ones + 3 ones = 12 ones

12 ones = 1 ten + 2 ones

Write 2 in the ones column and carry 1 to the tens column.

Th	H	T	O
		1	
2	3	6	9
+ 1	5	3	3
			2

Step 2: Add the tens

1 ten + 6 tens + 3 tens = 10 tens

10 tens = 1 hundred and 0 tens

Write 0 in the tens column and carry 1 to the hundreds column.

Th	H	T	O
	1	1	
2	3	6	9
+ 1	5	3	3
		0	2

Step 3: Add the hundreds

$$1 \text{ hundred} + 3 \text{ hundreds} + 5 \text{ hundreds} \\ = 9 \text{ hundreds}$$

Write 9 in the hundreds column.

Th	H	T	O
	1	1	
2	3	6	9
+ 1	5	3	3
	9	0	2

Step 4: Add the thousands

$$2 \text{ thousands} + 1 \text{ thousand} \\ = 3 \text{ thousands}$$

Write 3 in the thousands column.

Th	H	T	O
	1	1	
2	3	6	9
+ 1	5	3	3
3	9	0	2

Therefore, $2369 + 1533 = 3902$ (three thousand nine hundred two)



Let's Try

1. $7859 + 1155 =$ _____

(Use Dienes blocks)

Step 1:

Th	H	T	O
7	8	5	9
+ 1	1	5	5

Step 2:

Th	H	T	O
7	8	5	9
+ 1	1	5	5

Step 3:

Th	H	T	O
7	8	5	9
+ 1	1	5	5

Step 4:

Th	H	T	O
7	8	5	9
+ 1	1	5	5

Adding More than Two Numbers

Example: Add 5102, 1249 and 3262

Arrange the three numbers as per their place values.

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

Add the thousands
 $5 + 1 + 3 = 9$ ←

Add the hundreds
 $1 + 1 + 2 + 2 = 6$

Add the tens
 $1 + 0 + 4 + 6 = 11$, write 1, carry over 1
 (11 tens = 1 hundred + 1 ten)

Add the ones
 $2 + 9 + 2 = 13$, write 3,
 carry over 1 (13 ones = 1 ten + 3 ones)

Let's Try

1. $1357 + 2468 + 2058 =$ _____

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

Let's Do

With the help of an adult, make flashcards from 1 to 9. Pick any 3 or 4 flashcards at random and form a 3 or 4-digit number. Place the cards back. Ask your partner to pick any 3 or 4 flashcards at random and form another 3 or 4-digit number. Both of you add these numbers in your notebooks. See who gets the answer first.

Exercise 2(b)

1. Solve the following using Dienes blocks.

a.

Th	H	T	O
1	9	3	2
+ 6	2	1	8

b.

Th	H	T	O
4	3	6	1
+ 2	9	3	2

2. Write in columns and solve the following:

a. $2369 + 292$

c. $1362 + 900 + 1241$

b. $1981 + 3261$

d. $6349 + 7138 + 1000$

Word Problems

Example: Pinky had ₹1296 in her money box. Mother gave her ₹1200 more. Father gave her ₹750 more. How much money does she have altogether now?

Solution:

Money in Pinky's money box

Mother gave her

Father gave her

Therefore, total money she has now

$$= 1296 + 1200 + 750 = 3246$$

Pinky has ₹3246 altogether now.

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

Exercise 2(c)

1. Underline the required information and solve using addition.

A cricket bat costs ₹3125, a ball costs ₹105 and gloves ₹516. How much do the bat and ball cost together?

Th	H	T	O
+			



2. Solve the following:

- 1890 people watched a football match in a stadium. 7314 people watched it on television at home. How many people watched the match in all?
- There are 1604 fish in a pond. 1325 more fish are added. How many fish are there altogether now?
- A fruit seller has ₹1960 worth of apples and ₹3609 worth of mangoes. What is the total cost of his fruits?

Properties of Addition

Order Property

$$6525 + 1232 = 7757$$

$$1232 + 6525 = 7757$$

We observe that the sum of two numbers remains the same, even if we change the order in which we add them.

Grouping Property

$$(25 + 35) + 30 = 90 \text{ or } 25 + (35 + 30) = 90$$

$$(6525 + 1232) + 1593 = 7757 + 1593 = 9350$$

$$(6525 + 1593) + 1232 = 8118 + 1232 = 9350$$

$$(1593 + 1232) + 6525 = 2825 + 6525 = 9350$$

We observe that the sum of more than two numbers remains the same, even if we change the way in which we group them.

Zero Property

$$6232 + 0 = 6232$$

Using the zero property, we can say that $0 + 6232 = 6232$

When 0 is added to a number, or when a number is added to 0, the sum is the number itself.



Quick Tip

When we add 10 or its multiple to a number, the digit of tens will change.

$$135 + 40 = 175 \quad (30 + 40 = 70)$$

When we add 100 or its multiple to a number, the digit of hundreds will change.

$$4219 + 300 = 4519 \quad (200 + 300 = 500)$$

When we add 1000 or its multiple to a number, the digit of thousands will change.

$$6119 + 3000 = 9119 \quad (6000 + 3000 = 9000)$$

Exercise 2(d)

Fill in the blanks using properties of addition.

- $6356 + 1649 = 1649 + \underline{\hspace{2cm}}$
- $6356 + 1649 + 1985 = 1649 + \underline{\hspace{2cm}} + 6356$
- $6356 + 0 = \underline{\hspace{2cm}}$
- $1649 + \underline{\hspace{2cm}} = 1985 + 1649$
- $4545 + 20 = \underline{\hspace{2cm}}$

Estimation of Sum

Estimation means a rough calculation. We need to use estimation in our day-to-day life such as estimating the expenses for a picnic, estimating the time needed to travel, etc.

Estimation is done by rounding off numbers to the nearest tens, hundreds and thousands places.

We have learnt in the previous chapter that, if the digit to the right of the rounding digit is < 5 , we leave it as it is. If the digit to the right of the rounding digit is $=$ or > 5 , we add 1 more to the rounding digit.

Estimation to the nearest ten.



Example: Estimate the sum of 54 and 38 to the nearest tens.

Rounding 54 to the nearest ten, we get 50

Rounding 38 to the nearest ten, we get 40

Estimation to the nearest hundred.

Example: Estimate the sum of 532 and 385 to the nearest hundreds

Rounding 532 to the nearest hundred, we get 500

Rounding 385 to the nearest hundred, we get 400

Estimation to the nearest thousand.

Example: Estimate the sum of 1481 and 3666 to the nearest thousands.

Rounding 1481 to the nearest thousands, we get 1000

Rounding 3666 to the nearest thousands, we get 4000

Estimated sum

T	O
5	0
+ 4	0
9	0

Actual sum

T	O
5	4
+ 3	8
9	2

Estimated sum

H	T	O
5	0	0
+ 4	0	0
9	0	0

Actual sum

H	T	O
5	3	2
+ 3	8	5
9	1	7

Estimated sum

TH	H	T	O
1	0	0	0
+ 4	0	0	0
5	0	0	0

Actual sum

TH	H	T	O
1	4	8	1
+ 3	6	6	6
5	1	4	7

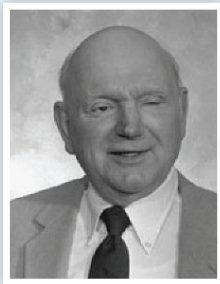


Find the estimated sum and actual sum of the following:

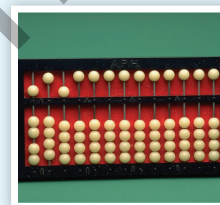
- By rounding off to the nearest ten:
 - $33 + 67$
 - $64 + 27$
 - $38 + 59$
- By rounding off to the nearest hundred.
 - $512 + 177$
 - $371 + 426$
 - $239 + 759$
- By rounding off to the nearest thousands.
 - $1556 + 2453$
 - $3790 + 4218$
- In your colony there are 335 people from the South, 1345 people from the North and East and 645 people from the West. How many people are staying in your colony?

5. Our Government is thinking of joining some rivers. Two rivers are 800 km and 390 km long respectively. They are joined by 50 km long canal. What is the total length now?

Did You Know ?



Tim Cranmer is the person who invented the Cranmer abacus. It is the adapted version of the abacus used by people without sight. A piece of soft fabric or rubber is placed behind the beads to keep them in place while the user feels or manipulates them.



Mental Math

1. Add the following numbers:

a. $103 + 60 = \underline{\hspace{2cm}}$

b. $265 + 10 = \underline{\hspace{2cm}}$

c. $312 + 70 = \underline{\hspace{2cm}}$

d. $718 + 200 = \underline{\hspace{2cm}}$

e. $120 + 600 = \underline{\hspace{2cm}}$

f. $1000 + 1000 = \underline{\hspace{2cm}}$



HOTS

Think and find out what is missing.

$$\begin{array}{r}
 1. \quad \begin{array}{cccc}
 3 & \square & 4 & \square \\
 + & 5 & 7 & \square & 6 \\
 \hline
 \square & 8 & 8 & 8
 \end{array}
 \end{array}$$

$$\begin{array}{r}
 2. \quad \begin{array}{cccc}
 2 & \square & 3 & 5 \\
 + & 3 & 6 & 5 & \square \\
 \hline
 \square & 7 & \square & 9
 \end{array}
 \end{array}$$

3. This see-saw has more weight on one side and less on the other. Can you move the kids around so that there is same weight on each side? The numbers written on the t-shirts tell you how much each kid weighs.



Let's Do

Create a counting chart. Make a grid and write numbers 0–9 in the 1st row, 10–19 in the 2nd row and so on upto 99.

Then, mark the chart upto the column containing the digit 4 in ones place. Colour in two different shades to show numbers to be rounded up and those to be rounded down.



Values and Life Skills

1. Take a paper and a pen. Estimate the expenses for your party.
 - a. Cake ₹2340
 - b. Sandwich ₹2170
 - c. Cold drinks ₹2190
 - d. Return gift ₹2270.

If your parents have given you ₹11000, are they enough for the party?



Weblinks

Visit the following links to learn more about the properties of addition:

<http://www.math-only-math.com/Properties-of-Addition.html>

www.abcschoolhelp.com/math/grade3/addition-subtraction

Review 1

1. Write in expanded form.

5302 = _____

2. Write the place value of the underlined digits.

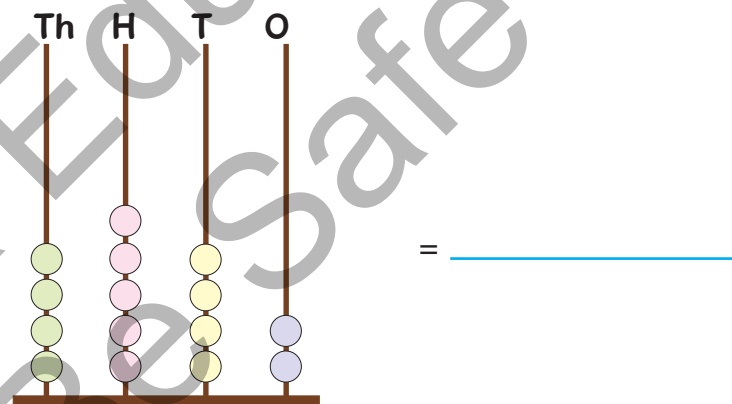
1275 = _____

8790 = _____

4234 = _____

5838 = _____

3. Write the number.



4. Write the face value and place value of number 7 in the given numbers.

Digits	Face Value	Place Value
7059		
1734		
207		
3437		
9572		

5. Write the number names.

7245 : _____

9047 : _____

3715 : _____

6. Complete the table.

Predecessor	Number	Successor
	3599	
4089		
	1212	

7. Fill in the blanks.

a. $2385 + 0 =$ _____

b. $9601 + 100 =$ _____

c. $7465 + 30 =$ _____

d. $1947 + 1000 =$ _____

e. $3190 + 2010 =$ _____ $+ 3190$

f. $4098 + 2865 + 7102 =$ _____ $+ 7102 + 4098$

8. Rewrite the following numbers in ascending order.

6112, 6432, 6553, 6246, 6601

_____, _____, _____, _____, _____,

9. Write down the estimated and actual sum of the following numbers.

$43 + 27 =$ _____, _____ $32 + 19 =$ _____, _____

10. Write the smallest and the greatest 4-digit number using the following digits once.

3, 6, 0, 2

Smallest = _____

Greatest = _____