FOUR-DIGIT - PLACE VALUE, PARTITION, ORDER, COUNT BY 100s, 1000s.

INVESTIGATIONS OVERVIEW PAGE
THIS PAGE IS A SUMMARY OF THE INVESTIGATIONS THAT STUDENTS MAY ENGAGE IN TO DEEPEN THEIR RELATIONAL UNDERSTANDING.

INVESTIGATIONS WITH INSTRUCTIONS TO STUDENTS FOLLOW ON SUBSEQUENT PAGES.

- In pairs, children record a place value chart with ones, tens, hundreds and thousands. They describe 1000 as 1 thousand and identify it on the place value chart. They describe 1000 as 10 hundreds and identify it on the place value chart. They describe 1000 as 100 tens and identify it on the place value chart. They describe 1000 as 1000 ones and identify it on the place value chart. Reflection: How can we see 1000 as 1 thousand and as 10 hundreds and as 100 tens and as 1000 ones?

- In groups, children make a four-digit number with cards. Children record a place value chart and record their number. Children describe their number using standard and non-standard place value. Reflection: How can we describe four-digit numbers using place value?

thousands	hundreds	tens	ones
1	2	4	8

1248 = 1 thousand + 2 hundreds + 4 tens + 8 ones
1248 = 12 hundreds + 4 tens + 8 ones
1248 = 124 tens + 8 ones
1248 = 1248 ones
1248 = 12 hundreds + 48 ones
1248 = 11 hundreds + 5 tens + 98 ones

- In pairs, children select cards to make a four-digit number. They partition their four-digit number using non-place value, standard and non-standard place value. Reflection: How can we partition four-digit numbers using standard, non-standard and non-place value?
- In pairs, children select cards to make a four-digit number. They record the number on an open empty number line. They record the number 10 before and after on the number line. They record the number 100 before and after on the number line. They record numbers that come between their numbers. Reflection: How can we use place value to order numbers?
- In pairs, children select 4 cards to make a four-digit number as a start number. They record the count forwards and backwards by 100s from their number, explaining the pattern of repeatedly adding 100, and explaining which digit changes and why and which digit does not change and why. Reflection: Why do the ones and tens digits stay the same and the hundreds digit change when we count by 100s? When does the thousands digit change? When does the ten-thousands digit change?
- In pairs, children select 4 cards to make a four-digit number as a start number. They record the count forwards and backwards by 1000s from their number, explaining the pattern of repeatedly adding 1000, and explaining which digit changes and why and which digit does not change and why. Reflection: Why do the ones and tens and hundreds digits stay the same and the thousands digit change when we count by 1000s? When does the thousands digit change? When does the ten-thousands digit change?
- In pairs, children take turns to take a card and place it in either the ones place or the tens place or the hundreds place or the thousands place. Once placed it cannot be changed. Children read their number out loud and explain their number using standard place value. They each place their number on the same number line, explaining their placements. The child who creates the highest / lowest number takes all cards. Reflection: How can we describe four-digit numbers using place value?
- In pairs, 4 cards are selected to be a target number. Each child flips 4 cards to make a four-digit number. The child who makes a number closest to the target number wins. Reflection: How can we describe four-digit numbers using place value?

© 2020 A Learning Place A Teaching Place Relational Mathematics TPL4US Resourceful Teaching

- In pairs, children have a calculator. One child enters a four-digit number. The other child 'wipes out' the thousands, hundreds, tens or ones digit by subtracting the number of thousands, hundreds, tens or ones. Reflection: How can we describe four-digit numbers using place value?
- In pairs, each child is dealt 12 cards to make 3 four-digit numbers and place them in a row. The remaining cards are placed face down in a pile. In turns, children select 4 cards from the pile and make a four-digit number to replace one of their four-digit numbers. The child player to have their 3 four-digit numbers in ascending (or descending) order is the winner. Reflection: How can we describe four-digit numbers using place value?
- Children play 'guess my four-digit number'. One child records and hides a four-digit number. As the other children guess the child tells them whether the number is higher or lower. Reflection: How can we describe four-digit numbers using place value?
- In pairs, children select 4 cards. They make the largest possible four-digit number, the second largest possible four-digit number, the third largest possible four-digit number, the smallest possible four-digit number, the second smallest possible four-digit number, the third smallest possible four-digit number, … Reflection: How can we describe four-digit numbers using place value?

As they develop their understanding of four-digit place value, children will apply their understanding to add and subtract three- and four-digit numbers bridging 1000 and 10 000 using place value (Addition and Subtraction 21).

© 2020 A Learning Place A Teaching Place Relational Mathematics TPL4US Resourceful Teaching

Four-Digit - Place Value, Partition, Order, Count By 100s, 1000s.

Record a place value chart with ones, tens, hundreds and thousands.

Record 100 in the place value chart.

How many thousands do you see?

How many hundreds do you see?

How many tens do you see?

How many ones do you see?

Reflection: How can we see 1000 as 1 thousand and as 10 hundreds and as 100 tens and as 1000 ones?

© 2020 A Learning Place A Teaching Place Relational Mathematics TPL4US Resourceful Teaching

Four-Digit - Place Value, Partition, Order, Count By 100s, 1000s.

Make a four-digit number with cards.

Record the number in a place value chart

thousands	hundreds	tens	ones
1	2	4	8

Describe your number using standard place value.

1248 = 1 thousand + 2 hundreds + 4 tens + 8 ones

Describe your number using non-standard place value in up to 4 ways.

1248 = 12 hundreds + 4 tens + 8 ones
1248 = 124 tens + 8 ones
1248 = 1248 ones
1248 = 12 hundreds + 48 ones
1248 = 11 hundreds + 5 tens + 98 ones

Reflection: How can we describe four-digit numbers using place value?

© 2020 A Learning Place A Teaching Place Relational Mathematics TPL4US Resourceful Teaching

Four-Digit - Place Value, Partition, Order, Count By 100s, 1000s.

Select cards to make a four-digit number.

Partition your number, using non-place value, standard and non-standard place value.

Reflection: How can we partition four-digit numbers using standard, non-standard and non-place value?

© 2020 A Learning Place A Teaching Place Relational Mathematics TPL4US Resourceful Teaching

Four-Digit - Place Value, Partition, Order, Count By 100s, 1000s.

Select cards to make a four-digit number.

Record the number on an open empty number line.

Record the number 10 before and after on the number line.

Record the number 100 before and after on the number line.

Record numbers that come between the numbers on the number line.

Reflection: How can we use place value to order numbers?

© 2020 A Learning Place A Teaching Place Relational Mathematics TPL4US Resourceful Teaching

Four-Digit - Place Value, Partition, Order, Count By 100s, 1000s.

Select cards to use as a four-digit number that is neither too easy nor too challenging to count by 100s.

Count forwards and backwards by hundreds from the number.

Record your count on a number line.

Explain why the ones and tens digit don't change.

Explain why the hundreds digit changes every time.

Explain when the thousands digit will change.

Explain when the ten-thousands digit will change.

Reflection: Why do the ones and tens digits stay the same and the hundreds digit change when we count by 100s?

© 2020 A Learning Place A Teaching Place Relational Mathematics TPL4US Resourceful Teaching

Four-Digit - Place Value, Partition, Order, Count By 100s, 1000s.

Select cards to use as a four-digit number that is neither too easy nor too challenging to count by 1000s.

Count forwards and backwards by thousands from the number.

Record your count on a number line.

Explain why the ones and tens and hundreds digit don't change.

Explain why the thousands digit changes every time.

Explain when the ten-thousands digit will change.

Reflection: Why do the ones and tens and hundreds digits stay the same and the thousands digit change when we count by 1000s?

© 2020 A Learning Place A Teaching Place Relational Mathematics TPL4US Resourceful Teaching

Four-Digit - Place Value, Partition, Order, Count By 100s, 1000s.

Sit with a friend.

Each of you record a place value chart with ones, tens, hundreds and thousands.

Take turns to take 1 card and place it in either the ones place or the tens place or the hundreds place or the thousands place.

Once placed it cannot be changed.

Read your number out loud and explain your number using standard place value as you place out each card.

Each of you place your complete four-digit number on the same number line, explaining your placements.

The child who created the highest / lowest number takes all cards.

Reflection: How did you use place value to decide what value to give each digit?

© 2020 A Learning Place A Teaching Place Relational Mathematics TPL4US Resourceful Teaching

Four-Digit - Place Value, Partition, Order, Count By 100s, 1000s.

Sit with a friend.

Select 4 cards to make a four-digit target number.

Each person flips 4 cards.

The child who makes the number closest to the target number wins.

Reflection: How did you use place value to arrange your cards to make the number closest to the target number?

© 2020 A Learning Place A Teaching Place Relational Mathematics TPL4US Resourceful Teaching

Four-Digit - Place Value, Partition, Order, Count By 100s, 1000s.

Enter a four-digit number into a calculator.

Wipe out the thousands digit.

Enter a four-digit number into a calculator.

Wipe out the tens digit.

Enter a four -digit number into a calculator.

Wipe out the hundreds digit.

Enter a four -digit number into a calculator.

Wipe out the ones digit.

Reflection: How did you use place value to wipe out each digit?

© 2020 A Learning Place A Teaching Place Relational Mathematics TPL4US Resourceful Teaching

Four-Digit - Place Value, Partition, Order, Count By 100s, 1000s.

Sit with a friend.

Flip 12 cards to make 3 four-digit numbers.

Place the numbers in a row.

Place the remaining cards face down in a pile.

Take turns to select 4 cards from the pile.

Make a four-digit number to replace one of your four-digit numbers.

The child player to have their 3 four-digit numbers in ascending (or descending) order is the winner.

Reflection: How did you use place value to place your numbers in order?

© 2020 A Learning Place A Teaching Place Relational Mathematics TPL4US Resourceful Teaching

Four-Digit - Place Value, Partition, Order, Count By 100s, 1000s.

Sit with friends.

Play ‘guess my four-digit number’.

One of you records and hides a four-digit number.

As the other children guess, tell them whether your number is higher or lower.

Reflection: How did you use place value to guess the number?

© 2020 A Learning Place A Teaching Place Relational Mathematics TPL4US Resourceful Teaching

Four-Digit - Place Value, Partition, Order, Count By 100s, 1000s.

Select 4 cards.

Make the largest possible four-digit number.

Make the second largest possible four-digit number.

Make the third largest possible four-digit number.

Make the smallest possible four-digit number.

Make the second smallest possible four-digit number.

Make the third smallest possible four-digit number.

Reflection: How did you use place value to make the numbers?

© 2020 A Learning Place A Teaching Place Relational Mathematics TPL4US Resourceful Teaching