

# Links to Learning

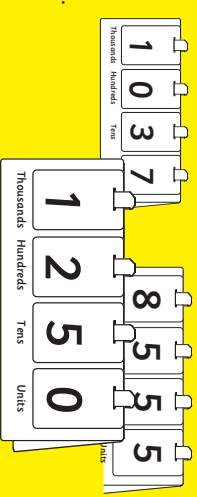
## The Place Value Range

### Colour Coded Flips

Teacher Flip

Pupil Flip

Thousands, Hundreds, Tens and Units.



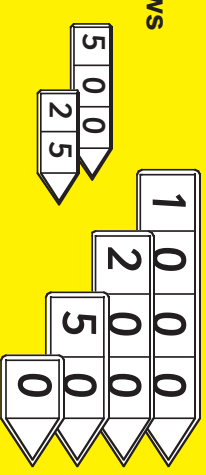
### Colour Coded Place Value Arrows

Teacher Place Value Arrows

Pupil Place Value Arrows

Teacher Place Value Arrows Thousands

Pupil Place Value Arrows Thousands



# edtech

educational technology ltd  
10cornotion way  
camperdown ind. estate  
newcastle upon tyne  
ne12 5us • united kingdom

t: 00 44 (0) 191 268 2222  
f: 00 44 (0) 191 268 1137  
e: sales@edtech.co.uk  
http://www.edtech.co.uk

## INTRODUCTION TO THE PLACE VALUE RANGE

The **Place Value** Range of products is carefully designed and selected to enhance the teaching of Math in the classroom. The best teachers find that no one product can teach or sufficiently reinforce concepts to be learned. We have recognised this and have designed a range of products to be used specifically with place value which often needs regular reinforcement before concepts are fully understood.

The teacher selects resources specific to the learning needs and abilities of individual pupils. It often takes a combination of resources to cater to the learning needs of the whole class. With this in mind we have designed the following range of products, all of which can be used individually or can be used in conjunction with each other. The products in this range are all colour coded so that pupils can easily identify one value from another.

Thousands = **blue**, hundreds = **green**, tens = **yellow** and units = **red**.

### FIRST AND FOREMOST

- Pupils need to become familiar with the resources. This can be achieved simply in group and front of class demonstrations.
- The resources are interchangeable with various ages of pupils, so early years teachers can develop familiarity with the materials that can be built upon through the grades.
- Pupils should have free reign to experiment with the resources and develop their own games and activities to fulfil their specific learning requirements. For example they could develop their own dice games, flip quizzes and so on.
- Colour coding specific sets within each product helps pupils to identify, categorise, organise and order products and help commit concepts to memory.

## THE PLACE VALUE RANGE OF RESOURCES

### THE FOLLOWING PRODUCTS ALSO AVAILABLE IN THIS RANGE;

#### NUMBER FLIPS

Teacher Number Flip - Th.H.T.U 1 Pack  
Pupils Number Flips - Th.H.T.U 5 Pack

#### PLACE VALUE DICE

10 Sided Jumbo Colour Coded  
Place Value Dice Th.H.T.U

#### PLACE VALUE ARROWS

Teacher Place Value Arrows  
Pupils Place Value Arrows  
Teacher Thousand Place Value Arrows  
Pupils Thousand Place Value Arrows

#### DECIMAL PLACE VALUE ARROWS

Teacher Place Value Arrows  
Pupils Place Value Arrows

**Decimal Supplements:** Tenths = **yellow**, Hundredths = **green**, Thousandths = **blue**.

<b>blue</b>	<b>green</b>	<b>yellow</b>	<b>red</b>	<b>yellow</b>	<b>green</b>	<b>blue</b>
<b>5</b>	<b>4</b>	<b>3</b>	<b>1.</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Thousands</b>	<b>Hundreds</b>	<b>Tens</b>	<b>Units</b>	<b>Tenths</b>	<b>Hundredths</b>	<b>Thousandths</b>

### HOW TO USE THIS BOOKLET

The activities in this booklet do not need to be followed in sequence, but are designed to give ideas and starting points as to how the materials can be used in the classroom.

**There is a section about each product. Each section outlines:-**

- a) Principles of each product
- b) Ideas for use
- c) A variety of games and activities for differing student abilities

# NUMBER FLIPS

## SECTION 1

### Principles

The Teacher Number Flip is best used as a front of class or group resource. The smaller Pupil Number Flips can be used by individual students.

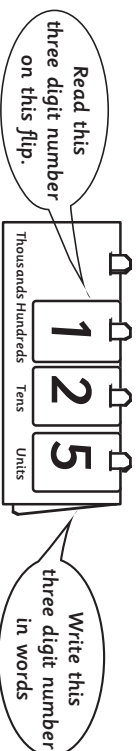
Both the Teachers Number Flip and the Student Number Flip contain thousands (Th), hundreds (H), tens (T) and units (U) cards. These Th.H.T.U cards can be used appropriate to the curriculum and the needs of the students.

The Teachers Flip and Pupils Flip are controlled by the teacher and can be used for all combinations up to thousands, hundreds, tens and units by removing or flipping over all of the digit values not used and covering the Place Value name cards.

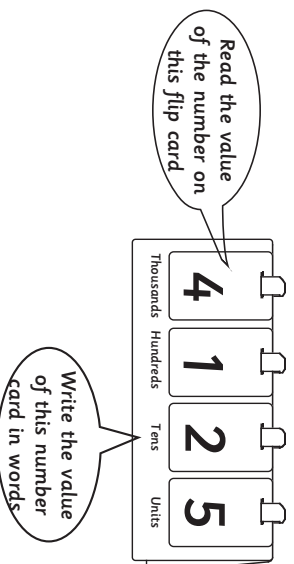
### IDEAS FOR USE:

#### FRONT OF CLASS/GROUP WORK SAMPLE QUESTIONS USING TEACHER NUMBER FLIP AND STUDENT FLIPS

##### ● READ AND WRITE NUMBERS TO AT LEAST 99/999



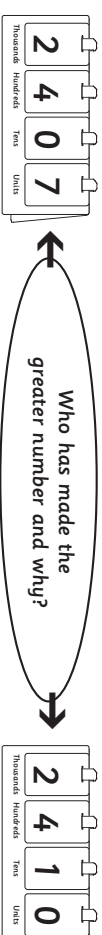
##### ● KNOW WHAT EACH DIGIT IN A 3-DIGIT NUMBER REPRESENTS



# NUMBER FLIPS

#### FRONT OF CLASS / GROUP WORK QUESTIONS USING TEACHER NUMBER FLIP AND PUPIL FLIPS

##### ● DETERMINE WHICH NUMBER IS GREATER (OR SMALLER)



##### ● MAKE THE BIGGEST/SMALLEST NUMBER YOU CAN WITH NUMBERS 4,9,1

Make the largest/smallest number you can with your flip

Everyone make the number four hundred, seventy, two

Make a number greater than nine hundred twenty six.

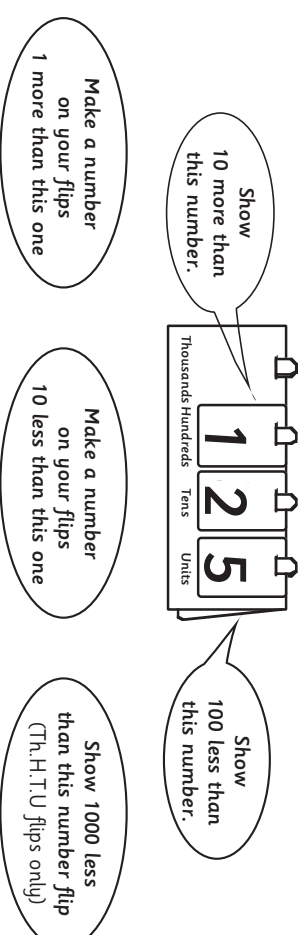
##### ● PLACE VALUE AND CALENDAR QUESTIONS

Show how many days there are in a year on your flip.

Show how many days there are in 40 weeks

Show what year it is on your flip (Th.H.T.U flips only)

##### ● ADDING AND SUBTRACTING 1, 10 OR 100



Teachers use the Teacher Flip to pose a question and pupils show responses on their own Pupil Flips.

## NUMBER FLIPS

### GAMES WITH FLIPS

**GUESS THE NUMBER** - Th.H.T.U Learning what each digit represents.

**For up to 5 players.** Use 1 Teacher Flip and up to 4 Pupil Flips.

The flip holder uses the Teacher Flip. The number guesser's use the Pupil Flips.

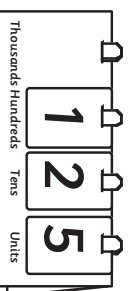
The flip holder makes a number up to 9999 on his/her flip and conceals it from the other players. The other players must guess the number within a certain number of turns (dependant on ability of pupils and read the number).

#### EXAMPLE

The first player guesses a number up to 9999 and makes it on their flip then shows it to the group. The holder must say "correct hundreds/tens/units" if any of these in the guesser's number is correct. If none of the digits are correct holder says "all incorrect". The players take turns as above. The first player to make the holder's number wins.

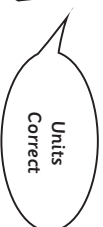
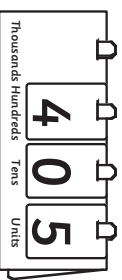
#### EXAMPLE

The flip holder makes a number but does not show it to players.



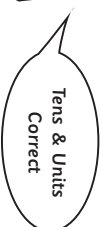
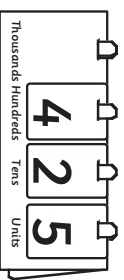
#### Number Guesser 1

Makes a guess at the number  
Shows guess to holder.



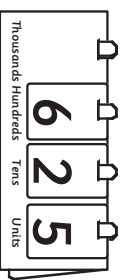
#### Number Guesser 2

Changes guess on his turn.  
Shows guess to holder.



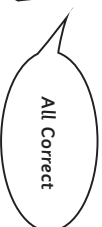
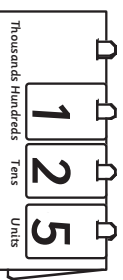
#### Number Guesser 3

Changes guess on his turn.  
Shows guess to holder.



#### Number Guesser 4

Changes guess on his turn.  
Shows guess to holder.



Game starts again this time with the winner being the Flip Holder and starting guessing with player 2.

## NUMBER FLIPS

### FRONT OF CLASS/GROUP ACTIVITIES WITH FLIPS AND DICE

#### ● FLIP ADD ON - ADDITION FROM 0 to 999 or 9999

Use 1 set of H.T.U dice and the Teachers Flip, pupils can use their own Pupil Flips to show the numbers they have made.

The teacher starts with no numbers shown on the flip. Pupils take turns to roll the H.T.U dice. The number of dice rolled depends on the number of flip cards used and the ability of the pupils. Teachers can choose just to use the tens and the units dice with the flip or three dice can be rolled with the Th. dice and the Th.H.T.U flip.

The first number rolled is shown on the flip. Pupils continue to take turns rolling the dice and then mentally or otherwise adding the number rolled to the number on the flip. Pupils can each show their own calculations if they have flips of their own. Keep going until the teacher's flip is over 9000.

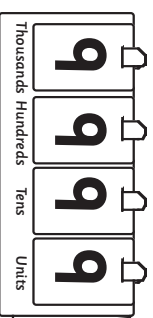
#### ● FLIP COUNT DOWN - SUBTRACTION FROM 999 or 9999

Use 1 set of H.T.U dice (or combine with Th. dice) and the Teachers Flip with either H.T.U or Th.H.T.U. Pupils can use their own Pupil Flips to show the numbers they have made.

The teacher makes the largest number possible on the number flip (999 or 9999), pupils take turns to roll the H.T.U dice. The number of dice rolled depends on the flip set used and the ability of the pupils, see above.

The pupils must mentally or otherwise subtract the number rolled from the number on the flip and show the number on their own flips. Keep going until the flip is under 100.

#### EXAMPLE



Number rolled on tens and units dice = 26  
pupils must mentally or otherwise  
subtract 26 from 9999

## PLACE VALUE ARROWS

### SECTION 2

#### Principles

The large place value arrows are best used as a front of class or group resource. The smaller arrows can be used by individual pupils.

There are two basic sets. Set 1 contains hundreds, tens and units for use with younger pupils. Set 2 is a supplement set and contains thousands for use with older or more able pupils.

#### IDEAS FOR USE:

#### FRONT OF CLASS/GROUP WORK ACTIVITY USING LARGE AND PUPIL PLACE VALUE ARROWS

##### ● READ AND WRITE NUMBERS TO AT LEAST 100/1000

##### ● KNOW WHAT EACH DIGIT IN A 3-DIGIT NUMBER REPRESENTS

Make these numbers with your arrows

Make this number with your arrows. What do the digits 1, 7 & 4 represent?

One hundred

seventy-four

twenty-six

174

with one arrow change, make this number into 350

Read the number I have made on these arrows

Hold up the arrow that represents this digit

Using the 100's arrows (green) order them from 100 to 900

Using the 10's arrows (yellow) set out the answers when you multiply the numbers 1-9 by 10

##### ● PLACE VALUE AND ORDERING NUMBERS

## PLACE VALUE ARROWS

#### FRONT OF CLASS/GROUP WORK QUESTIONS USING LARGE ARROWS AND SMALLER ARROWS

##### ● PLACE VALUE AND ORDERING NUMBERS

205

Who has made the greater number? How much greater?

250

Make the biggest/smallest number you can with these arrows.

Make the biggest number you can with your set of arrows

Everyone make the number four hundred seventy - two

Make a number greater than nine hundred twenty - six

Pupils can use the Pupil Place Value Arrows for desk top work. The larger arrows can be used when showing a group or class.

##### ● PLACE VALUE AND CALENDAR QUESTION

Show how many days there are in a year on your arrows

Show how many days there are in 40 weeks

Show what year it is on your arrows (Th.H.T.U arrows only)

##### ADDING AND SUBTRACTING 1, 10 OR 100

10 more than this number

100 less than this number is

205

Make a number with your arrows 1 more than this one

Make a number with your arrows 10 less than this one

Show 1000 less than this number (Th.H.T.U arrows)

## PLACE VALUE ARROWS

### GAMES AND ACTIVITIES WITH PLACE VALUE ARROWS

- **PLACE VALUE SUMS** - Play individually or in groups.

You need one set of arrows each and a pencil and paper.

Separate your arrows into piles of hundreds, tens and units. Place them face down and pick an arrow from each pile to make a three digit number. Do the same again so you have 2 numbers. Now work out the difference between the numbers by using the rest of the arrows.

- **GREATER OR SMALLER** - Up to 6 players.

Use one set of Place Value Arrows each.

Separate your arrows out into piles of hundreds, tens and units.

Place face down and each player picks an arrow from each pile to make a three digit number, read the number. The player with the largest number wins. Keep a tally of scores. The player scoring the most after 10 turns is the winner.

### GAMES WITH ARROWS AND DICE

- **MAKE A NUMBER** - Up to 4 players.

Use 1 set of Place Value Arrows for each player and 1 set of H.T.U dice, separate their arrows into piles of hundreds, tens and units. Spread the arrows out altogether in their separate piles so that they are easy to see. You may even want to place each number into piles e.g. piles of 10s, 20s, 100s, 200s etc.

Each player takes it in turn to throw all three dice together and then make the number shown on the dice with the arrows, e.g. if you throw 800, 60 and 4 make:



At the end of each round look at the numbers that each player has made.

Have the pupils read each number and discuss how they determine the largest number. The player with the largest number scores 1 point.

Players keep the number arrows that they have made and then play another round, keeping score each time.

At the end of four rounds players should have four numbers each in front of them.

## PLACE VALUE ARROWS

Now each player must make the largest number they can using all the arrows that they have collected. The player who has made the largest number scores two points. Now add up the points, the winner scores the most points.

### ADDING TO 999 - Mental Calculation - Play in pairs.

- Use 2 sets of Place Value Arrows and one ten dice and one units dice.

Player 1 rolls both dice together and makes that number with the arrows. Player 2 rolls the dice and also makes the number rolled. Player 2 must add the number made to the original number. Players can do the addition mentally or otherwise but may use arrows to help them. Players take turns to do this until number is over 900.

number reached during play



number rolled on tens and units dice



Player must add the two numbers together.

### SUBTRACTION FROM 9999 - Mental Calculation - 4 Players.

- Use 4 sets of Place Value arrows and one each of the Th.H.T.U dice.

Each player displays their arrows to represent 9999. He/she then chooses to roll any number of dice. The number presented is subtracted from the original number on the arrows to create a new number. The winner is the player left with the smallest number without going bust.

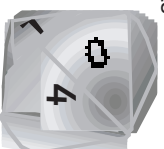
## PLACE VALUE DICE

### SECTION 3

#### Principles

The place value dice are all colour coded to match the other products in the place value range.

Pupils can use any combination of the dice depending upon their ability and learning requirements.



There are two basic sets. Set 1 contains hundreds (000-900), tens (00-90) and units (0-9). Set 2 is a supplement set and contains thousands (0000-9000) dice. However, younger pupils need only use the units and tens dice as required.

#### IDEAS FOR USE:

#### GROUP OR INDIVIDUAL WORK ACTIVITIES USING COMBINATIONS OF DICE

##### ● KNOW WHAT EACH DIGIT IN A 2,3,4-DIGIT NUMBER REPRESENTS

Throw a combination of the dice (as selected by the teacher) and say or write down the number which has been thrown. Pupils can write the number down or show the number on number flips, as above.

#### EXAMPLE

green dice      yellow dice      red dice

"This number is 522"

Thousands	Hundreds	Tens	Units
5	2	2	

##### ● ORDER NUMBERS - GREATER THAN (>)

Work in pairs. Each pair must throw the same combination of dice as selected by the teacher. Each pupil say what number has been thrown and then work out which is the greater number.

John's number      Jane's number

"Jane's number is greater than John's"

pupils can write down it's relationship from numbers thrown on the dice such as;  $64 > 22$ . Note: A similar game can be created for "less than" (<)

## PLACE VALUE DICE

##### ● ORDER NUMBERS.

Work individually. Throw 2, 3 or 4 dice (either the T.U or H.T.U or Th.H.T.U dice). Write down the number made or make it with the Place Value Arrows. Do this 5 times. Now order the numbers from the smallest to the greatest.

##### ● APPLYING KNOWLEDGE OF ADDING, SUBTRACTING OR MULTIPLYING NUMBERS.

Teacher's can select the number and colour of dice to be used in activities according to the number concepts to be practiced. Computations using addition, subtraction and multiplication can be practiced. Pupils simply throw a selected combination of the dice and either add, subtract or multiply the numbers. The place value arrows could be used in conjunction with these activities to help with computations.

##### Two Units Dice :

Addition to 18, addition facts to 18 and related subtraction, multiplication facts to 81 and related division.

#### EXAMPLE

<b>Add/Subtract</b>	<b>Multiply/Divide</b>
$2 + 8 = 10$	$2 \times 8 = 16$
$8 + 2 = 10$	$8 \times 2 = 16$
$10 - 2 = 8$	$16 \div 8 = 2$
$10 - 8 = 2$	$16 \div 2 = 8$

##### One Ten Dice, One Unit Dice:

Addition of tens and units, subtracting units from multiples of ten, multiplying units by multiples of ten. (One digit by the digit multiple of 10)

##### Two Tens Dice:

Adding multiples of 10 to 180, subtracting multiples of ten from multiples of ten, multiplying multiples of ten up to 8100.

##### Two Tens, Two Units Dice:

Throwing 2 scores up to 99 (one red and one yellow each time) and then adding, subtracting or perhaps multiplying the scores.

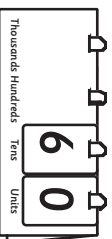
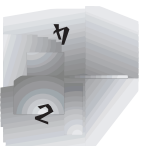
This list can be added to in a variety of ways using combinations of Units, Tens, Hundreds and even Thousands Dice.

## FRONT OF CLASS/GROUP ACTIVITY USING PLACE VALUE DICE AND FLIPS

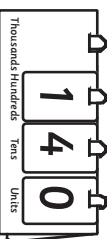
### ● ADDING IN MULTIPLES OF 10

Use one ten dice (yellow). The teacher holds a teacher number flip at the front of the class. The teacher selects a pupil to roll the dice. The pupil then puts the number scored on to the flip. The next pupil selected does the same but adds the number they rolled to the number already shown on the flip.

### EXAMPLE



**1ST NUMBER**  
ROLLED = 60    **ADD TO FLIP**



**2ND NUMBER**  
ROLLED = 80    **ADD TO FLIP**

Keep adding until number reaches maximum on flip. Count how many rolls of the dice it took. Alternatively pupils can use the hundreds dice or any combination of the H, T & U dice to add up to 999 or 9999 (Thousands Teacher Flip).

### ● SUBTRACTING IN MULTIPLES OF 10

Use one ten dice (yellow). The teacher holds the teacher flip at the front of the class showing the number 999.

Proceed as for above activity but subtract instead of add until lowest score possible is achieved. Again any combination of the H, T, U dice can be used for this activity either with the H, T, U flip or the Th, H, T, U flip.

## GAME WITH DICE AND PUPIL FLIPS

### ● FIRST TO 500 - ADDITION TO 500, MENTAL ARITHMETIC

Up to 4 players. Use 1 set of T, U dice (red and yellow) and 1 Pupil Flip per player.

Players take it in turns to throw the two dice and put the number scored on to their flip. Each score thrown must be added to the throwers flip. The first player to reach 500 is the winner. The same game can be played using a Th, H, T, U flip and the H, T, U dice. In this case the first player past 9999 is the winner.