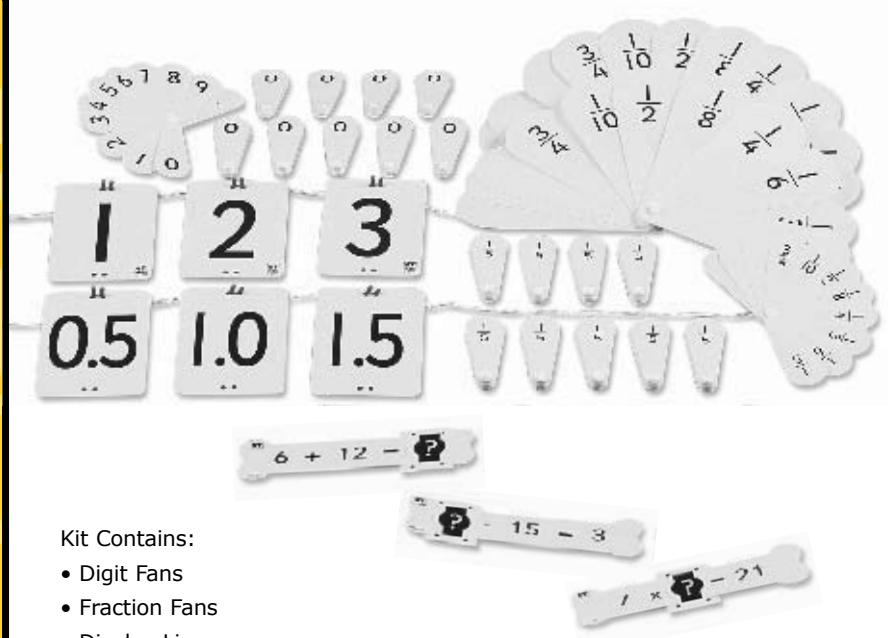
Links to Learning

The Number Sense Range



Kit Contains:

- Digit Fans
- Fraction Fans
- Display Lines
- Number Crunchers

edtech©
educational technology

Designed and manufactured by ed tech for SI Manufacturing

SI Manufacturing

Introduction to the Number Sense Range

These products have been carefully designed and selected to enhance the teaching of Math in the classroom, and to meet the specific learning needs and abilities of individual children. It often takes a combination of resources to cater for the learning needs of the whole class so we have designed the following range of products to be used individually or in conjunction with each other.

First and Foremost

- Students need to become familiar with the resources which can be achieved simply in group and front of class situations.
- The resources are interchangeable with various ages of children, so early years teachers can develop familiarity with the materials that can be built on through the grades.
- Younger children can use other edtech resources which do not reinforce the same concepts but use the same system of delivery. For example digit fans, display lines, and crunchers are all featured in a variety of ranges for several areas of the curriculum, many containing very early learning concepts. Staff throughout the grades, from kindergarten onwards, can organize resources so that by the time the more complex concepts are ready to be learned students are very familiar with the products themselves.
- Students should have free reign to experiment with the resources and develop their own games and activities to fulfill their specific learning requirements. For example they could develop their own digit fan games, cruncher quizzes and so on.
- Other products in the Math Range can be used with this Number Sense Range in order to extend the use. For example dice, flips and so on.

The Number Sense Range of Resources

Digit Fans

- Teacher Fans (Item #133124)
  Two sets of numbers 0 - 9, plus a decimal point
- Student Fans – Set of 10 (Item #133132)

Fraction Fans Not available

- Teacher Fraction Fans – Set of 2 (Item #75085)
  The Teacher Fraction Fans are printed with each of the following fractions: 1/2, 3/4, 1/4, 1/5, 1/6, 1/8, 1/10 & 1/3 plus 4 blanks.
- Student Fraction Fans – Set of 10 (Item#75090)
  The Student Fraction Fans are printed with one of each of the above 8 fractions plus 3 blanks.

Number Display Line

- Numbers 0 to 20 (Item #112219)

Decimal Display Line Not available

- Numbers 0.1 to 2.0 (Item #75115)

Number Crunchers

- 100 Bones containing addition facts to 10 and related subtraction (Item #147033)
- 100 Bones containing addition facts to 20 and related subtraction (Item #142273)
- 100 Bones containing multiplication facts to 100 (Item #147041)

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

- **Principles of each product**
- **Ideas for use**
- **A variety of games and activities for differing abilities**

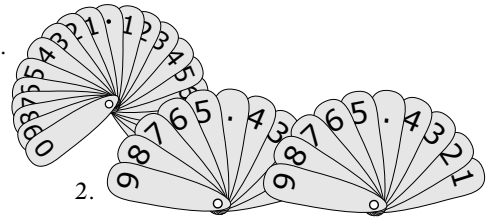
Digit Fans

Principles

The **Digit Fans** contain two sets of numbers 0 - 9 and a decimal point.

1) They can be used as one set of 20 digits plus the decimal point:

2) or split into two sets of 10 digits with or without decimal points:



The Teacher Digit Fan is best used as a front of class or group resource.
The smaller Students Fans can be used by individual students.

The following concepts can be reinforced and tested using the fans; counting, properties of numbers and number sequences, place value and ordering, addition and subtraction, mental calculation, decimals.

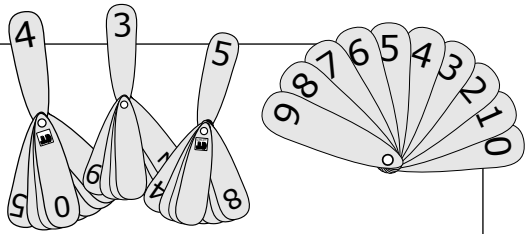
Ideas for Use

Front of Class/Group Work Activity

- **Questions Using Digit Fans**

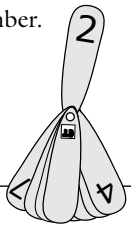
Number Recognition and Counting for Early Years

The teacher poses questions and problems from the front of the group, using the large teacher fan without the decimal point. Students respond orally or by showing answers on their student fans. Remove the decimal point from the student fans for these activities.



Ask Students:

- What number is this?
- Write this number.
- Double this number.
- Half this number.



- Show me the number 4 on your fan.
- Show me the answer to 2 + 1.
- Show me how many pencils I'm holding (5).
- Put all the numbers in order.

Addition and Subtraction to and from 5, 10 or 20

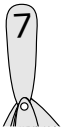
The teacher uses the Teacher Digit Fan with the decimal point removed. The students respond to problems using their Student Digit Fans, also with the decimal point removed.

The teacher poses a range of problems regarding addition and subtraction by holding up two digits on her fan and asking students to either add or subtract the numbers shown.

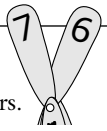
Ask Students:

Add these two numbers.

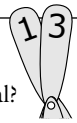
Is this the total?



Add these two numbers.



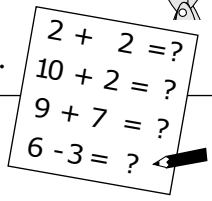
Is this the total?



Subtract the second number from the first.

Is this the total?

Problems can also be written on a black or white board for the student responses.



Multiplication and Division

The teacher uses the Teacher Digit Fan with the decimal point removed. The students respond to problems using their Student Digit Fans, also with the decimal point removed.

Add these two numbers.

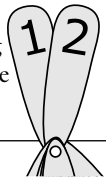
Multiply this number by 4.

Divide the 1st number by the 2nd.

Divide this number by 4.

Place Value and Ordering

The teacher presents these more challenging problems by encouraging students to show what each digit in a number represents. Remove the decimal point from the student fans for these activities.

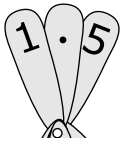


Ask Students:

- What number am I showing using these digits?
- What number does the 1 represent?
- Swap the digits. The number is...?
- Show me the number twelve on your fan.
- Show me 1 more than 16.
- Show me 10 more than 6.
- In one move six into sixteen.
- Show me 1 less than 20.
- Show me the number which is 1 ten and 2 units.

Relating Decimal Fractions to Measures and Money

The teacher poses a range of problems regarding money and measures. Students use digit fans with decimal points to make appropriate responses. If the Student Digit Fans contain only one set of numbers 0 - 9 take care not to ask questions which require an answer using two of the same digits.



Show me half of 3 metres.

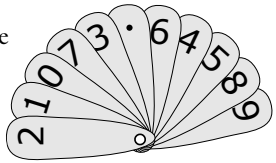
Show me 347 cents in dollars.

Show in dollars the total of nine $1 and 2 cents.

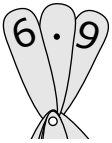
Show me 125 cm in meters.

Using and Understanding Decimal Notation. Recognizing and Using the Equivalence of Fractions and Decimals.

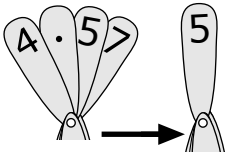
The teacher poses questions and problems from the front of the group, using the large teacher fan with the decimal point. Students respond orally or by showing answers on their student fans. Teachers may also choose to use the Fraction Fans to ask equivalent decimal fraction questions (see pages 9 & 10).



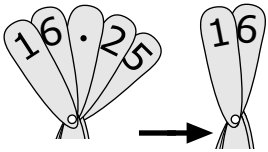
Ask Students:



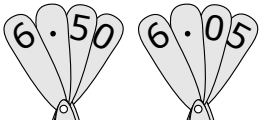
Point to the digit which represents nine tenths.



Round this number up to the nearest whole number.



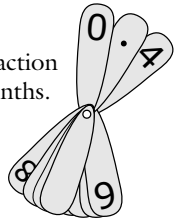
Round this number up or down to the nearest whole number.

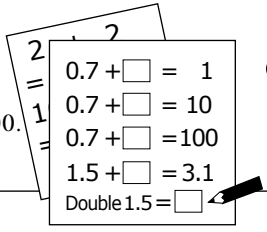


Which is less?

Derive quickly related facts such as decimals with a total of 1, 10 or 100. Work out given decimal sums.

Show the decimal fraction equivalent to four tenths.





Decimal Display Line

Principles

The **Decimal Display Line** contains 20 printed cards showing decimal numbers 0.1 to 2.0 with 5 meters of cord. The cards are easily removed and are printed on yellow plastic for visual clarity and durability. The Decimal Display Line is best used as a front of class or group resource. This product can be used in conjunction with the Digit and Fraction Fans.

The following concepts can be reinforced and tested using this product; decimal notation, understanding what each digit in a decimal fraction represents, ordering sets of decimal fractions, recognizing the equivalence between decimals and fractions.

Ideas for Use

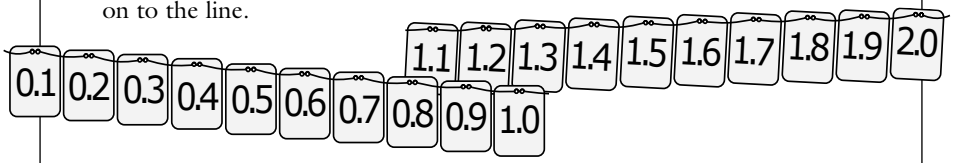
Front of Class/Group Work

- **Example of Questions Using Decimal Display Lines**

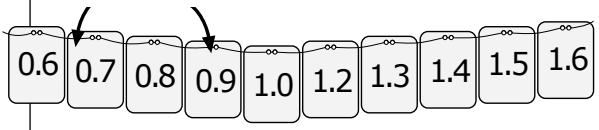
Ordering Sets of Decimal Numbers

Ask Students:

- Ask the students to hang a selected set of decimal fraction cards in order on to the line.



Which number is more, this one or this one? Say: 0.9 is more than 0.7. (*Recognize, for example, that 0.7 is less than 0.9).*



Where should these numbers go on the line? (*Hang the decimals in order on the line, keeping 2 or 3 aside.)*

- Point to the decimal fractions which are less than 1.
- Point to a fraction which is greater than 1 but less than 1.3.
- *The decimals can be mixed up then hung on the line to make the questions harder.*

Comparing and Ordering Decimals

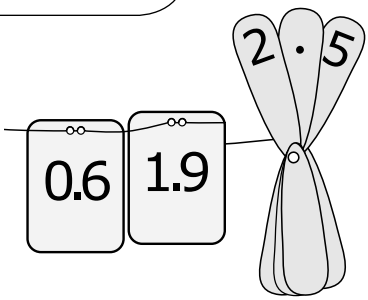
Arrange in order a selection of decimal fractions.

Ask Students:

- Each of you take a decimal card from this pile and then arrange yourselves in the right order, from the smallest number.

Addition of Decimal Numbers

Use all the Digit Fans and the Decimal Display Line. The teachers chooses decimal fraction pairs to be added. The students add the two numbers and show responses on their fans.

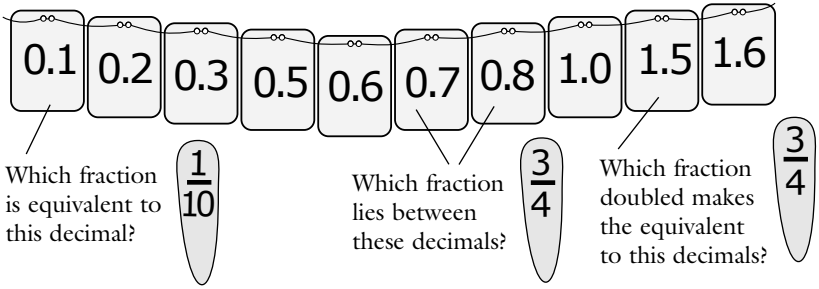


Recognizing the Equivalence Between Decimals and Fractions

Use all the Fraction Fans and the Decimal Display Line. The teacher can mount the specific cards on to the line which are equivalent to some of the fractions on the fans; 0.1, 0.2, 0.3, 0.5 and 0.6 as well as extra numbers such as 0.7, 0.8, 1, 1.5 and 1.6. The teacher then points to a decimal on the line and the students must respond by showing which fraction is equivalent or the nearest equivalent to the decimal pointed out.

Ask Students:

- Ask fraction and decimal fraction questions relating to the decimal fractions hanging on the line.



0 – 20 Display Line

Principles

The **0-20 Display Line** contains 20 giant sized numbers 0 - 20 with a set of 20 in line connectors on a 5 metre nylon cord. The cards are easily removed and are printed on yellow plastic for visual clarity and durability. The Display Line is best used as a front of class or group resource.

The following concepts can be reinforced and tested using the Display Line; counting, properties of numbers and number sequences, place value and ordering, addition and subtraction, mental calculation, decimals. The 0 - 20 Display Line can be used in conjunction with the Digit Fans.

Ideas for Use

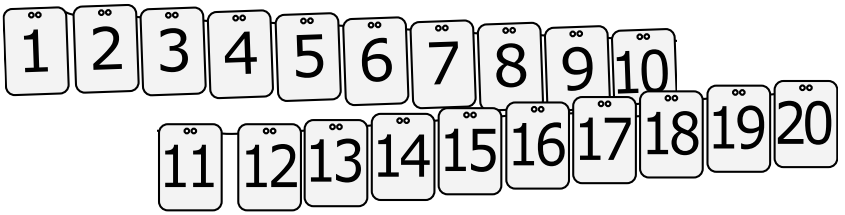
Front of Class/Group Work

- **Example of Questions Using Number Display Line**

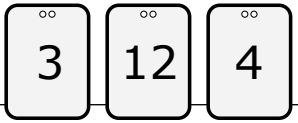
Simple Number Recognition and Counting for Early Years

Ask Students:

- Ask the students to hang a selected set of number cards in order on the line.



- Show me the answer to 2 + 1.
- Show me the number four.
- Which number is 2 less than 7?
- Which number is 1 more than 9?
- Point to the number which is 10 more than 5.
- Point to a number which is double/half of 6.
- The cards can be mixed up then hung on the line to make the questions harder.
- Hang the numbers in order on the line, keeping 2 or 3 aside.
- Where should these numbers go on the line?



Use Ordinal Numbers

Place 5 or 10 numbers on to the line. Ask questions relating to ordinal number and the relationship between ordinal and cardinal numbers. Students can use the Display Line to help with the answers.

Ask Students:

- How many numbers come before the fifth number?
- If you come 4th out of 5 runners how many beat you?
- Point to the first number.
- Which is the last number?
- Which is the third number?
- Which number is last but one?

Relating Addition to Counting On

Place 10 or all 20 numbers on to the line. One child is chosen to come to the front and start counting from the lowest number on the line e.g. 'one, two, three, four.' The next child stands up and continues the count 'five, six, seven, eight.' This continues until all the numbers have been counted.

Show 2 fingers on one hand and then put it behind your back. Students establish what number was shown by pointing it out on the line. Now show 3 more fingers on the other hand. How many fingers altogether? Students count on 3 from the number 2 shown on the line: '3, 4, 5.' Say : "2 add 3 is 5."

Counting How Many More to Make a Larger Number

Place 10 or all 20 numbers on to the line. Find out by counting up how many more will make a given number. For example:

Ask 2 students to come to the front. "We have 2 children here" (point to the number 2 on the line.) Now point to the number 6. "How many more children need to stand up to make 6 children stand altogether?" (Count up from 2 to 6 "3, 4, 5, 6.... so 4 more are needed". Say together: "2 add 4 makes 6."

Counting Back and Relating Subtraction to Taking Away

Place 5, 10 or all 20 numbers on to the line. Students count backwards from 5, 10 or 20 using the numbers on the line as a guide. Point to the numbers as they are counted down.

Pose subtraction problems for students by saying for example; "We had 5 cakes, (point to the number 5) we eat two. How many cakes are left?" (Count back 2 numbers on the line) Say: "5 take away 2 is 3".

Fraction Fans

Principles

The **Fraction Fans** come in two sizes. The teacher size is best used as a front of class resource. The student size fans can be used by individual students to show responses to the teachers questions. The teacher fans show 16 fractions and 4 blanks for use with a dry marker pen. The student fans show 8 fractions and 3 blanks.

The Fraction Fans can be used in conjunction with the Display Lines and Digit Fans.

Ideas for Use

Front of Class/Group Work

- **Example of Questions Using Fraction Fans**

Recognize and Understand Fractions

All students in the group have fraction fans. The teacher aims questions about fractions at the ability of the students. Students must answer the questions by showing the correct fraction on their fans.

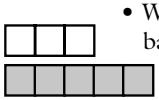
Ask Students:

- Show me one half, now show me one tenth.
- If I cut a cake into 3 and give three people a piece each, what fraction of the cake does each person have?
- Show me the fraction which is bigger, one half or one quarter?
- Out of 100 students, 75 eat school lunches. What fraction is this?
- What fraction is one half of one half?

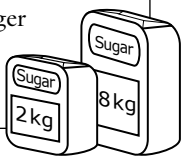
Find Fractions of Number and Quantities

Ask Students:

- What fraction of 100 is 10?
- What fraction of \$1 is 50¢?
- What fraction of 1 metre is 25 cm?
- What fraction of the larger shape is this smaller shape?



- What fraction of the larger bag is this smaller bag?



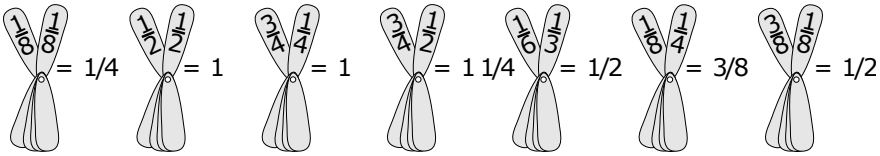
- **Activity Using Teacher and Student Fraction Fans**

Add Fractions

Use one Teacher Fraction Fan. All students have Student Fraction Fans. Write the following fractions on to the blank Student Fans using a dry wipe marker: 1,1/8, 3/8.

Write the following fractions on to the blank Teacher Fans using a dry wipe marker: 1, 1 1/4, 1 1/2, 3/8.

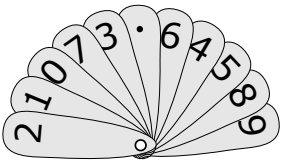
The teacher poses problems relating to addition of fractions. The teacher holds up 2 fractions on her fan and asks students to add them and show the total on their fans. Some examples as follows:



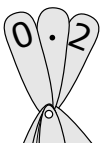
Alternatively the teacher shows one fraction. Students must show two or three of their fractions which when added together total the value shown on the teachers fan.

Equivalence Between Fractions and Decimals

The teacher shows a decimal number from the front of the group, using the Teacher Digit Fan. Students respond by showing the equivalent fraction on their Student Fraction Fans.

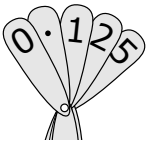


Show the fraction equivalent to 0.1

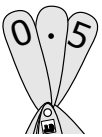


Student Answer = 1/5

Student Answer = 1/4



Student Answer = 1/8



Student Answer = 1/2

Student Answer = 3/4

Teacher and students can swap fans. The teacher shows a fraction which the students convert to its decimal equivalent on their Digit Fans.

0 – 10 & 1 – 20 Number Crunchers

Principles

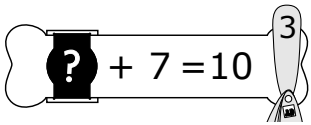
There are two sets each containing 100 bones. The bones in the **0 - 10 set** are printed with addition or subtraction up to 10. The **1 - 20 set** contains addition and related subtraction to 20. Each bone has a plastic slider which can be easily moved to conceal the total, the first or second part of the sum or even the symbols. The bones are made of durable wipe clean plastic, printed black on yellow for visual clarity. The Crunchers can be used in conjunction with the rest of the Number Sense Range, for example with the Display Lines and the Digit Fans.

Ideas for Use

Front of Class/Group Work Questions

- **Using Number Crunchers and Digit Fans**

Addition to 10

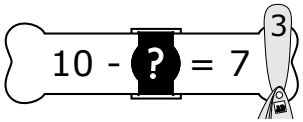


The teacher selects a number of addition to 10 Crunchers. The teacher holds up one of the Crunchers at the front and conceals one of the numbers in the equation with the slider. The students must show the value of the missing number using their Digit Fans (decimal point removed).

Addition to 20

The teacher can do the same activity as above using the 1 - 20 Number Crunchers.

Subtraction from 10



The teacher selects a number of subtraction from 10 Crunchers. The teacher holds up one of the Crunchers at the front and conceals one of the numbers in the equation with the slider. The students must show the value of the missing number using their Digit Fans (decimal point removed).

Subtraction from 20

The teacher can do the same activity as above using the 1 - 20 Number Crunchers.

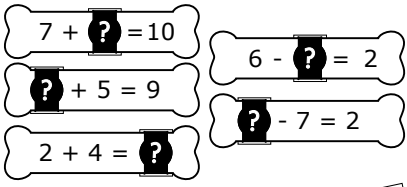
Games and Activities

- **Game Using 0–10 Number Crunchers**

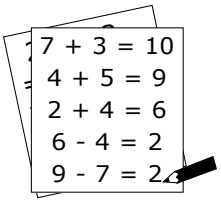
Addition and Subtraction from 10 Using 0–10 Crunchers

All activities on this page can be covered with the 1 - 20 Crunchers if teachers wish to teach addition facts and related subtraction to 20.

What you need: Use ten 0-10 Crunchers per pair
A pencil
Paper



Students work in pairs. Each pair takes 10 Crunchers back to their workstation. The students test each other on their addition and subtraction skills. The students take 5 Crunchers each, with the same number of add and subtract bones per pair. They place the sliders in different positions on the five Crunchers then swap Crunchers. They must both then work out what the missing number is and write the sums down. The first student finished with the most correct answers is the winner. Sums can be self checked by the students by moving the slider to compare answers. Students can then do the activity again by moving the sliders and swapping Crunchers.

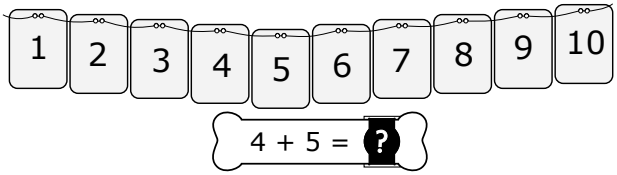


- **Activity Using 0–10 Crunchers and Display Line**

Addition Facts to 10

What you need: Set up the Display Line with numbers to 10. Have a pile of Crunchers with the slider set in the required positions.

The teacher shows a Cruncher with the slider concealing one of the numbers in the equation. A student is picked from the class to work out the missing number. That student comes to the front and points to the correct number on the Display Line. The teacher can move the slider to allow the class to check that the student is right. Each student can have a turn using a different Cruncher.



Multiplication Fact Crunchers

Principles

There are 100 bones each printed with all the multiplication facts from 1 x 0 = 0 to 10 x 10 = 100. Each bone has a plastic slider which can be easily moved to conceal the total, the first or second part of the sum or even the symbols. The bones are made of durable wipe clean plastic, printed black on yellow for visual clarity.

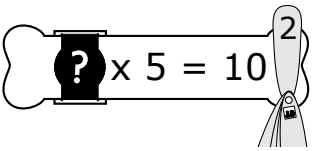
The Crunchers can be used in conjunction with the rest of the Number Sense Range, for example with the Display Lines and the Digit Fans.

Ideas for Use

Front of Class/Group Work Questions

- **Using Multiplication Fact Crunchers and Digit Fans**

Reinforce Multiplication Facts



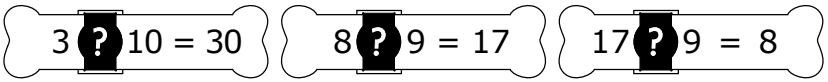
The teacher can use the Crunchers to help students practice their multiplication facts and to find out which students need knowledge reinforced. Each student has a Digit Fan (decimal point removed). The teacher selects the Crunchers relevant to the multiplication facts to be practiced. He/she then shows one Cruncher at a time with the slider concealing the first factor. Students must show what the missing factor is on their Digit Fans.

To make the activity more challenging the teacher can select Crunchers from a number of different multiplication facts and test the students knowledge in a random fashion.

- **Multiplication Fact Crunchers and 0–20 Crunchers**

Mental Calculation Involving Multiplication, Addition and Subtraction

The teacher selects ten Multiplication Fact Crunchers and twenty 1 - 20 Crunchers (ten addition and ten subtraction). She/he then selects one at a time and conceals the mathematical sign with the slider. Students can take it in turns to tell the teacher which sign is concealed.



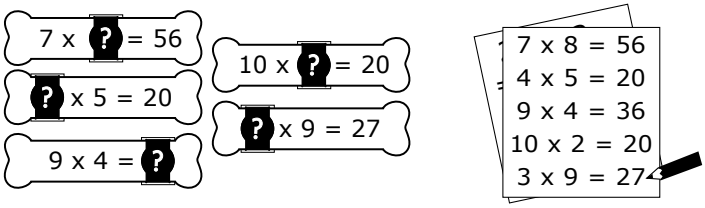
Games and Activities

• Game Using Multiplication Fact Crunchers

Multiplication to 100

What you need: Each Student has:
Five Multiplication Fact Crunchers
One Pencil
Paper

Students work in pairs. Each pair takes the 10 Crunchers back to their workstation. The students test each other on their multiplication skills. The students take five Crunchers each. They place the sliders in different positions on the five Crunchers then swap Crunchers. They both then work out what the missing number is on each Cruncher and write each factor/product down. The first student finished with the most correct answers is the winner. Answers can be self checked by the students by moving the slider to compare answers. Students can then do the activity again by moving the sliders to different positions and swapping Crunchers back again.

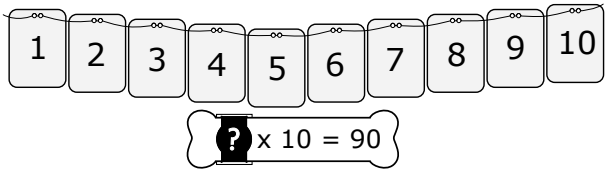


• Activity Using Multiplication Fact Crunchers and Display Line

Multiplication to 100

What you need: Set up the Display Line with numbers to 10. Have a pile of Crunchers with the slider set in the required positions.

The teacher shows a Cruncher with the slider concealing the appropriate factor/product in the equation. A student is picked from the class to work out the missing number. That student comes to the front and points to the correct factor or product on the Display Line. The teacher can move the slider to allow the class to check that the student is correct. Each student can have a turn using a different Cruncher.



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