Sixteen and a half ideas for starting your mathematics lesson

Ken Carr

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This is a small collection of ideas for starting your math sessions.

The suggestions are offered as an alternative to the "20 mental" that children often come to dislike and even fear. It is a sad fact that many students feel they are under pressure during introductions to mathematics lessons, particularly if the activity involves trying to write down answers as quickly as possible to questions from the teacher. Even worse is if the class is then asked 'Who got 20 out of 20? Who got 19?' etc.

A more appropriate way of starting the math time is through an interesting, challenging and positive experience where there is communication and genuine mathematizing.

These activities can often be done with a partner, and should be followed with discussion and a sharing of 'how I did it'. The 16.5 suggestions come from a variety of sources – teachers, articles in journals, student teachers, texts. Most can be adapted with ease for a range of student ages and levels.
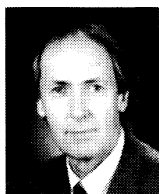
16.5 Ideas for Starting Your Mathematics Lesson

1. "How to get there"
Write a numeral on the whiteboard.

This might be of one two, three or more digits depending on the age of the children. e.g. **"68"**

Now ask the students to think up as many ways as they can to make this number with two or more other numbers. Let them use any operation, or a combination of operations. Let them have 5 minutes to do this. Share the responses with the students. As they listen to each other the students learn. Over time their responses become more and more creative.

2. "What makes this?"
Usually we ask students to solve a problem by giving them the two addends (and find the sum), or the sum and one addend (and find the missing addend).

But, we can be more creative. Write down the sum or an addend, and ask the children to complete the equation.

e.g. $32 =$ $\quad + \quad$
$37 =$ $\quad + \quad$
$24 =$ $\quad - \quad$
$15 =$ $\quad - \quad$

3. "Where Am I"
Grid practice for students. The children have 10 x 10 paper. You have marked a secret spot on your copy. The children call out coordinates and you give clues - 'further North' etc. till someone finds you. This student then takes over.

4. "Find-the-Rule" type games
There are many versions on this. The games may be associated with words, word pairs, numbers, number pairs, shapes.

e.g. When I draw these shapes I am using a 'rule'. Continue for at least another four shapes What is the rule?

△ □ □ △ □ □
△ □ ○ ○ □ △

etc.

5. "Did you say 'the Empty Number Line?"
A great idea with which to start your math class. Set a problem - or, have the children create a problem that they might want to solve.

e.g. "I have saved $12. I want to buy a second-hand skateboard for $45. How many more dollars to save?"

Use the empty number line to show how you solved this problem.

Discuss the various solution paths with your class.

6. "Krytpo"

This game is available commercially. It involves using numeral cards – say, four cards with "1", "2", "3", "4" and "5" on them and one or two cards with other numerals up to ten. Shuffle well. Four cards (or later on five) are placed face up in a row, and the 5th card is placed underneath as the 'target'. Players try to get to the target by using all four cards above, with any operation, in any order.

Use smaller numbers with younger children.

This game is similar to '24', which was very popular some years back.

7. "Can you find them all?"

Put the following up on the OHP/white board. How many triangles altogether?
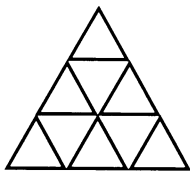
Do the same for rectangles, etc.

8. "I can continue"

Number sequences provide great fun and challenge. See if students can continue the following.

2, 4, 6, 8, ...
1, 2, 4, 7, ...
1, 2, 3, 2, 3, 4, 3, ...
1, 1, 2, 3, 5, 8, 13, ...
22, 27, 4, 13, 8, 97 ....

Encourage students to construct their own, let their partner try to solve them, then discuss as a whole class.

9. "Alphametic puzzles"

Work out what digits these letters stand for:

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  B C          S E N D
x B C         +M O R E
A B C         M O N E Y
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This can take a while!

10. "Make it 12"

Pentominoes are tremendous fun. Many, many activities are associated with these 12 shapes made from 5 congruent squares.
(i)   First, make the 12 shapes - but follow the rules (at least one whole side of each square must touch a whole side of another, and reflections and rotations do not count as new shapes)
(ii) Which ones have a line of symmetry through them? Where is it?
(iii) Make a 6 x 10 rectangle with all 12 shapes. Show your solutions on the OHP.
(iv) Which ones tessellate? Make a pattern.
(v)   Make some animal shapes. Show them on the OHP.
[an excellent book here is 'Pentominoes' by Jon Millington (1987)].

11. "Times tables patterns"

We all probably know the patterns in the 9 times table. But there are others!
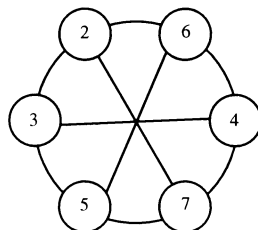
Give the students a 10 x 10 multiplication array. Colour in the multiples of 7. The multiples of 10. The multiples of 9.

The hundred-chart. What number patterns are there for:
• multiples of 5
• multiples of 2
• multiples of 4
• multiples of 9, etc.

12. "Get-to-seventeen"

Play in pairs, taking turns. Have a chart as follows:

Players slide one marker along to new circles, adding as they go. Say totals out loud. First player to get to

'17' is the winner. Change the target number as you wish.

13. "Dinkum Decimals" (a game I found in an Australian math ed journal, hence the name)

Make a set of cards with the digits 0 - 9, and one with a decimal point on it. Shuffle well. Deal out four cards. Add the decimal point card to make five cards in total.

Now set 'challenges' for the students such as:
• make the greatest number you can.
• make the smallest number you can.
• make the number nearest to 20.
• make the number nearest to 34.7

etc.
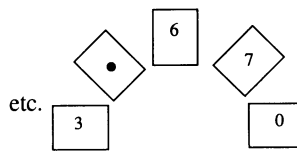
14. "Skip Counting"

Let your students try a variety of skip countings, starting from a different number, and skipping in threes, fives, twos, eights, etc.

15. "Many paths"

Put two numerals on the white board e.g.

Working in pairs, allow students to say how they would get from the smaller to the larger, using addition (as well as, perhaps, subtraction). Share the strategies with the whole class.

16. Which is larger?

Have a range of cards with percentages, common fractions and decimals on them. Shuffle the pack. Deal out 2. The recipient has to say which is the larger, and how they worked this out. Let other students explain their methods and strategies.
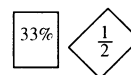
16.5 Fraction dominoes is a useful variation on the above. Try to provide simple realistic contexts for the fractional numbers as the students give reasons for placing equivalent numerals next to each other.