

# Estimating Multiplication

Developed with Judith Evans from Rosebery School in Loughborough. This grew out of a concern that children were learning methods of dealing with big number multiplication, but were not really understanding how the numbers worked, and if they made a mistake with the calculation did not notice that they had come up with a 'right' answer that could be several noughts incorrect. We wanted children to cooperate in making healthy guesses, and while doing so, talk some maths and consolidate their understanding of place value. There are two versions here: the first one where the gaps for guessing are smaller and the multiplications a bit longer than the second one. We have tried this out with Year 6 and children stayed on task and talked maths as they shared strategies and refined them. At the last revision we have put the gameboard on a single sheet since most colleagues now can enlarge it up to A3. We have also produced coloured versions of the cards which can be directly printed on paper from the computer and then laminated. We are working on a Powerpoint version of the activity and will post the link here when it is ready.

The webaddress for this activity is:

<http://www.collaborativelearning.org/estimatingmultiplication.pdf>

## Activity last updated 26th November 2008

COLLABORATIVE LEARNING PROJECT

Project Director: Stuart Scott

Supporting a cooperative network of teaching professionals throughout the European Union to develop and disseminate accessible teaching materials in all subject areas and for all ages.

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### BRIEF SUMMARY OF BASIC PRINCIPLES BEHIND OUR TEACHING ACTIVITIES:

The project is a teacher network, and a non-profit making educational trust. Our main aim is to develop and disseminate classroom tested examples of effective group strategies across all phases and subjects. We hope they will inspire you to use similar strategies in other topics and curriculum areas. We run teacher workshops, swapshops and conferences throughout the European Union. The project publishes a catalogue of activities plus lists in selected subject areas, and a newsletter available by post or internet: "PAPERCLIP".

\*These activities were influenced by current thinking about the role of language in learning. They are designed to help children learn through talk and active learning in small groups. They work best in mixed classes where children in need of language or learning support are integrated. They are well suited for the development of speaking and listening. They provide teachers opportunities for assessment of speaking and listening and other formative assessment.

\*They support differentiation by placing a high value on what children can offer to each other on a particular topic, and also give children the chance to respect each other's views and formulate shared opinions which they can disseminate to peers. By helping them to take ideas and abstract concepts, discuss, paraphrase and move them about physically, they help to develop thinking skills.

\*They give children the opportunity to participate in their own words and language in their own time without pressure. Many activities can be tried out in mother tongue and afterwards in English. A growing number of activities are available in more than one language, not translated, but mixed, so that you may need more than one language to complete the activity.

\*They encourage study skills in context, and should therefore be used with a range of appropriate information books which are preferably within reach in the classroom.

\*They are generally adaptable over a wide age range because children can bring their own knowledge to an activity and refer to books at an appropriate level. The activities work like catalysts.

\*All project activities were planned and developed by teachers working together, and the main reason they are disseminated is to encourage teachers to work effectively with each other inside and outside the classroom. They have made it possible for mainstream and language and learning support teachers to share an equal role in curriculum delivery. They should be adapted to local conditions. In order to help us keep pace with curriculum changes, please send any new or revised activities back to the project, so that we can add them to our lists of materials.

# Estimating Connect Four Game Board 1

<500	500 - 1000	250 - 350	<500	<1000	300 - 500
200 - 400	<1000	400 - 600	500 - 1000	700 - 1000	400 - 600
<1000	800 -1200	300 - 500	800 - 1200	<1000	>500
400 - 600	200 - 400	800 - 1200	<1000	250 - 350	<500

Estimating Connect Four Cards for Board 1

75 X 28

74 X 19

23 X 18

44 X 17

36 X 27

24 X 14

27 X 12

47 X 16

25 X 15

22 X 9

29 X 18

19 X 16

34 X 30

66 X 9

17 X 30

90 X 11

28 X 32

54 X 19

23 X 18

37 X 11

58 X 15

43 X 13

51 X 12

83 X 22

49 X 11

Estimating Connect Four Cards for Board 1

75 X 28	74 X 19	23 X 18	44 X 17	36 X 27
24 X 14	27 X 12	47 X 16	25 X 15	22 X 9
29 X 18	19 X 16	34 X 30	66 X 9	17 X 30
90 X 11	28 X 32	54 X 19	23 X 18	37 X 11
58 X 15	43 X 13	51 X 12	83 X 22	49 X 11

Estimating Connect Four Cards for Board 1

75 X 28	74 X 19	23 X 18	44 X 17	36 X 27
24 X 14	27 X 12	47 X 16	25 X 15	22 X 9
29 X 18	19 X 16	34 X 30	66 X 9	17 X 30
90 X 11	28 X 32	54 X 19	23 X 18	37 X 11
58 X 15	43 X 13	51 X 12	83 X 22	49 X 11

## HOW TO PLAY ESTIMATING CONNECT FOUR

You need 4 people, one baseboard and two sets of cards (different colours.)

Work with a partner to make a team of two.

Place your cards in a pile facing down.

Take it in turns to turn over your top card and decide where to put it on the board. You don't need the exact answer but need to make a rough guess and be able to explain to others how you decided.

The winning team gets four in row in any direction. Decide whether to have challenges or a checking system.

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## Estimating Connect Four Game Board 2

250 - 500	<500	300 - 400	250 - 500	<500	400 - 600
> 500	100 - 200	200 - 300	100 - 200	> 500	>300
200 - 300	300 -400	> 500	> 300	400 -600	300 - 400
> 500	400 - 600	250 - 500	200 - 300	100 - 200	<500

# Estimating Connect Four Cards for Board 2

$78 \times 5$	$43 \times 9$	$25 \times 31$	$24 \times 16$	$61 \times 9$
$75 \times 6$	$23 \times 19$	$34 \times 19$	$85 \times 4$	$24 \times 13$
$19 \times 18$	$18 \times 52$	$58 \times 5$	$78 \times 3$	$23 \times 11$
$12 \times 15$	$32 \times 18$	$75 \times 3$	$15 \times 18$	$77 \times 6$
$32 \times 11$	$45 \times 8$	$11 \times 13$	$16 \times 17$	$95 \times 8$

# Estimating Connect Four Cards for Board 2

78 X 5

43 X 9

25 X 31

24 X 16

61 X 9

75 X 6

23 X 19

34 X 19

85 X 4

24 X 13

19 X 18

18 X 52

58 X 5

78 X 3

23 X 11

12 X 15

32 X 18

75 X 3

15 X 18

77 X 6

32 X 11

45 X 8

11 X 13

16 X 17

95 X 8