

Estimating Multiplication

Developed with Judith Evans from Rosebery School in Loughborough in 2000. 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 three versions here: the first one where the gaps for guessing are smaller and the multiplications a bit longer than the second one. The third is easier and we are trying it with Y4 up. .

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

< less than

Activity last updated 1st July 2015

> greater than

There is a snappy little song on Youtube to help you remember this. Search Numbergators!

COLLABORATIVE LEARNING PROJECT

Project Director: Stuart Scott

We support a network of teaching professionals to develop and disseminate accessible talk-for-learning activities 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 that promote talk across all phases and subjects. We hope they will inspire you to develop and use similar strategies in other topics and curriculum areas. We want to encourage you to change them and adapt them to your classroom and students. We run teacher workshops, swapshops and conferences throughout the European Union. The project posts online many activities in all subject areas. An online newsletter is also updated regularly.

*These activities are 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 non selective classes where children in need of language or learning support are integrated. They are well suited for the development of oracy. They provide teachers opportunities for assessment of talk.

*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 pupils' first languages 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 more 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.

Board for Estimating Multiplication Connect Four Game 1

$\lt 500$	500 - 1000	250 - 350	$\lt 500$	$\lt 1000$	300 - 500
200 - 400	$\lt 1000$	400 - 600	500 - 1000	700 - 1000	400 - 600
$\lt 1000$	800 - 1200	300 - 500	800 - 1200	$\lt 1000$	$\gt 500$
400 - 600	200 - 400	800 - 1200	$\lt 1000$	250 - 350	$\lt 500$

Estimating Connect Four Cards for Game 1

75×28

74×19

23×18

44×17

36×27

24×14

27×12

47×16

25×15

22×9

29×18

19×16

34×30

66×9

17×30

90×11

28×32

54×19

23×18

37×11

58×15

43×13

51×12

83×22

49×11

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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Board for Estimating Multiplication Connect Four Game 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 Game 2

78×5

43×9

25×31

24×16

61×9

75×6

23×19

34×19

85×4

24×13

19×18

18×52

58×5

78×3

23×11

12×15

32×18

75×3

15×18

77×6

32×11

45×8

11×13

16×17

95×8

Board for Estimating Multiplication Connect Four Game 3

50-150	greater than > 200	150 - 200	300 - 500	less than < 500	0 - 99
> 50	150 - 250	200 - 300	100 - 200	< 100	> 300
50-200	300-400	> 50	> 200	200 -400	< 200
< 100	100-300	50-150	200 - 300	100 - 200	< 500

Estimating Connect Four Cards for Game 3

15×5	12×9	20×6	7×11	61×2
75×3	23×3	34×10	85×2	24×11
3×18	18×10	55×5	78×3	12×12
10×15	6×22	70×4	4×17	31×6
32×10	45×2	12×13	15×15	95×8