

Additional Maths Challenges (Optional)

Monday

Dotty Six for Two

Age 5 to 11

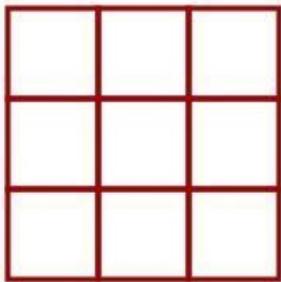
Here's a game to play with an adult!



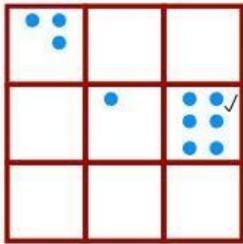
How do you play?

You'll need an adult to play with.

You'll also need a 1 to 6 dice (you could use our [interactive dice](#)), and a grid like the one below. You can print some off [here](#).



Take turns with the adult to throw the dice and draw that number of dots in one of the boxes on the grid. Put *all* of your dots in one of the boxes. You can't split them up and you can't have more than six dots in a box. When a box is full, you could put a tick in the corner like this:



Keep going until there are three ticks in a row or column or diagonal. The winner is the person who puts the last tick.

Now, can you change the game to make your own version?

How do you know where to put your dots?

There is a poster of the game [here](#).

Notes for adults

The game as introduced is intended for KS1 children who are just beginning to become confident with small numbers. However there are many variations, some suggested below, that make it suitable for older children. Consolidation of basic number facts is combined with an element of strategic thinking.

Easier version: small children could use counters on a [large grid](#). They could begin with six counters in each box and take away the number thrown on the dice.

Harder version: try using a different total, different dice, or a bigger grid. You could make the winner the first to complete a *whole row* that adds to a certain total (e.g. 20), change the shape of the grid (triangles rather than squares perhaps), or use a different sort of number - fractions, decimals, percentages...

Tuesday

Dicey Operations in Line for Two

Age 7 to 11

Here's a game to play with an adult!



How do you play?

You'll need an adult to play with.

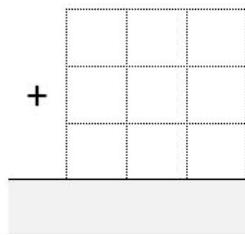
You'll need a scoring sheet, which could either be some squared paper or [this sheet](#).

You'll also need a 1 to 6 dice, or even a 0 to 9 dice if you have one. You could use a spinner instead of a dice. (You could use our [interactive dice/spinner](#).)

Take turns to throw the dice and decide which of your cells to fill. This can be done in two ways: either fill in each cell as you throw the dice or collect all your numbers and then decide where to place them.

Game 1

Each of you draw an addition grid like this:



Throw the dice nine times each until all the cells are full.

Whoever has the sum closest to 1000 wins.

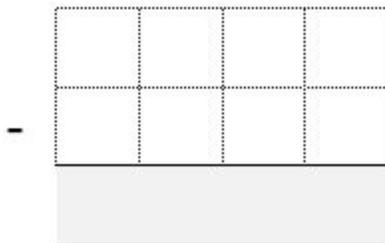
There are two possible scoring systems:

- A point for a win. The first person to reach 10 wins the game.
- Each player works out the difference between their result and 1000 after each round. They keep their running total. First to 5000 loses.

You can vary the target to make it easier or more difficult.

Game 2

Each of you draw a subtraction grid like this:



Throw the dice eight times each until all the cells are full.

Whoever has the difference closest to 1000 wins.

There are two possible scoring systems:

- A point for a win. The first person to reach 10 wins the game.
- Each player works out the difference between their result and 1000 after each round. They keep their running total. First to 5000 loses.

You can vary the target to make it easier or more difficult, perhaps including negative numbers as your target.

Wednesday

Four Go for Two

Age 7 to 11

Here's a game to play with an adult!



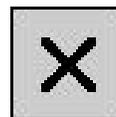
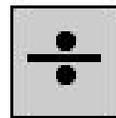
How do you play?

You'll need an adult to play with.

You'll also need a number line from 1-20, like the one above. You can print some off [here](#).

The adult chooses two numbers in this grid and either multiplies or divides them.

100	25	5
10	2	36
12	4	3



They then mark the answer to the calculation on the number line. You then choose two numbers and either \times or \div , and mark that number in a different colour on the number line.

If the answer is too big or too small to be marked on the number line, the player misses a go. The winner is the person to get four marks in a row with none of their opponent's marks in between.

What good ways do you have of winning the game?

Does it matter if you go first or second?

How are you deciding which number to aim for next?

Can you find a winning strategy?

Notes for adults

This game gives children the opportunity to estimate answers to calculations in a motivating context and gives plenty of practice in multiplication and division. Playing strategically involves higher-order thinking and the need to think ahead.

Easier version: you could use a calculator, and/or adapt the grid and numberline.

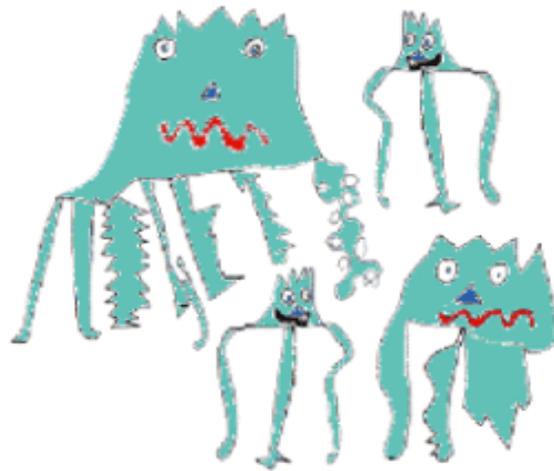
Harder version: children can be encouraged to tweak the game and to try out their new version. For example, they might change the number line, the grid of numbers, the operations, the number of numbers needed to win...

Thursday

Zios and Zepts

Age 7 to 11

On the planet Vuv there are two sorts of creatures. The Zios have 3 legs and the Zepts have 7 legs.



The great planetary explorer Nico, who first discovered the planet, saw a crowd of Zios and Zepts. He managed to see that there was more than one of each kind of creature before they saw him. Suddenly they all rolled over onto their backs and put their legs in the air.

He counted

52

legs. How many Zios and how many Zepts were there?

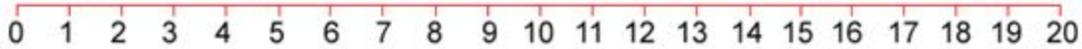
Do you think there are any different answers?

Friday

Strike it Out for Two

Age 5 to 11

Here's a game to play with an adult!



How do you play?

You'll need an adult to play with.

You'll also need a number line from 0 to 20, like the one above. You can find some of these [here](#).

The adult chooses a number on the line and crosses it out.

They then choose a second number and cross that out too.

Finally, the adult circles the sum or difference of the two numbers and writes down the calculation.

For example, the adult's go could look like this:



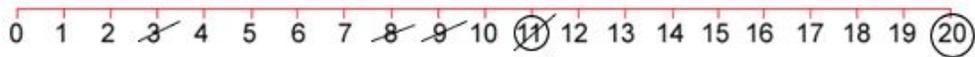
$$3 + 8 = 11$$

You must start by crossing off the number that the adult has just circled.

You then choose another number to cross out, and then circle a third number which is the sum or difference of the two crossed-off numbers.

You also writes down their calculation.

For example, once you have had a turn, the game could look like this:

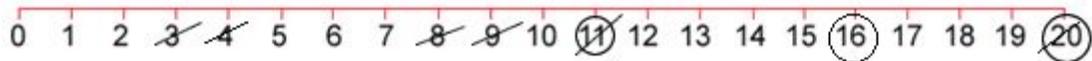


$$3 + 8 = 11$$

$$11 + 9 = 20$$

Play continues in this way with each player starting with the number that has just been circled.

For example, the adult could then have a turn which left the game looking like this:



$$3 + 8 = 11$$

$$11 + 9 = 20$$

$$20 - 4 = 16$$

The winner of the game is the player who stops their opponent from being able to go.

What is your strategy for winning?

Can you cross out all the numbers in one game? How do you know?

What is the biggest number of numbers you can cross out?

Notes for adults

Strike it Out offers an engaging context in which to practise addition and subtraction, but it also requires some strategic thinking. It is easily adaptable and can be used co-operatively or competitively.

Easier version try starting with a number line from 0 to 10 instead.

Harder version: try using multiplication and division as well as addition and subtraction. Children could suggest different number lines that they could use: maybe longer number lines, or ones involving decimal or negative numbers.