Race to 200

Children apply knowledge of factors within the 2, 3, 4, 5, 9 and 10x tables.

Skills practised:

- Recognising or deriving multiples of 2, 3, 4, 5, 9 and 10
- Choosing methods for mental addition

Conjecture: *Larger numbers have greater 'factor sums'.*

What to do:

Children work in pairs or threes.

1. The first player chooses and crosses off one of the green numbers from the game board:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60

e.g. **18**...
Now, write down all the numbers that 18 is a multiple of: 1, 18, 2, 9, 3, 6.
Finally, add together all of those numbers to create a 'factor sum':

1 + 18 + 2 + 9 + 3 + 6 = **39**

39 is player 1's score for that round. The winner is the first player to reach a total of 200!
If both/all three players reach 200 in the same round, the winner is the player closest to 200, so be careful which number you pick as the game nears its end.
How might you keep track of people's scores?

2. Will the biggest number always have the highest 'factor sum'?

CHALLENGE: Write something you notice about the grey numbers. Do you think it would be helpful to have these numbers in the game? Explain your ideas.

HINT: If you find a number with a high 'factor sum', double that number will also have the same list of factors.

Aims:

– To use the link between multiplication and division
– To choose strategies for efficient mental addition

Minimum number of calculations expected

20

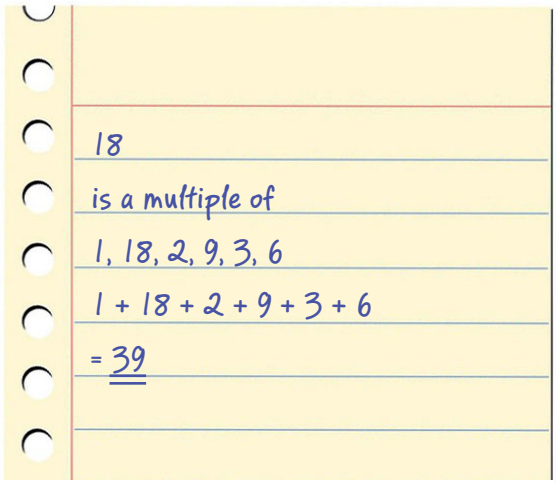
Race to 200

1. Player 1 chooses and crosses off one of the green numbers from the game board:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60

Write down all the numbers that your number is a multiple of.
Finally, add together all of those numbers to create a 'factor sum'.

This number is player 1's score for that round.



2. Player 2 takes a turn.
The winner is the first player to reach a total of 200!
If both/all three players reach 200 in the same round, the winner is the player closest to 200, so be careful which number you pick as the game nears its end.

How might you keep track of people's scores?

3. Will the biggest number always have the highest 'factor sum'?

Challenge

Write something you notice about the grey numbers. Do you think it would be helpful to have these numbers in the game? Explain your ideas.