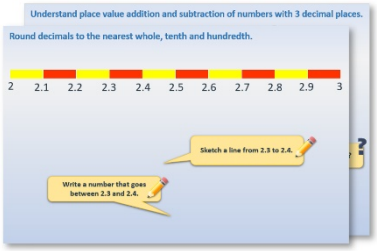
Week 9, Day 4

Use factors to multiply

Each day covers one maths topic. It should take you about 1 hour or just a little more.

1. Start by reading through the **Learning Reminders**. They come from our *PowerPoint* slides.



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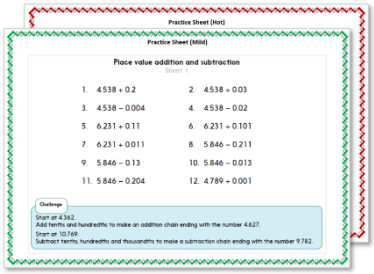
2. Tackle the questions on the **Practice Sheet**. There might be a choice of either Mild (easier) or Hot (harder)! Check the answers.



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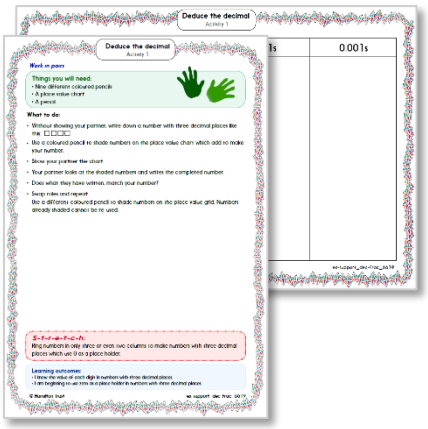
3. Finding it tricky? That's OK… have a go with a grown-up at **A Bit Stuck?**



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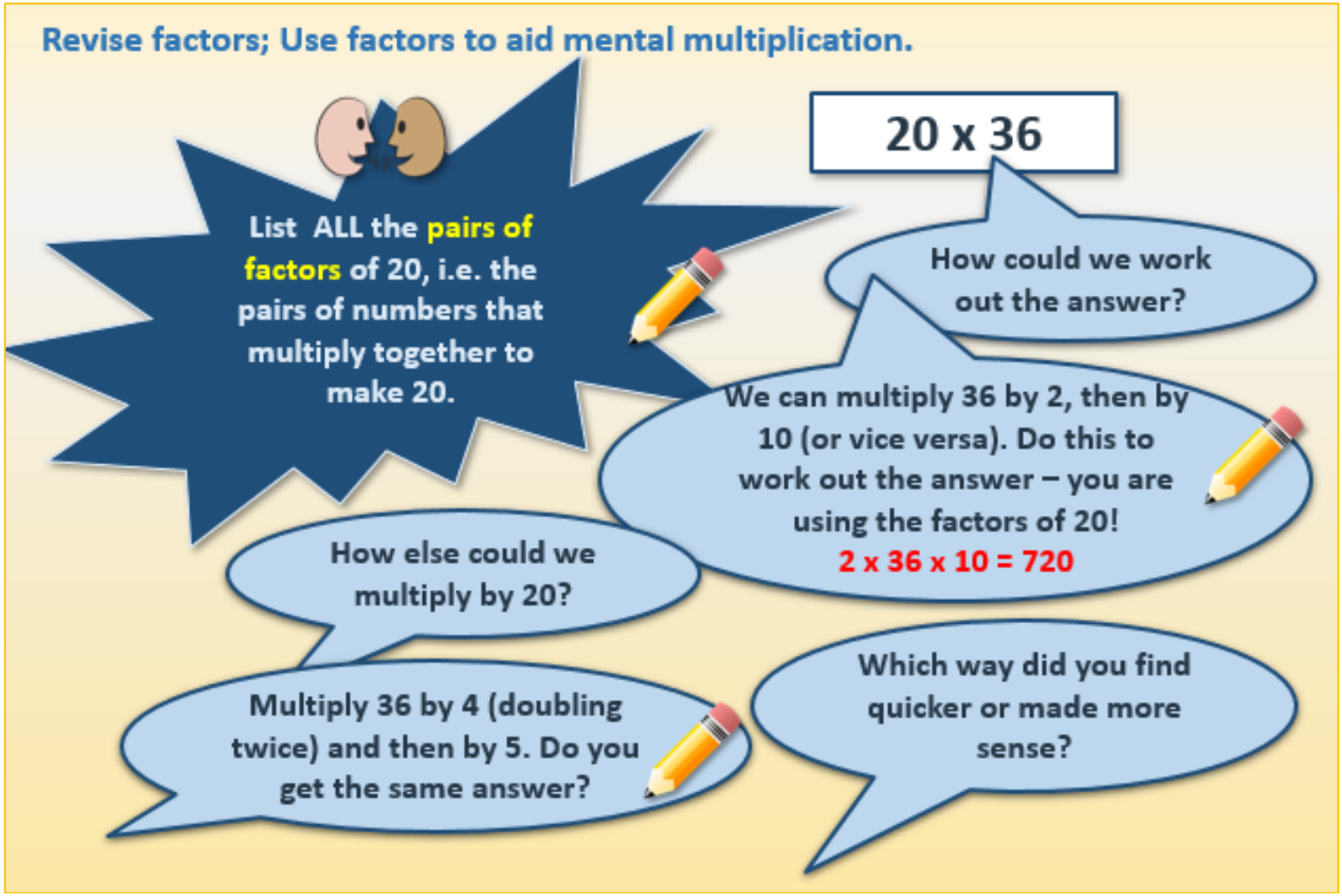
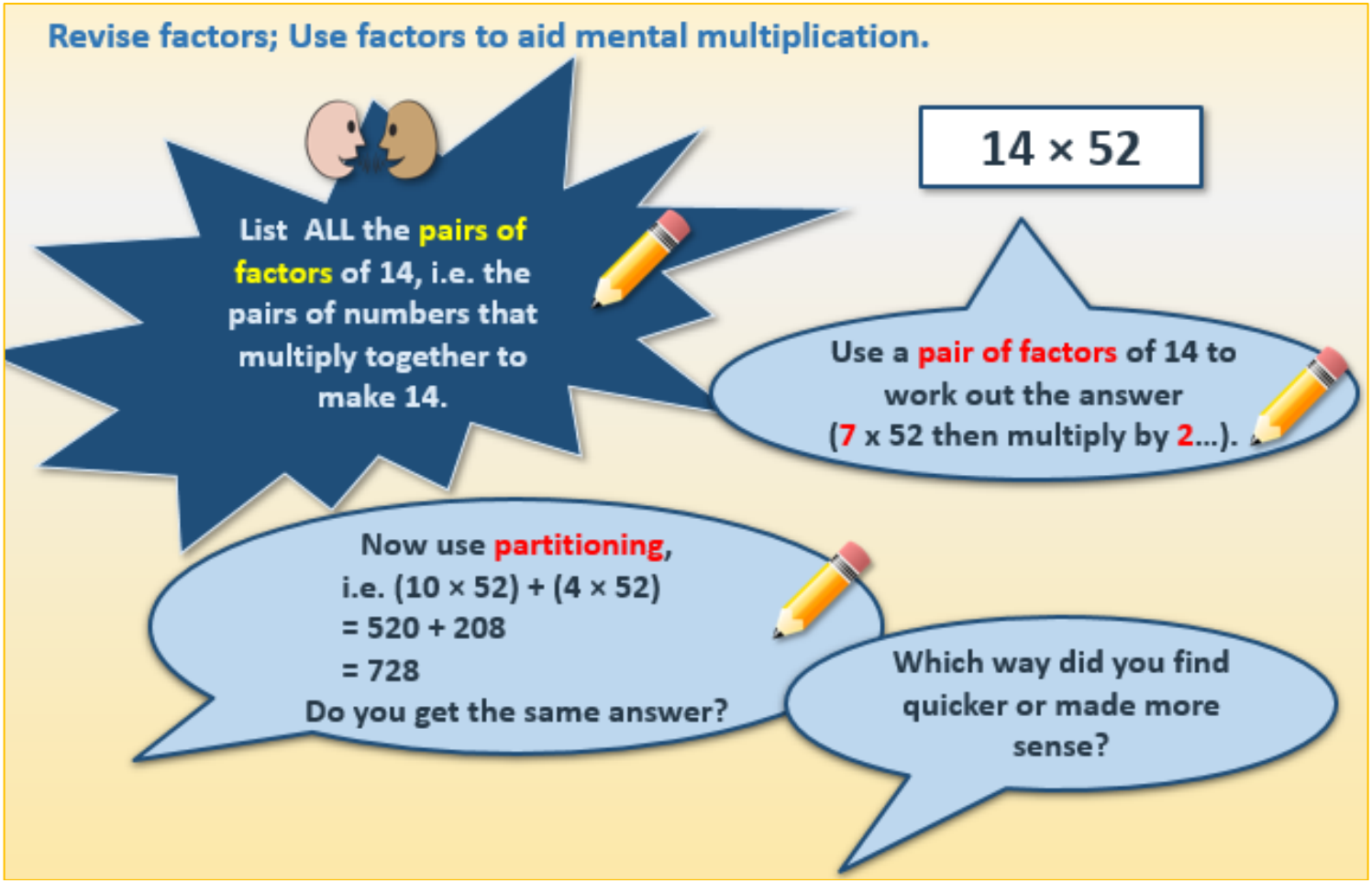
4. Think you've cracked it? Whizzed through the Practice Sheets? Have a go at the **Investigation**…

Learning Reminders



Learning Reminders



Practice Sheet for All
Using factors

1. Write all the pairs of factors of 12.
   Choose a pair to help you to work out 12 × 31.

2. Write all the pairs of factors of 16.
   Choose a pair to help you to work out 16 × 25.

3. Write all the pairs of factors of 30.
   Choose a pair to help you to work out 30 × 42.

4. Write all the pairs of factors of 18.
   Choose a pair to help you to work out 18 × 31.

5. Use factor pairs to quickly find 6 x 123.

HOT! Now have a go at these two challenges...!

Challenge 1

Choose 3 of the questions and for each one show how you can use a second pair of factors to find and check the answer.

Challenge 2

1. Kristina says '1005 must be a multiple of 15 because it is a multiple of 5 and a multiple of 3.' Do you agree?
2. If you do decide that 1005 is a multiple of 15, use factor pairs and inverse operations to say how many 15s it is.

Practice Sheets Answers

Using factors

1. 1 and 12, 2 and 6, 3 and 4
   12 x 31
   3 x 31 = 93, 4 x 93 = 372

2. 1 and 16, 2 and 8, 4 and 4
   16 x 25
   4 x 25 = 100, 100 x 4 = 400

3. 1 and 30, 2 and 15, 3 and 10, 5 and 6
   30 x 42
   3 x 42 = 126, 126 x 10 = 1260

4. 1 and 18, 2 and 9, 3 and 6
   18 x 31
   6 x 31 = 186, 186 x 3 = 558
   or 31 x 3 x 3 x 2 = 93 x 3 x 2 = 279 x 2 = 558

5. 123 x 6 = 123 x 3 x 2
   = 369 x 2 = (370 x 2) - 2
   = 740 - 2 = 738

Challenges (hot)

Challenge 1

1. 12 x 31 — 2 x 31 = 62, 6 x 62 = 372
2. 16 x 25 — 2 x 25 = 50, 8 x 50 = 400
3. 30 x 42 — 2 x 42 = 84, 15 x 84 = 1260
4. 18 x 31 — 2 x 31 = 62, 9 x 62 = 558
5. There isn't a second pair of factors which would help to find and check this answer.

Challenge 2

1. Yes, multiples of 3 which are also multiples of 5 are all multiples of 15, e.g. 15, 30, 45, but not 12, 18 (multiples of 3) or 10, 25 (multiples of 5).

2. 1005 ÷ 15 is the same as 1005 ÷ 5 ÷ 3.
   1005 ÷ 5 = 201; 201 ÷ 3 = 67, so, 1005 ÷ 15 = 67

A Bit Stuck?
Array or disarray

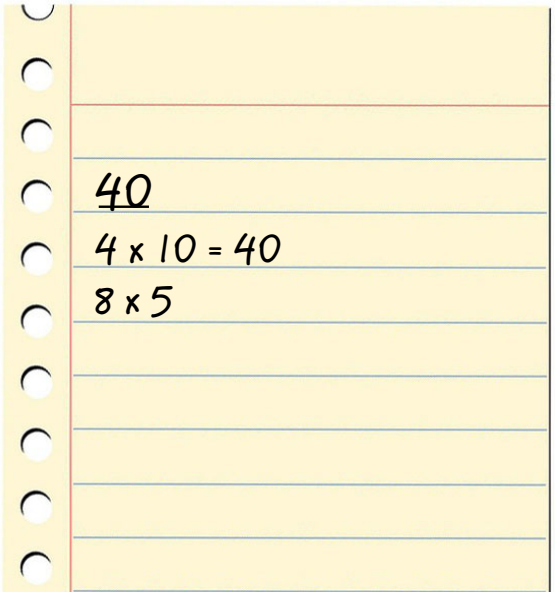
Work in pairs

Things you will need:
- 50 counters
- A pencil

What to do:

16, 40, 12, 15, 25, 41, 48, 36, 50

- Choose a number.
  Take this number of counters.
  Arrange the counters into an array (rectangle).
  Write the matching multiplication.
- Now rearrange them into as many different arrays as you can.
  Write the matching multiplication each time.
- Score one point for each multiplication you write.
- Choose another number and do the same.
  Try to score as many points as you can.
- Carry on choosing different numbers and making as many arrays as you can.
  Write the matching multiplication each time.
- Which numbers do you think will score lots of points?
  Which number do you think won't score many points?



S-t-r-e-t-c-h:

Find the number between 40 and 50 with the greatest number of factors, i.e. the greatest number of possible arrays.

Learning outcomes:
- I can make different arrays for a given number and write the matching multiplications.
- I understand that multiplication works both ways, e.g. 4 x 6 = 6 x 4.
- I am beginning to identify pairs of factors.

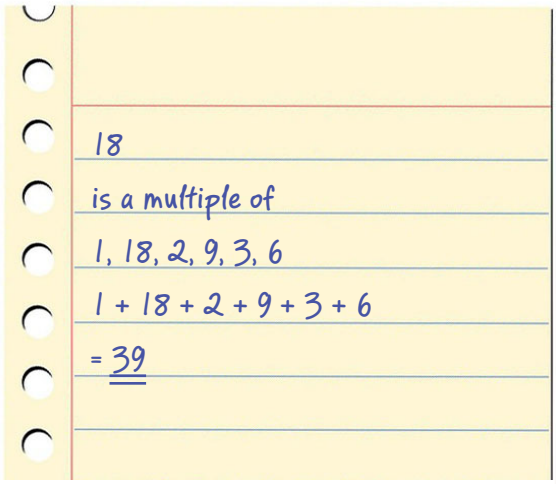
Investigation
Race to 200

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.