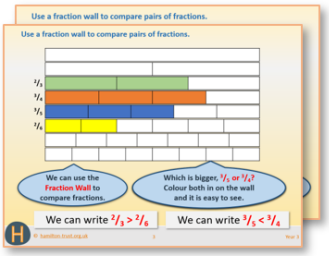
Week 8, Day 4

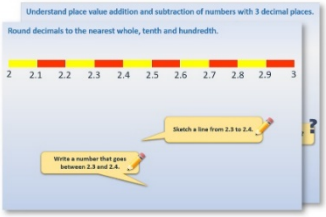
Count on and back in steps through zero

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

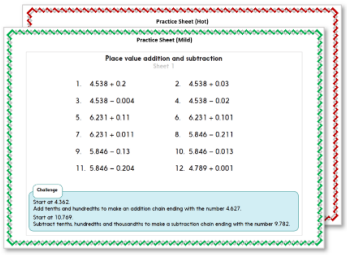
1. If possible, watch the **PowerPoint presentation** with a teacher or another grown-up.



   OR start by carefully reading through the **Learning Reminders**.



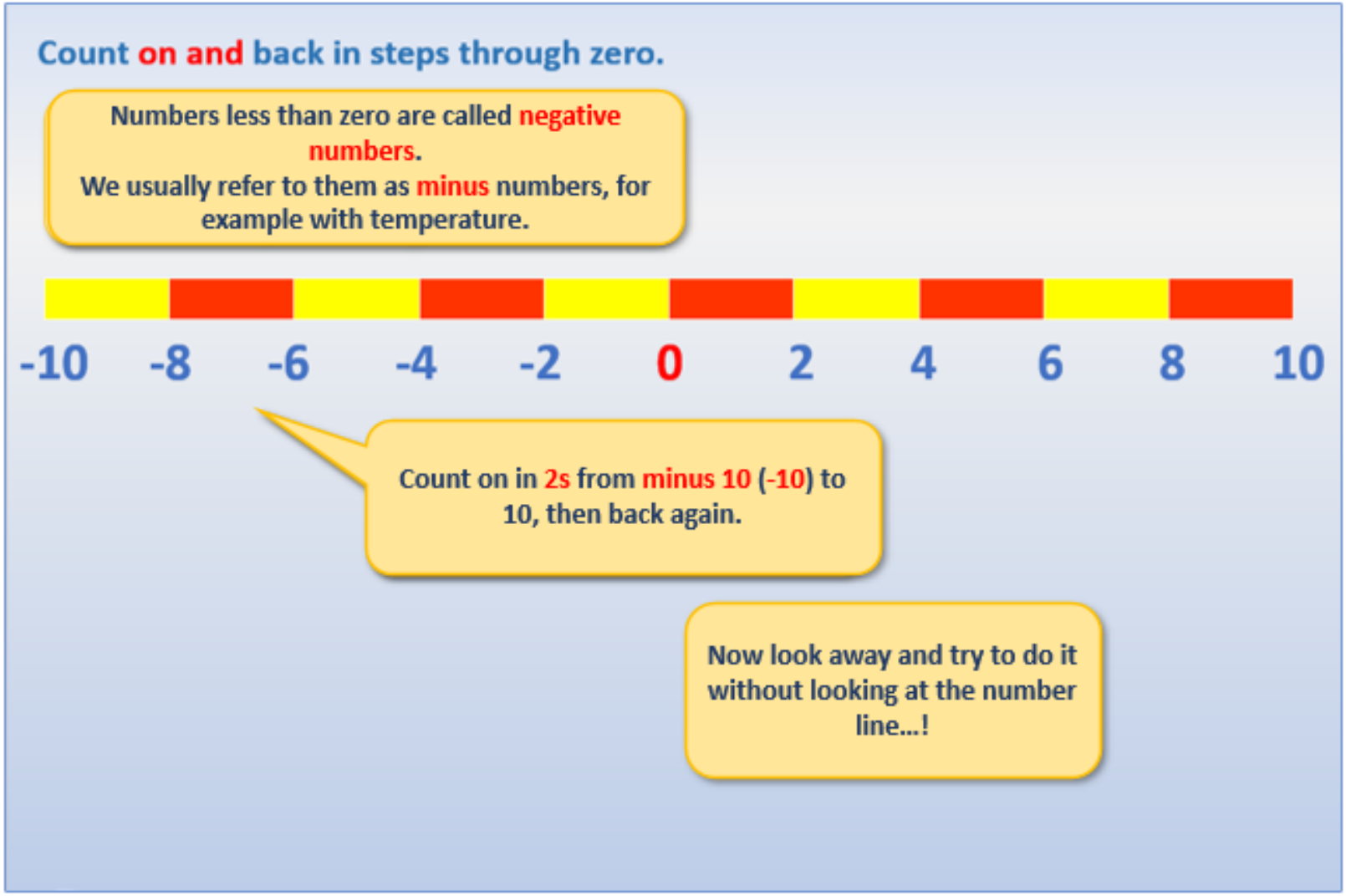
2. Tackle the questions on the **Practice Sheet**.
   There might be a choice of either Mild (easier) or Hot (harder)!
   Check the answers.



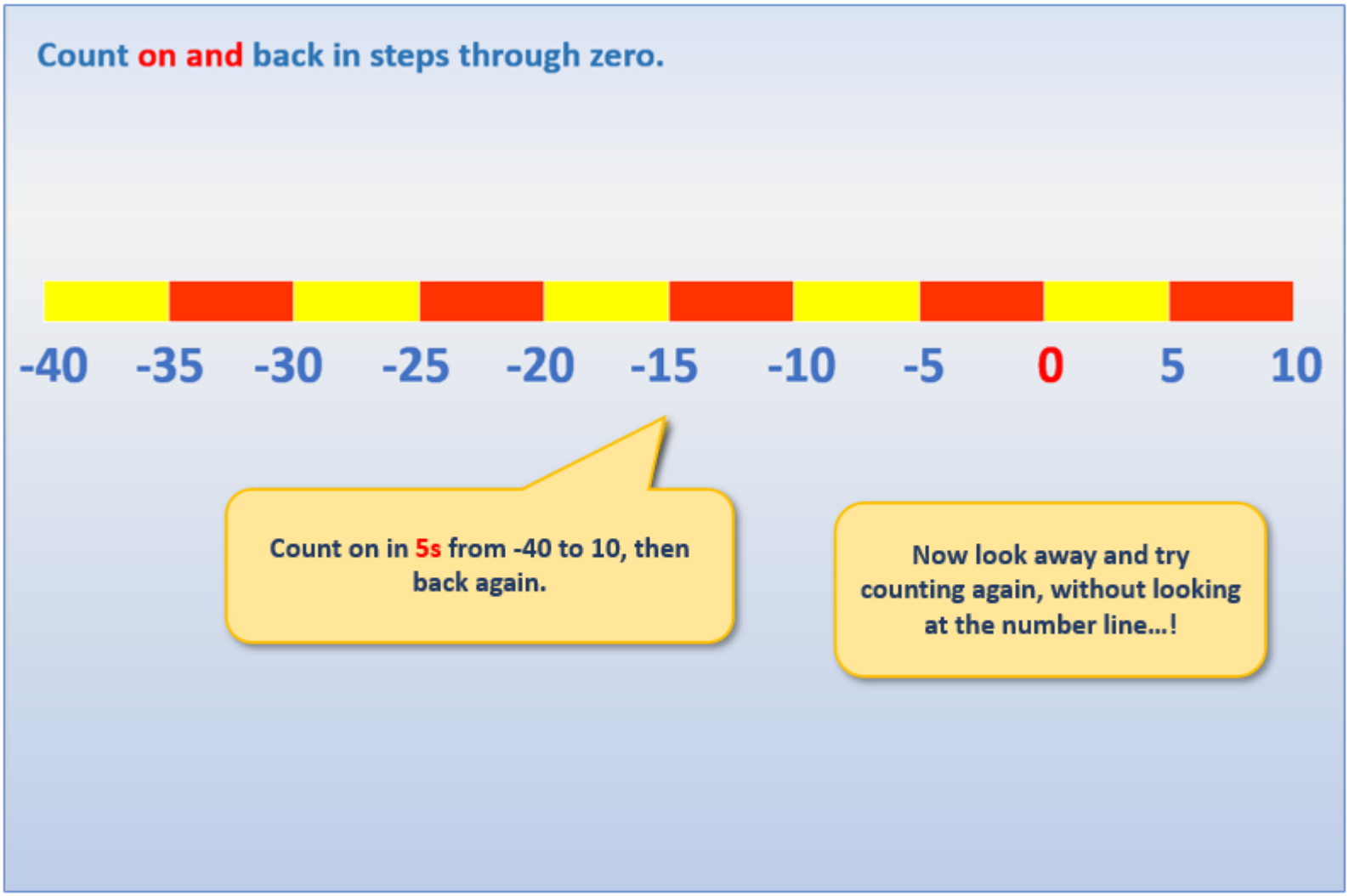
3. Finding it tricky? That's OK… have a go with a grown-up at **A Bit Stuck?**

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

Learning Reminders



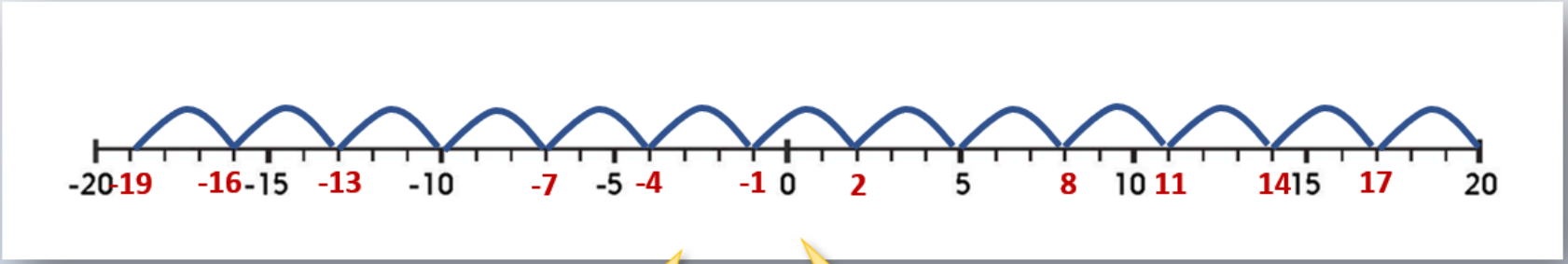
Learning Reminders



Learning Reminders

Count on and back in steps through zero.

Check how we count back from 20 in 3s.



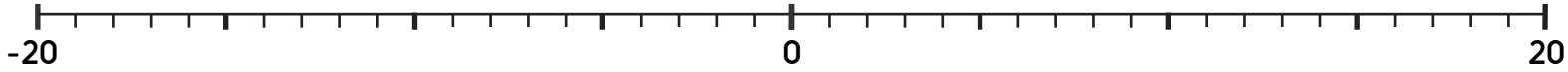
We need to take particular care when counting back and crossing zero.

2 - 3 = -1.
Count back 2 to 0 then 1 more to -1.

Practice Sheet Mild

Count in steps through zero

Complete the -20 to 20 number line then use it to answer the questions below



Write the next three numbers in each sequence.

1. 20, 15, 10, 5, 0, ___, ___, ___

2. 12, 9, 6, 3, 0, ___, ___, ___

3. 16, 12, 8, 4, 0, ___, ___, ___

4. 7, 5, 3, 1, -1, ___, ___, ___

5. 17, 12, 7, 2, -3, ___, ___, ___

6. 8, 5, 2, -1, -4, ___, ___, ___

Practice Sheet Hot

Count in steps through zero

Write the next three numbers in each sequence.

1. 20, 15, 10, 5, 0, ___, ___, ___

2. 12, 9, 6, 3, 0, ___, ___, ___

3. 16, 12, 8, 4, 0, ___, ___, ___

4. 7, 5, 3, 1, -1, ___, ___, ___

5. 17, 12, 7, 2, -3, ___, ___, ___

6. 8, 5, 2, -1, -4, ___, ___, ___

7. -15, -12, ___, -6, ___, ___, ___, ___

Challenge

1a. A sequence begins 13, 18, 23, 28,... Ollie says 'This sequence counts on in 5s, so 65 will be in the sequence.' Do you agree with him?

b. A sequence begins 9, 5, 1, -3,... Will -36 be in the sequence?

2. A mini-sub starts off at sea level. It descends 2 metres every 5 seconds. What depth will it be after one minute?

3. The temperature is 3°C at 4pm. As it gets dark the temperature falls by 2 degrees every hour. What temperature is it at midnight?

Practice Sheets Answers

Count in steps through zero (mild)

1. 20, 15, 10, 5, 0, -5, -10, -15
2. 12, 9, 6, 3, 0, -3, -6, -9
3. 16, 12, 8, 4, 0, -4, -8, -12
4. 7, 5, 3, 1, -1, -3, -5, -7
5. 17, 12, 7, 2, -3, -8, -13, -18
6. 8, 5, 2, -1, -4, -7, -10, -13

Count in steps through zero (hot)

1. 20, 15, 10, 5, 0, -5, -10, -15
2. 12, 9, 6, 3, 0, -3, -6, -9
3. 16, 12, 8, 4, 0, -4, -8, -12
4. 7, 5, 3, 1, -1, -3, -5, -7
5. 17, 12, 7, 2, -3, -8, -13, -18
6. 8, 5, 2, -1, -4, -7, -10, -13
7. -15, -12, -9, -6, -3, 0, 3, 6

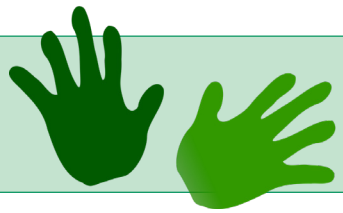
Challenge

1. a. 65 will not be in the sequence. The closest numbers will be 63 and 68, having counted in 5s from 28.
   b. -36 will not be in the sequence, as all of the numbers are odd.
2. -24 metres
3. -13 °C

A Bit Stuck?
Out at sea

Work in pairs

Things you will need:
- A sea picture



What to do:

- Choose a fish or bird from the picture without telling your partner.
- Write the height above or below sea level, e.g. 3m or -4m.
- Your partner points to the fish or bird they think you chose.
- Is your partner right? If so, you both earn a point.
- Swap roles and repeat.
- Can you reach 8 points?

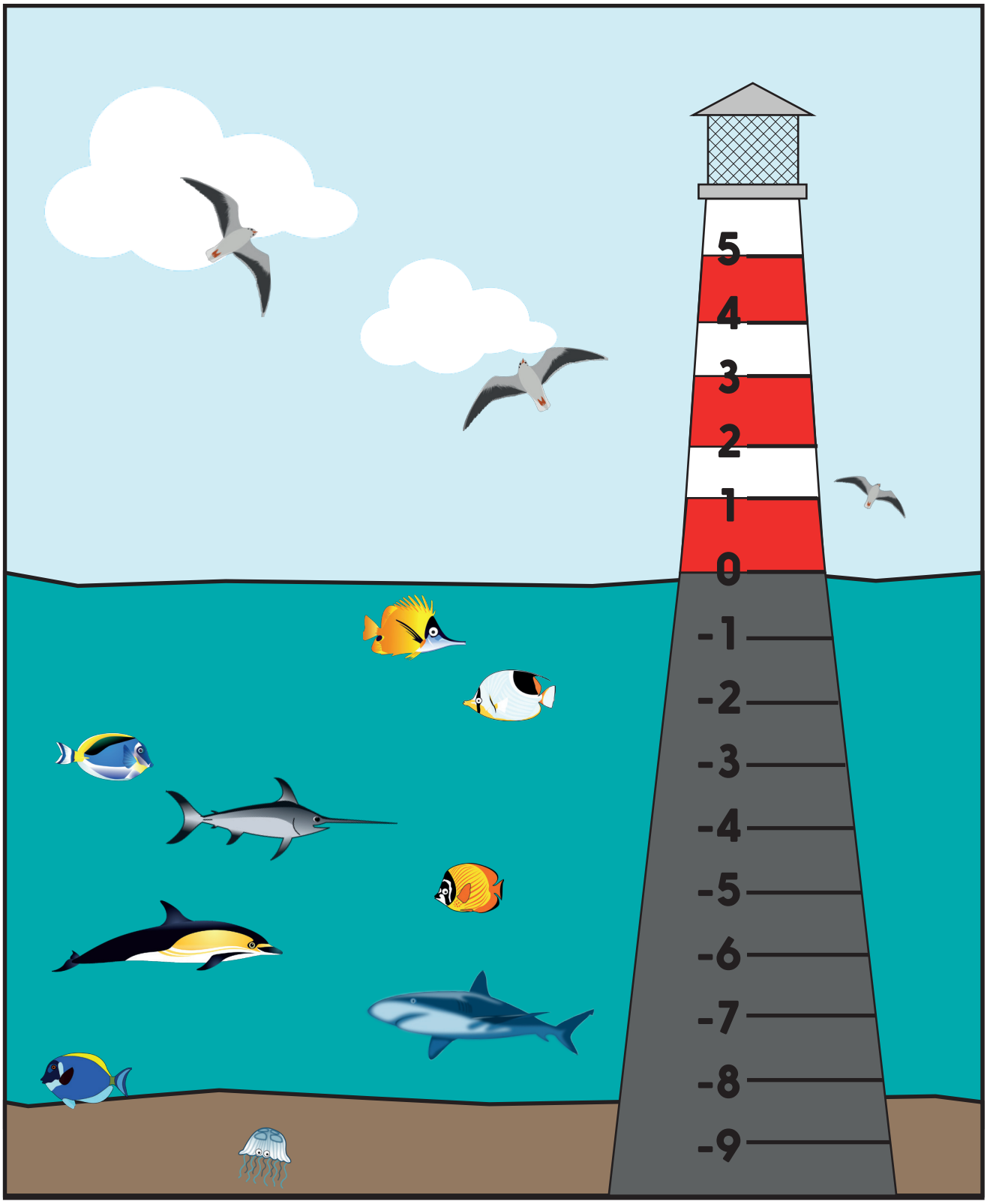
S-t-r-e-t-c-h:

Write the missing numbers in this number sequence.

-10 -9 ☐ -7 -6 ☐ -4 -3 -2 -1 ☐ 1 ☐ 3

Learning outcomes:
- I understand positive and negative numbers.
- I am beginning to count on and back through zero.

A Bit Stuck?
Out at sea



Investigation
Subtracting into negatives

For each number pair, find at least one number (other than 1) which, when repeatedly subtracted from the first number in the pair, will reach the second number.

For example

The pair is 17 and −3

We can count back in steps of 5

17 12 7 2 −3

or in steps of 4

17 13 9 5 1 −3

or in steps of 10

17 7 −3

- Try these pairs:

20 → −50	4 → −11
4 → −8	7 → −17
7 → −13	8 → −25

- Choose your own number pairs to investigate.
  Have you spotted any interesting patterns or relationships?
  Try to describe and explain them...

Challenge

- Try 4.5 → −9. You will need to subtract decimal numbers.
- Try subtracting numbers with one decimal place, e.g. 2.5 or 3.5, for at least three of the above sequences.