B Count On and Back Across 0

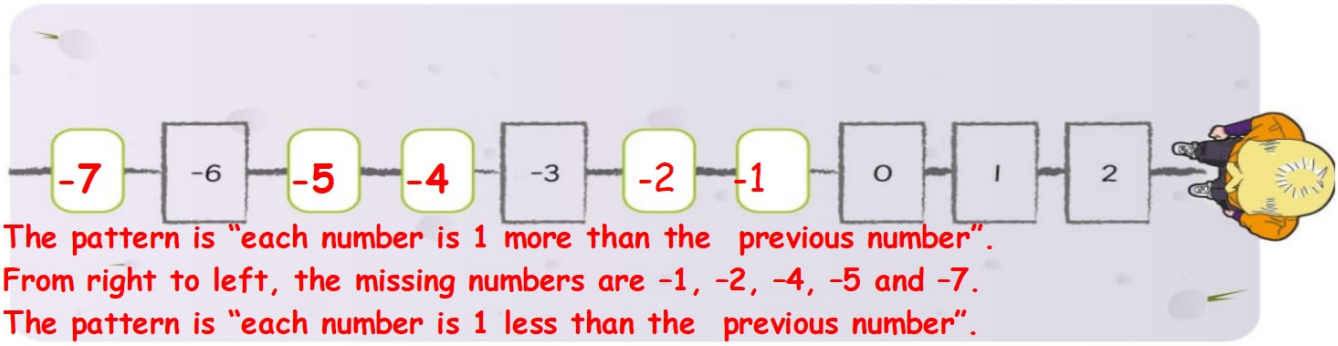
Student's Book p.27

What You Will Learn:

- Count on in ones, tens and hundreds across 0.
- Count back in ones, tens and hundreds across 0.

Look Back

Ralph has drawn a number line on the floor. He has left out some numbers.



The pattern is "each number is 1 more than the previous number".
From right to left, the missing numbers are –1, –2, –4, –5 and –7.
The pattern is "each number is 1 less than the previous number".

What are the missing numbers? Explain to your partner how you know.
What patterns do you see in the numbers?

Thinking Cap

Student's Book p.27

counts back

If Ralph starts on 2 and hops back in 1s or 5s, which numbers will he land on? Which is a faster way?

If Ralph counts back from 2 in 1s to negative 10, which numbers would he say?

1, 0, -1, -2, -3, -4, -5, -6, -7, -8, -9, -10.

Which numbers would Ralph land on if he counted back in 5s?

2, -3 ,-8, -13, -18, -23, -28.

Which is the most effective way?

For example, 1, 0, -1, -2, -3, -4, -5, -6, -7, -8 etc. in ones, and -3, -8, -13, -18, -23 in fives if he continued.

It is quicker to make jumps of 5s than jumps of 1.

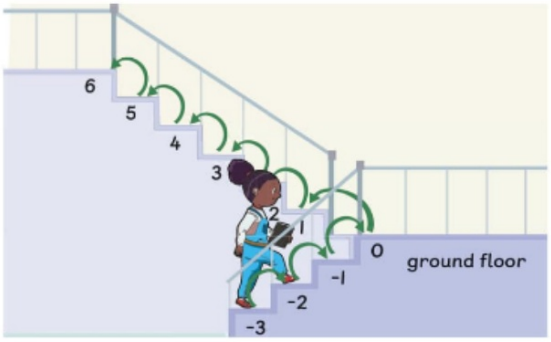
- Which patterns did you notice when counting back?

pattern of repeated 3s and 8s in the negative ones digits for counting in 5s.

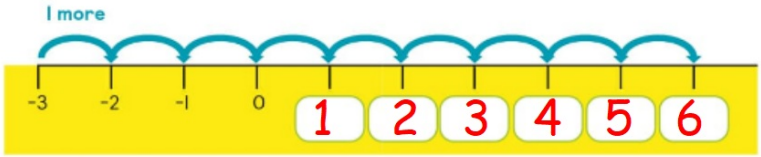
Let's Learn

Student's Book p.28

a Izzy climbs the steps to her home. She is 3 steps away from the ground floor. She starts on −3 and counts on 9 steps. Which step will she end at?



Count on 9 from –3: 1 more than –3 is –2.
1 more than –2 is –1, and so on.



She will end at 6.

What do you notice when you count on another 10? Explain to a partner using a diagram.

she will stop at step 16

What if you added on in 10s from here? What would the pattern be?

16, 26, 36, 46 would give a pattern that is the same as counting on in ten from 6 .

If you start on negative 15 and count on 10, where will you be? How do you know?

Negative 5 because -15 count on 10 is -5.

If you counted on ten to get negative 5, what would you get with 9 more tens

Can you use the pattern from earlier?

5, 15, 25, 35, 45, 55, 65, 75, 85.

If you counted on 100 to negative 15 and got 85, what would you get by counting on 400 more?

485

What do you notice about the digits when you count on in hundreds? Why do the tens and hundreds stay the same after crossing zero?

The ones change as it crosses zero but then the pattern follows to above zero, the tens and ones do not change but only the hundreds are changing.

- What is count on 20 from -12?

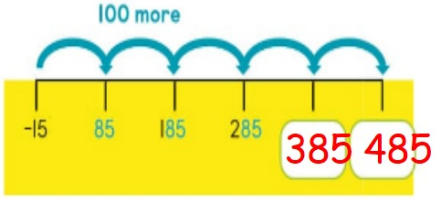
8

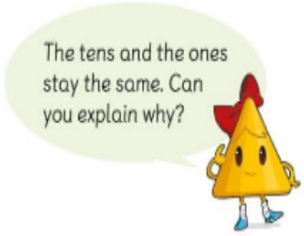
- What is negative 12 count on 300? How do you know?

288, by making jumps on a number line.

Student's Book p.28

b What is 500 more than −15? Count on 5 hundreds.





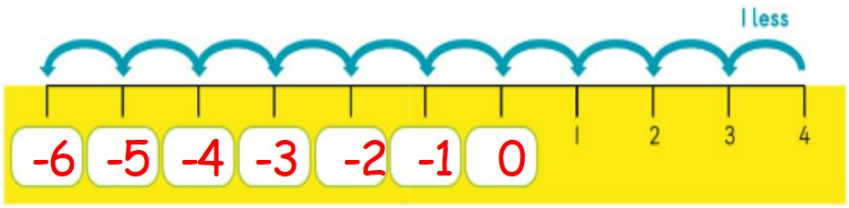
500 more than −15 is 485.

Count on 500 from –15.
100 more than –15 is 85.
From 85, count 400 more.

The tens and ones digits in the numbers 85, 185, 285, 385 and 485 remain the same. This is because each time, 100 is added to the previous number.

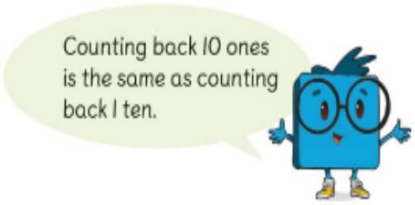
Student's Book p.29

c Ron walks down the same stairs in a. He starts on 4 and counts back 10 ones. He counts back 10 less. Which step will he end at?



Ron is at -6 now.

4 count back 1 ten is -6.



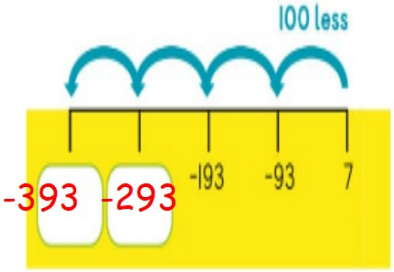
Count back 10 from 4. When Ron reaches 0, he counts back 1 to 0, then to –1, and so on.

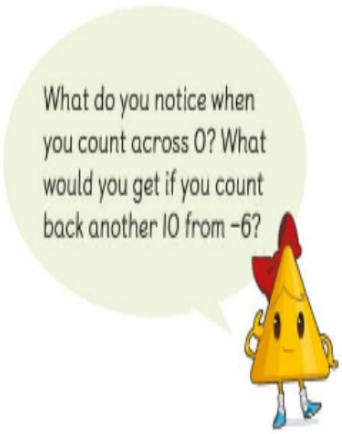
What would you get if you carried on counting back in tens now?

It would have a pattern of -6, -16, -26, -36 etc.

Student's Book p.29

d What is 400 less than 7? Count back 4 hundreds.





400 less than 7 is -393.

Count back 400 from 7.
100 less than 7 is –93.
From –93, count 300 less.

First, count back ten 10s from 7:
–3, –13, –23, –33, –43, –53, –63, –73, –83, –93

The digits “93” remain unchanged.

If you start on positive 7 and count back 10, where will you be? How do you know?

Negative 3 because it is 10 less than 7.

Show negative 3 count back 9 tens.

What will that give you? Do you see a pattern?

-3, -13, -23, -33, -43, -53, -63, -73, -83, -93

What is another 300 less?

Negative 393.

What do you notice about the digits when you count across zero?

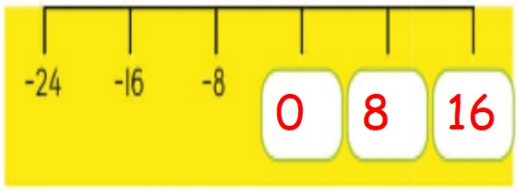
The ones change going across zero but after zero it follows the same pattern as above zero.

What would you get it you count back 10 from -6. *-16*

Student's Book p.29

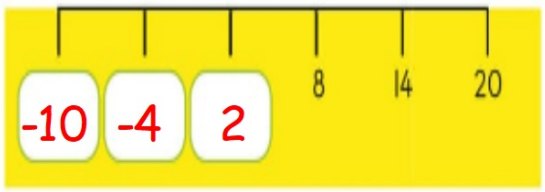
Let's Practise

1 There is 8 more each time.



-24, -16, -8, 0, 8, 16.

2 Count back in 6s.



-10, -4, 2, 8, 14, 20

Student's Book p.30

3 What are the missing numbers?

a −94, −74, −54, −34, -14, 6, 26

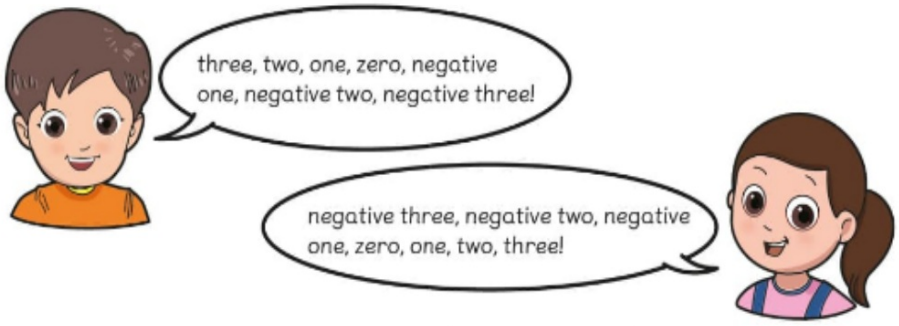
I counted on in 20.

Guess if −104 is in this sequence. How do you know?

b 231, 131, 31, -69, −169, -269

I counted back in 100.

4 Ali counts backward while Bianca counts forward.



Who's way of counting is easier? Why do you think so? How can they know if they counted correctly?

Both ways of counting are correct. Ali counted backwards and Bianca counted forward.

Student's Book p.30

5 a Count back in 4s, starting from 0.

Would your numbers include −38?

b Count back in 4s, starting from −100.

What do you notice about these numbers when you count back? Discuss with a partner.

What if you count back in 4s from −1000 and −10 000? Convince a partner by using a diagram.

Tick (✓) to show what you can do.

- [ ] I can count on in ones, tens and hundreds across 0.
- [ ] I can count back in ones, tens and hundreds across 0.

a) No

0, 4, -8, -12, -16, -20, -24, -28, -30, -32, -36, -40

Activity Book
Worksheet 2B

b) -104 because counting back means less

What is the same and what is different if they counted back from -1000.

For example, the pattern is the same with -1004, -1008, -1012 but this time it starts from -1000.