Calculating Intervals Across Zero

Aim

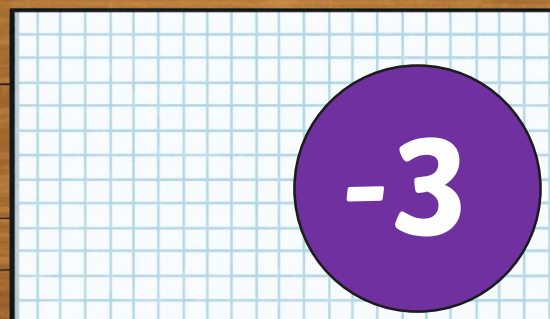
- To calculate intervals across zero.

Success Criteria

- I can use a number line to calculate with negative numbers.
- I can solve additions and subtractions above, below and across zero.

Negative Numbers

Negative numbers are numbers below zero. They are expressed with a minus sign before the number, like this:

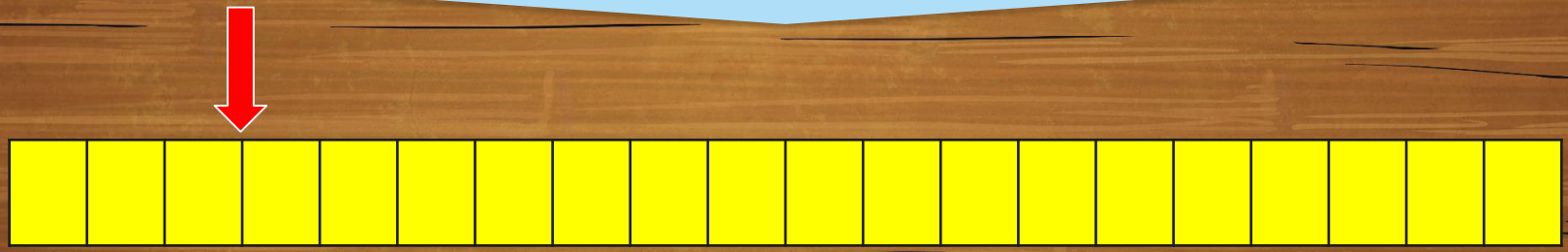


We can use negative numbers to describe values on scales that go below zero, such as temperature scales, or to express an absence or opposite of something.

Negative numbers are the opposite of positive numbers. Positive numbers increase above zero, and negative numbers decrease below zero. The greater the negative number, the further below zero it is.

Negative Numbers

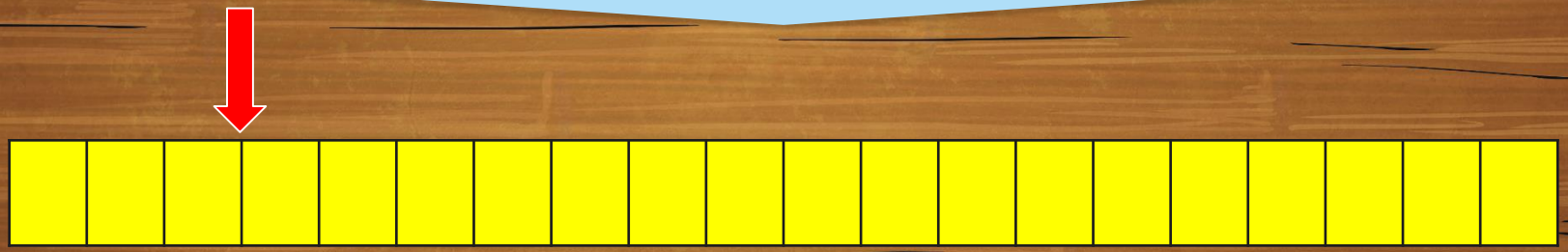
When calculating with negative numbers, we can use a number line to help when crossing zero (from positive to negative or negative to positive). Each section within a number line is known as an interval.



Which number does the red arrow point to on the number line?

Negative Numbers

When calculating with negative numbers, we can use a number line to help when crossing zero (from positive to negative or negative to positive). Each section within a number line is known as an interval.



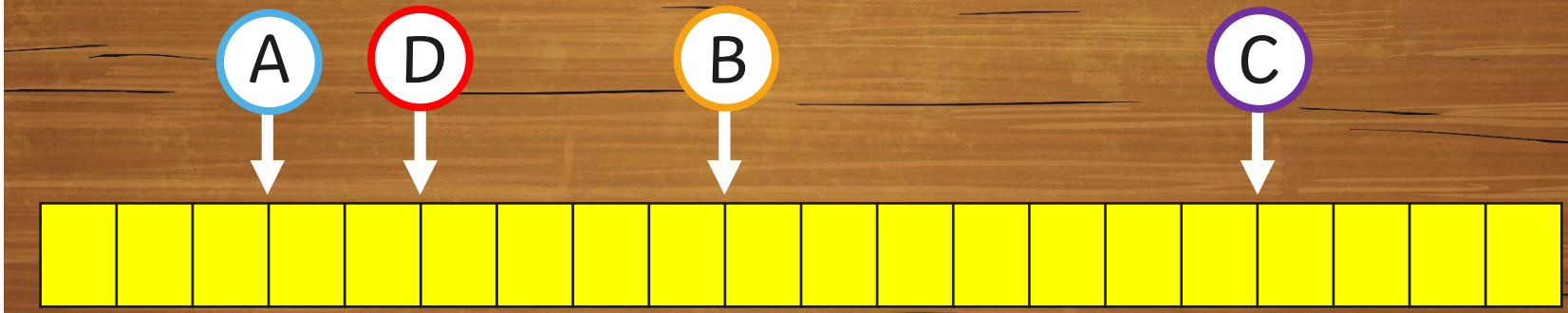
Which number does the red arrow point to on the number line?

-7

The answer is pronounced negative 7.

Negative Numbers

Find the values of A, B, C and D.



A =

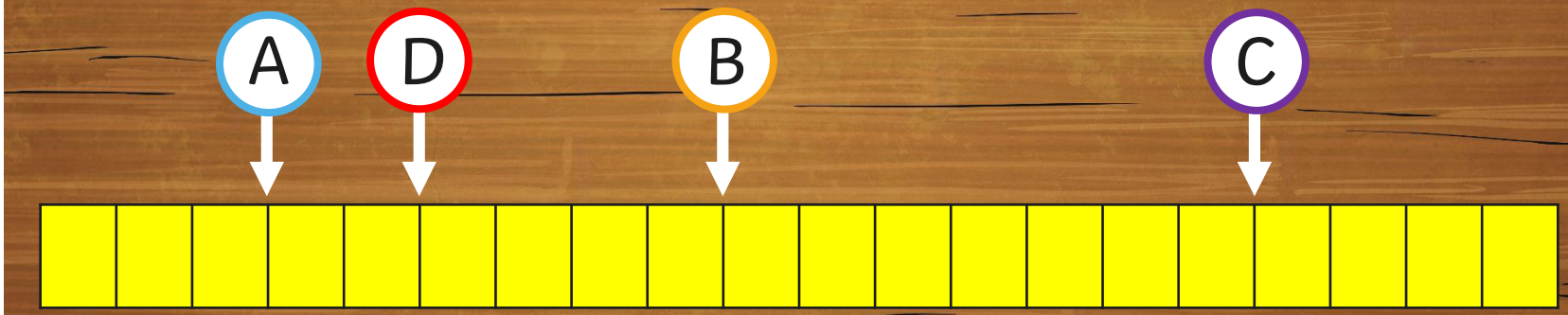
B =

C =

D =

Negative Numbers

Find the values of A, B, C and D.



-7

-1

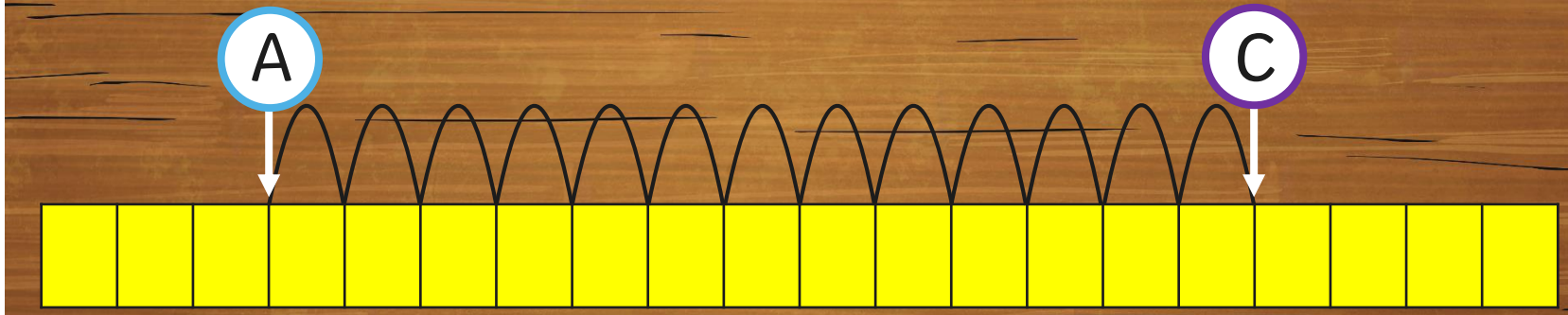
6

-5

Negative Numbers

Whole Class

What is the difference between the values of A and C?



A is

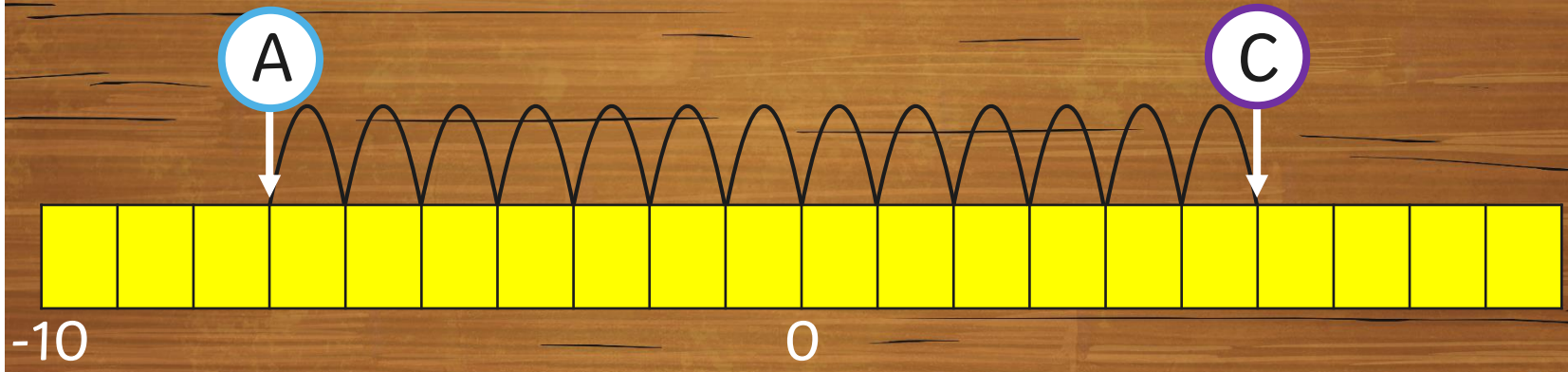
C is

Counting the intervals between each letter helps to find the difference.

Negative Numbers

Whole Class

What is the difference between the values of A and C?



A is -7

C is 6

The difference between A and C is 13.

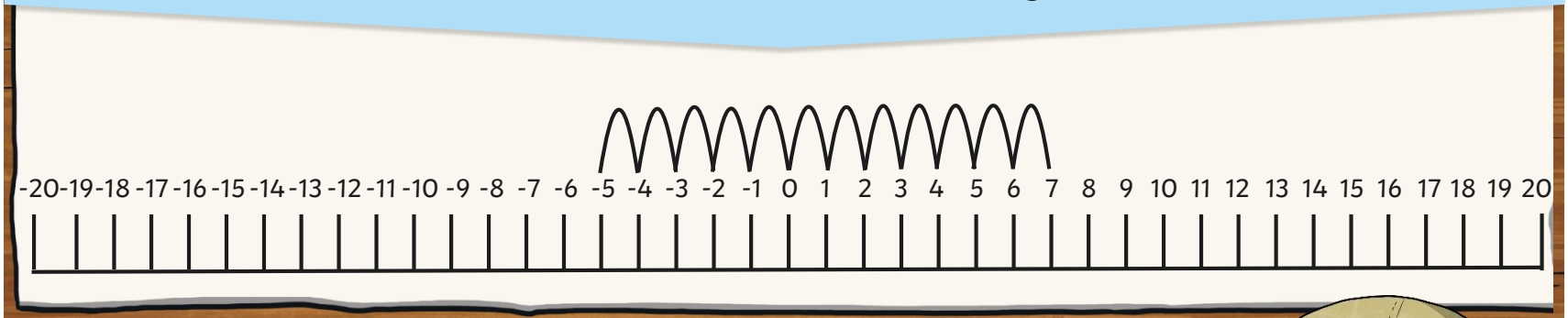
Counting the intervals between each letter helps to find the difference.

Negative Numbers

Whole Class

When calculating with negative numbers, we often cross zero.

For example, 7 - 12 crosses zero to get to -5.



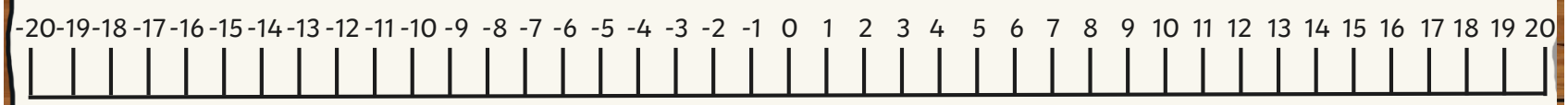
We start at 7, then count back 12 steps.

We cross zero to reach - 5.

7 - 12 = -5

Negative Numbers

Find the answers to these calculations involving crossing zero.
How did you do?
You can use the number line to help you.



9 - 17 = _____	_____ = -8 + 13
13 - 20 = _____	6 - 10 = _____
_____ = 4 - 17	-3 + 9 = _____

Negative Numbers

Find the answers to these calculations involving crossing zero.
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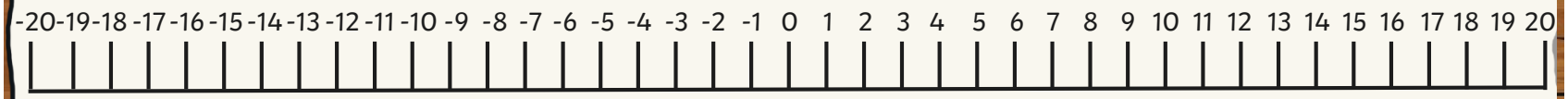


9 - 17 = -8	5 = -8 + 13
13 - 20 = -7	6 - 10 = -4
-13 = 4 - 17	-3 + 9 = 6

Calculating Intervals Across Zero

Use a number line to help answer the negative number problem.

-20 -19 -18 -17 -16 -15 -14 -13 -12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

I start at 10.

I subtract 13.

I add 11.

What number do I land on?

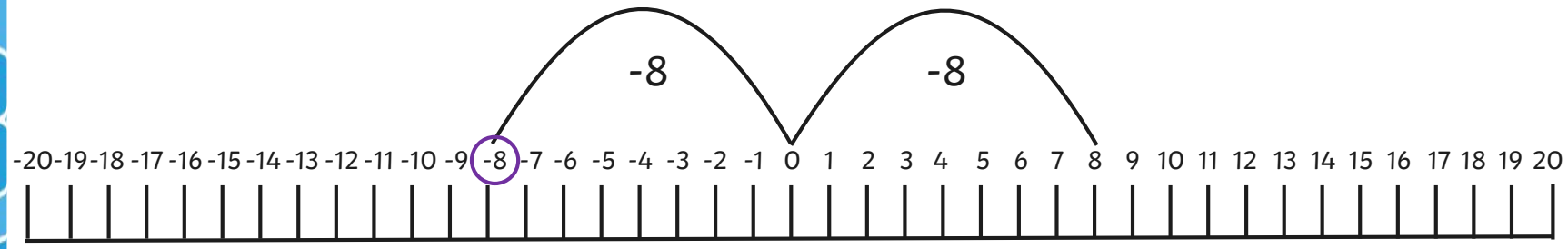
8

Calculating Intervals Across Zero

Carlton is counting using a number line.
He starts on 8 and counts back 16.

Carlton finishes on -9.

Is this true or false?



Instead of counting backwards in single intervals, larger subtractions can be made to calculate the answer. In this example, 16 is partitioned into two lots of 8. Each subtraction of 8 is then shown on the number line.

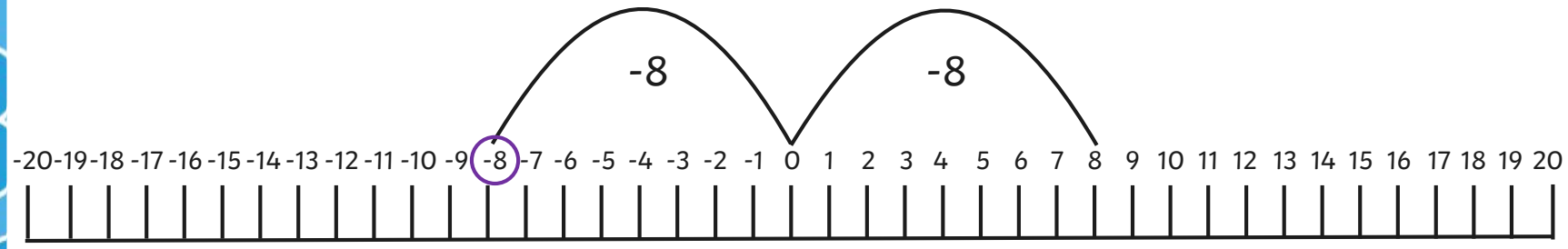
Calculating Intervals Across Zero

Carlton is counting using a number line.
He starts on 8 and counts back 16.

Carlton finishes on -9.

Is this true or false?

False. Carlton should land on negative 8, rather than negative 9.



Instead of counting backwards in single intervals, larger subtractions can be made to calculate the answer. In this example, 16 is partitioned into two lots of 8. Each subtraction of 8 is then shown on the number line.