



Maths

Number and Place Value

Need a coherently planned sequence of lessons to complement this resource?

Assessment Statements
By the end of this unit;

children working towards the expected level will be able to:

- read and write numbers up to 100 000;
- identify the value of each digit in a number up to 100 000 using place value grids and counters;
- recognise concrete and visual representations of numbers with one decimal place;
- order numbers up to 100 000;
- compare numbers up to 100 000 using the greater than and less than symbols;
- round numbers to the nearest 10, 100, 1 000, 10 000 or 100 000 using a number line; calculate intervals across zero using a number line;
- compare and order negative numbers using a number line;
- identify negative numbers in context;
- recognise some powers of 10 within sequences;
- read Roman numerals up to 500 (D) using a symbol chart;
- identify years written in Roman numerals using a symbol chart;

children working at the expected level will be able to:

- read and write most numbers up to 1 000 000;
- identify the value of most digits in a number up to 1 000 000;
- use concrete, visual and abstract representations to help identify numbers with two decimal places;
- order most numbers up to 1 000 000;
- compare most numbers up to 1 000 000 using the greater than and less than symbols;
- round numbers up to 1 000 000 to the nearest 1000, 10 000 or 100 000 using a number line;
- compare, backwards and forwards across number lines;
- compare and order negative numbers;
- solve age appropriate problems involving negative numbers;
- count forwards and backwards in steps of 10;
- read Roman numerals up to 1000 (M);
- identify years written in Roman numerals;
- solve reasoning problems using all of the above.

Introduction

Teacher Note: The Y5 Place Value objectives read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit and round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 are closely linked to the Y5 Fractions objectives read, write, order and compare numbers with up to three decimal places and round decimals with two decimal places to the nearest whole number and to one decimal place. Please head over to the Fractions Topic Area to find some more support lessons to support decimal place value.

In this unit, children will read, write, construct and deconstruct numbers up to 1 000 000. They will use concrete, visual and abstract methods to help identify the value of individual digits in numbers with up to six digits. As well as larger numbers, children are introduced to the concept of decimal numbers in preparation for the designated book in Spring term. They revisit comparisons of numbers using the greater than and less than symbols and then develop their skills by reasoning about numbers. Children will focus on rounding any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 or 100 000. They will work with negative numbers, counting forwards and backwards across zero. They will use negative numbers in context to solve problems. Children will count forwards and backwards in different powers of 10. They will have the opportunity to use all of their number and place value skills to solve a range of problems. Finally, children will extend their knowledge of Roman numerals to represent numbers up to 1000 and read years written in Roman numerals.

Resources
In addition to your standard maths resources, you may need place value counters, scissors, glue or sticky tape, playing cards, D9 dice and T4 dice.

Number and Place Value
Maths | Year 5 | Steps to Progression Overview

The aim of this overview is to support teachers using PlanIt Maths to show the most coherent and progressive sequence to teach each area of maths. We also want to fully support teachers who use the White Rose Maths scheme of learning to make full use of the resources available within PlanIt Maths. Wherever possible, lesson packs have been matched to each of the small steps on the White Rose Maths scheme of learning.

Yearly Overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number: Place Value			Number: Addition and Subtraction		Statistics		Number: Multiplication and Division		Perimeter and Area		Consolidation
Spring	Number: Multiplication and Division				Number: Fractions					Number: Decimals and Percentages		Consolidation
Summer	Number: Decimals			Geometry: Properties of Shapes			Geometry: Position and Direction	Measurement: Converting Units		Measurement: Volume		Consolidation

See our [Number and Place Value Steps to Progression](#) document.

Interpret Negative Numbers in Context



Aim

- To interpret negative numbers in context.

Success Criteria

- I can identify negative numbers on different scales.
- I can find the difference between negative numbers using number lines.

Remember It



Lots of negative numbers have been hidden around your classroom.
Everybody needs to find one number, then return to their group.

Once everyone is back with their group, your next challenge is to get yourselves in order! It is up to you whether you get into ascending or descending order.

Look around at other groups.
How have they ordered their numbers?
Do you think they have ordered their numbers correctly?



Remember It



Now, for a final challenge: can you get your whole class into order?

To make this even trickier,
you could try to do this
without talking at all.

Is it possible?

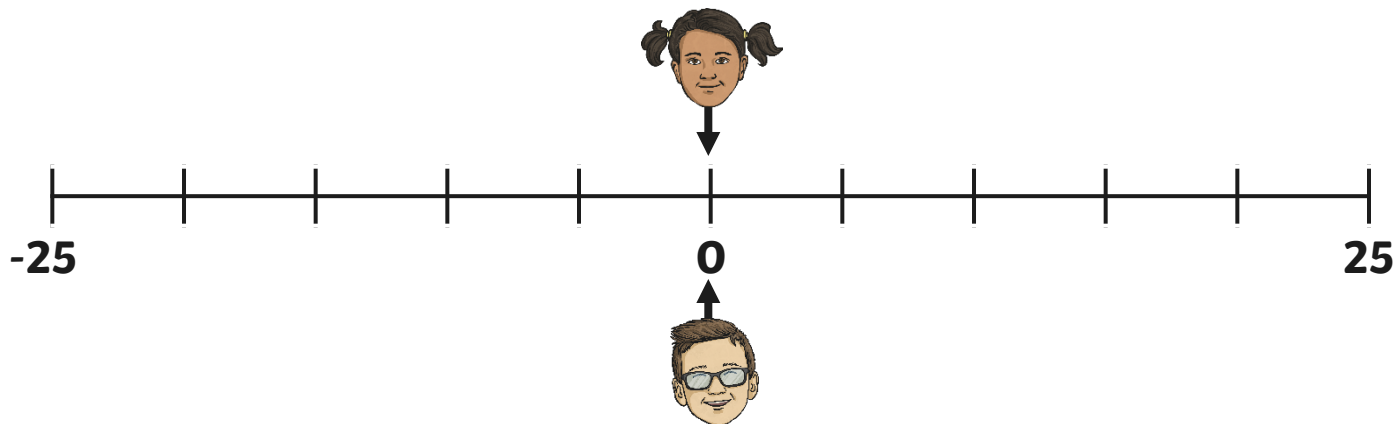


Computer Conundrums



Jamila and Edgar are playing a computer game.
Every time they lose a life, they lose points.

The computer screen displays a bar showing their points.
Each player starts at 0.

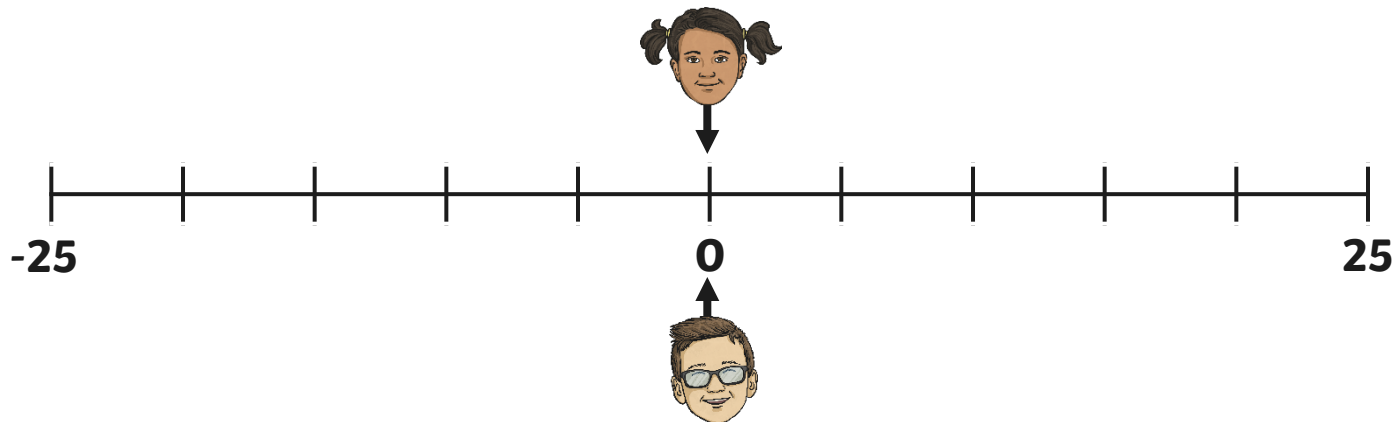


Computer Conundrums



Jamila and Edgar are playing a computer game.
Every time they lose a life, they lose points.

Each time they score points, they move up the scale.

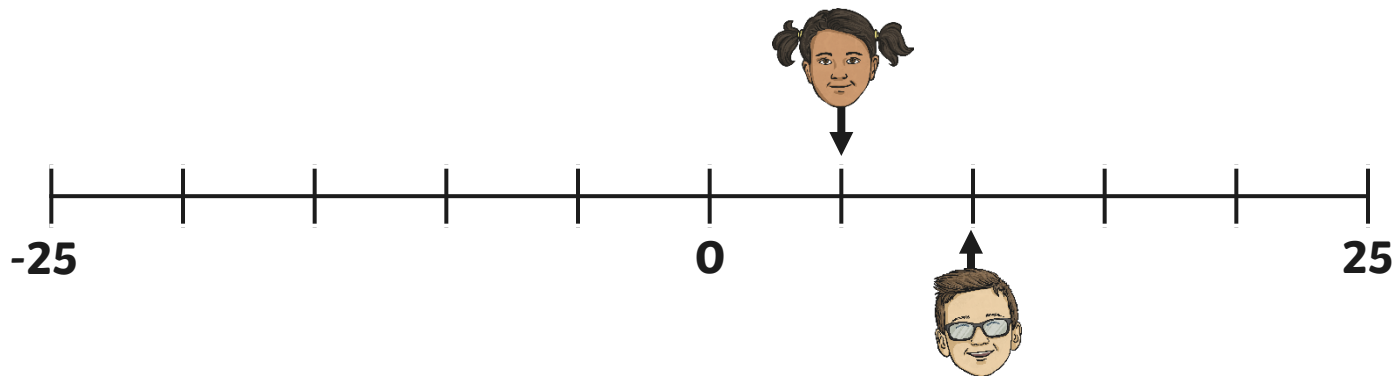


Computer Conundrums



How can we work out how many points each player has scored?

We need to work out the steps that the scale goes up in. We know it goes from 0 to 25. We can use this information to work out each step.

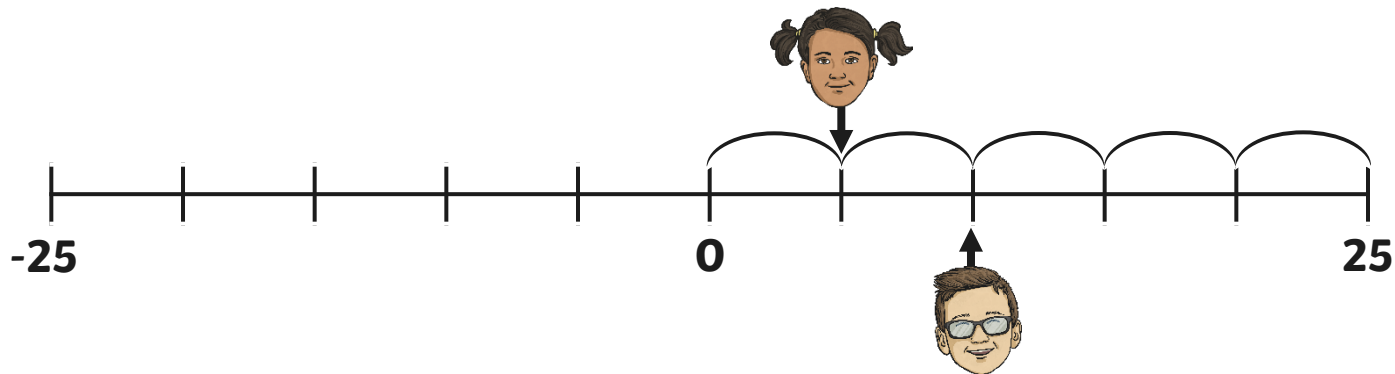


Computer Conundrums



How can we work out how many points each player has scored?

There are 5 steps altogether.

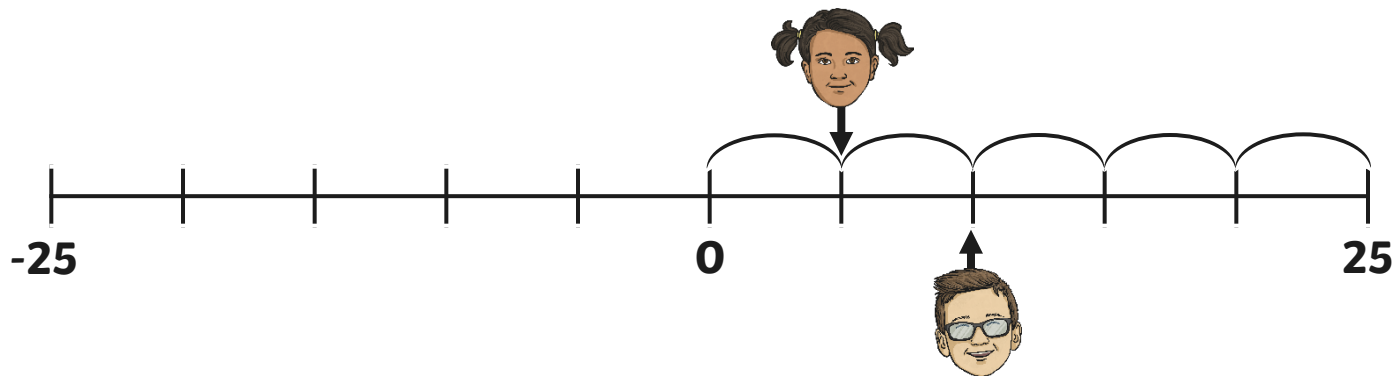


Computer Conundrums



To find out what each step is worth, we divide the total of all the steps by the number of steps there are. In this case, we need to divide 25 by 5.

Each step is worth 5.

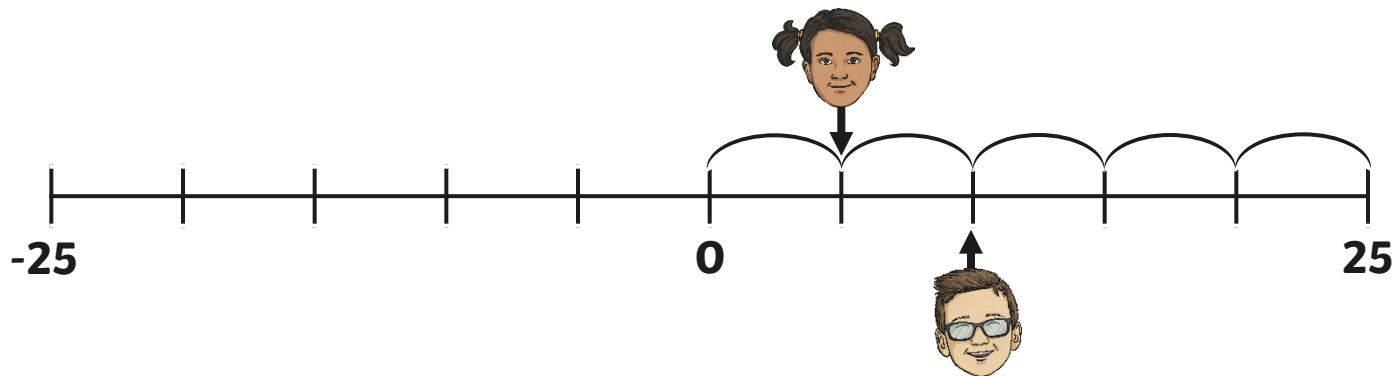


Computer Conundrums



To find out what each step is worth, we divide the total of all the steps by the number of steps there are. In this case, we need to divide 25 by 5.

Jamila has 5 points, and Edgar has 10 points.

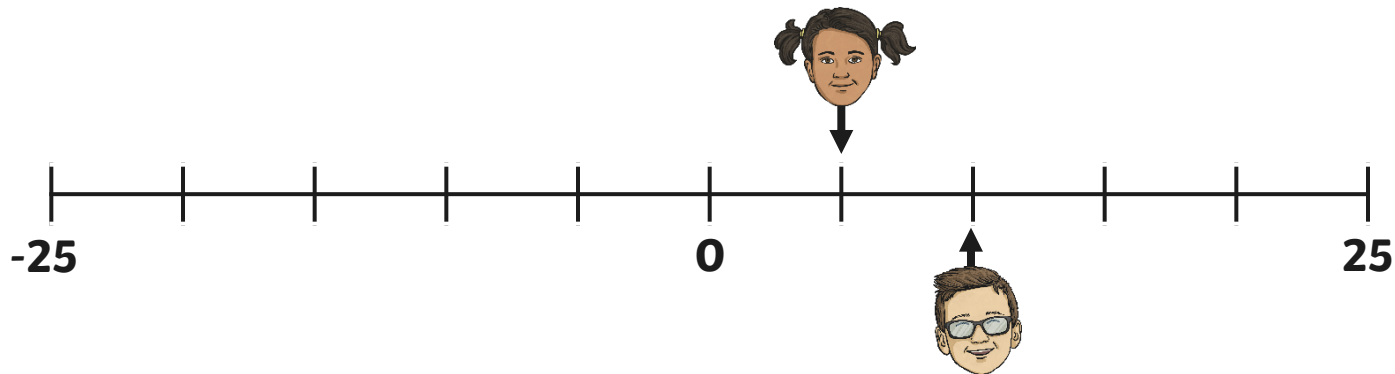


Computer Conundrums



Each time they lose points they move down the scale.

We can use the information we discovered about the value of each step to work out their scores. Jamila is 1 step below 0, and Edgar is 3 steps below 0.

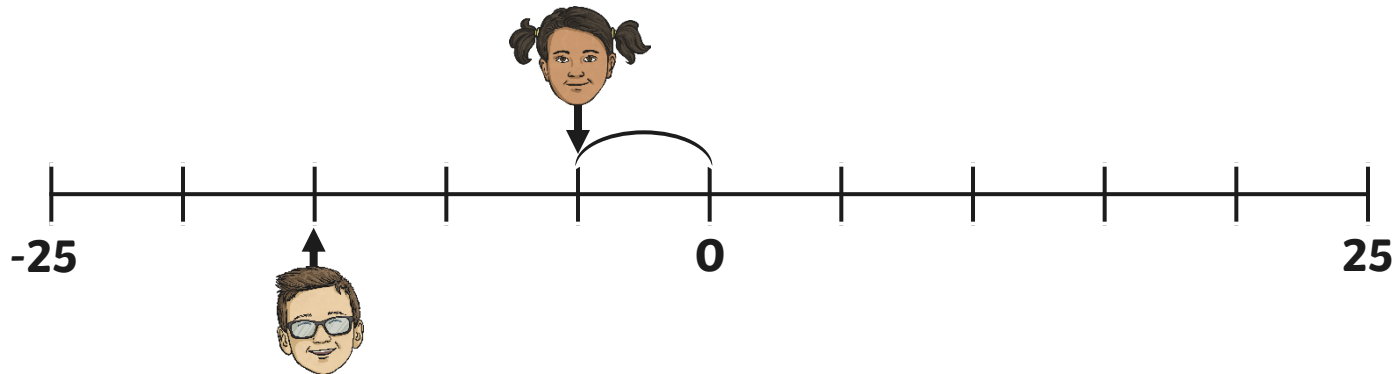


Computer Conundrums



We know that each step is worth 5.
Can you work out how many points each player has?

Jamila is 1 step below zero, which is 5 points below 0.

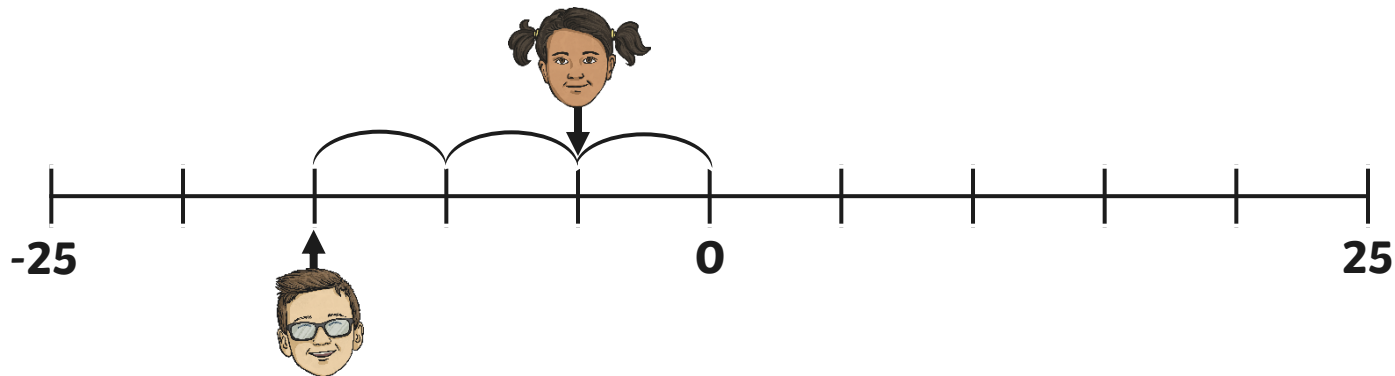


Computer Conundrums



We know that each step is worth 5.
Can you work out how many points each player has?

Edgar is 3 steps below 0, which is 3×5 points below 0.

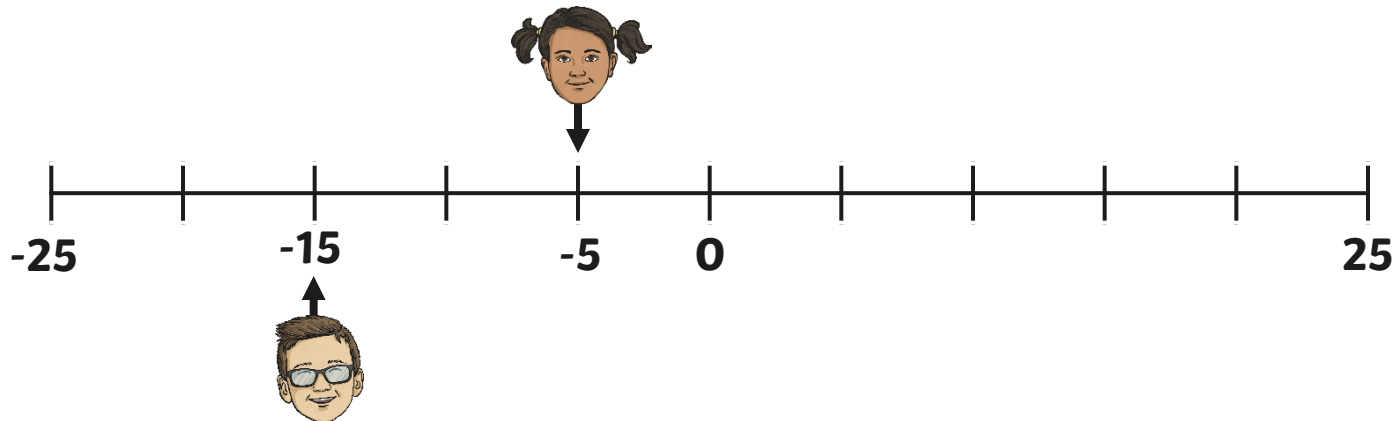


Computer Conundrums



Jamila has -5 points.

Edgar has -15 points.

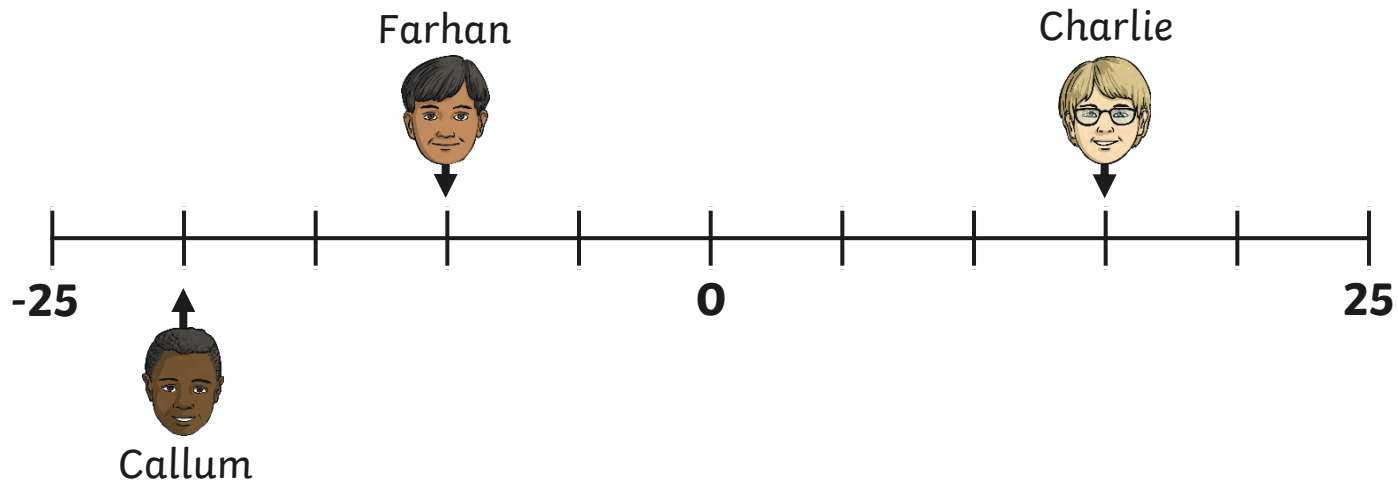


Computer Conundrums



Some more children play the game.

Can you use what you know about the scale to work out each child's score?

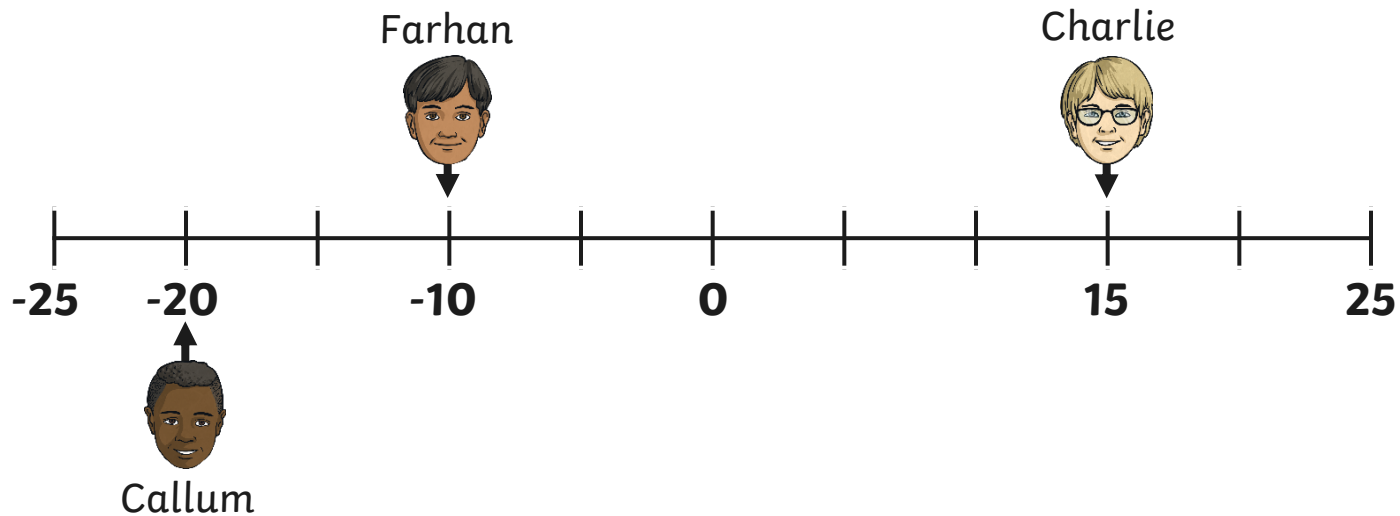


Computer Conundrums



Some more children play the game.

Charlie scored 15, Farhan scored -10 and Callum scored -20.

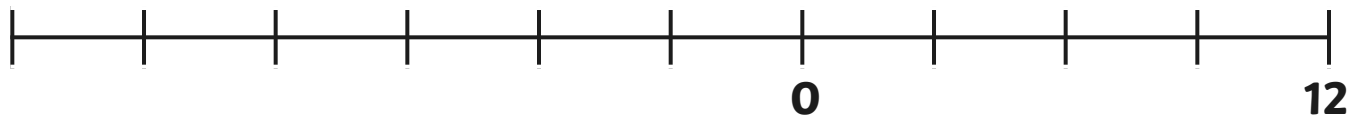


Different Scales



As players progress through the different levels of the computer game, their scores are represented on different scales.

Let's look at how we can work out their scores on different scales.



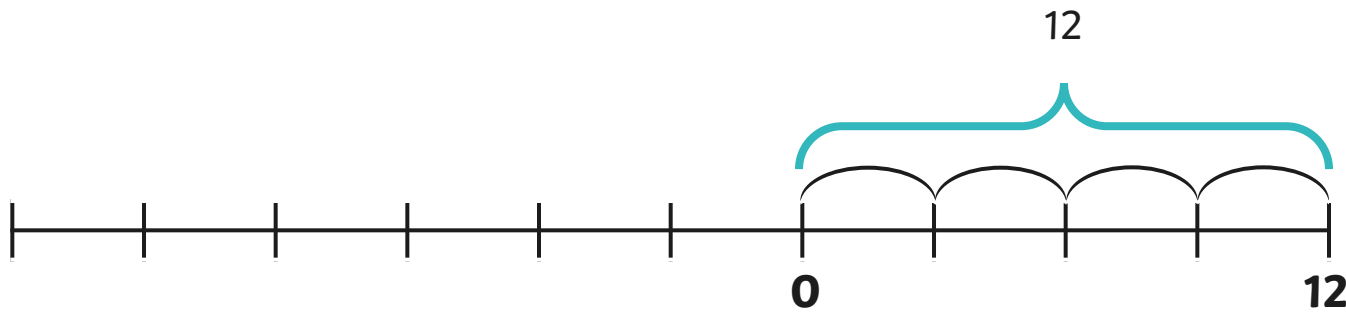
Different Scales



The first thing is to work out the total of a number of steps.

All the steps between 0 and the end of the number line total 12.

There are 4 steps.



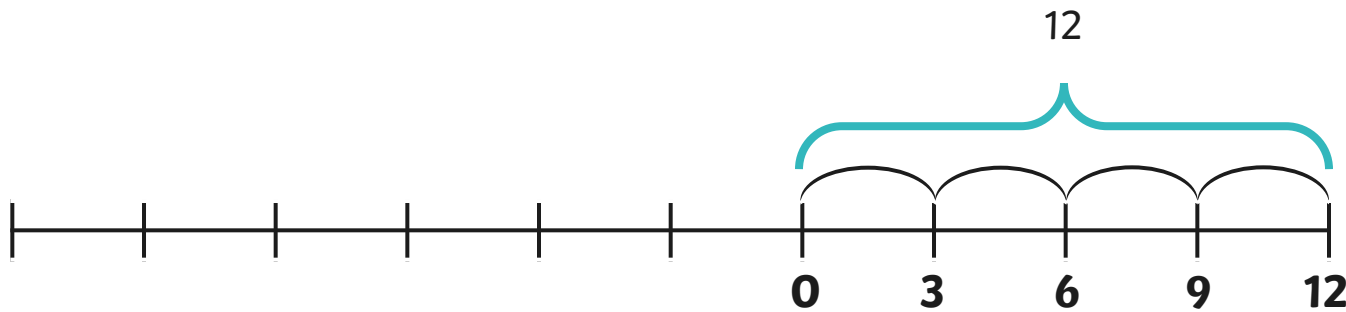
Different Scales



We can find out what each step is worth by dividing the total by the number of steps.

In this case we need to divide 12 by 4.

This tells us that each step is worth 3 points.



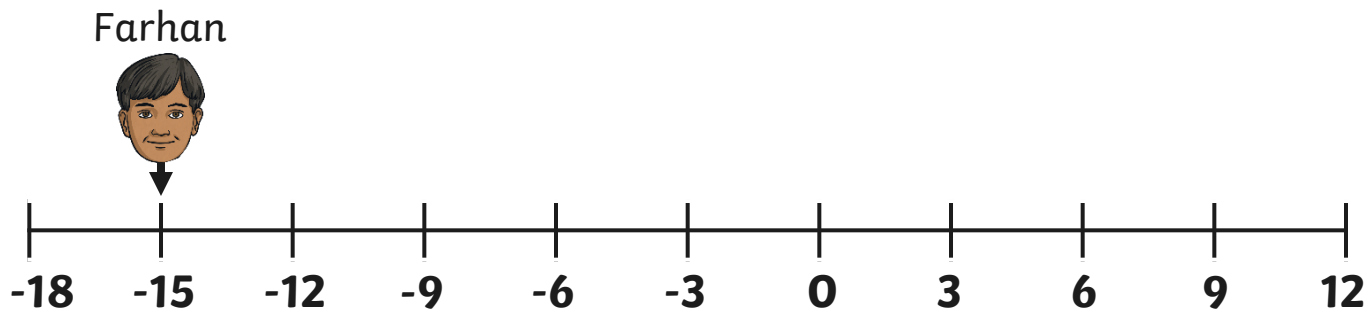
Different Scales



Can you work out Farhan's score for this level of the computer game?

To work out his score, we need to count back from 0 in threes.

Farhan has scored -15 points on this level.



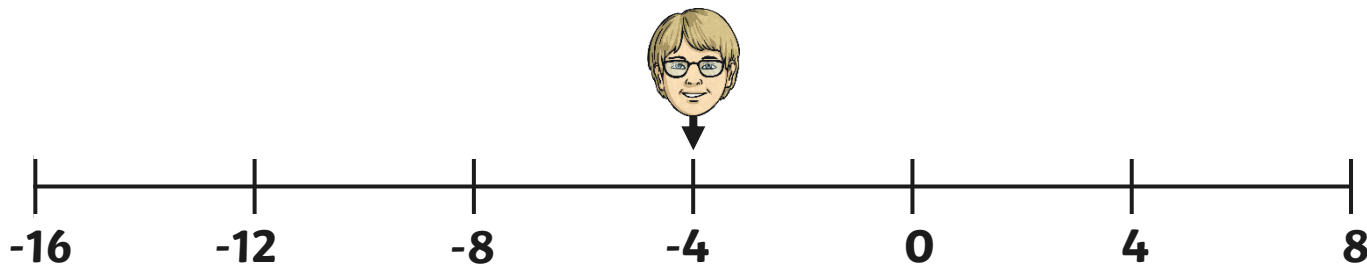
Different Scales



Can you work out the steps on this scale to find Charlie's score?

Each step on the number line is worth 4.

Charlie's score is -4.

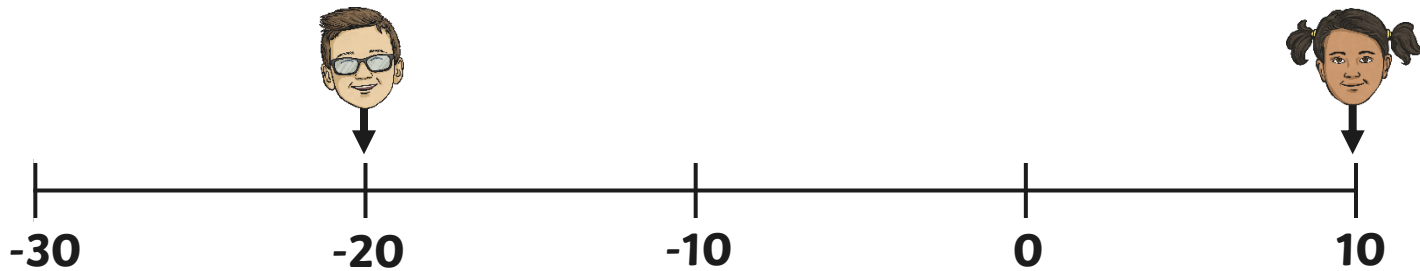


Different Scales



Find the difference between Jamila and Edgar's scores by working out the steps on this number line.

To work out the difference, calculate the amount between the two scores.
There is a difference of 30 between Edgar and Jamila's score.



Different Scales



Jamila and Edgar are playing Virtual Golf. In this game, the lowest score wins.



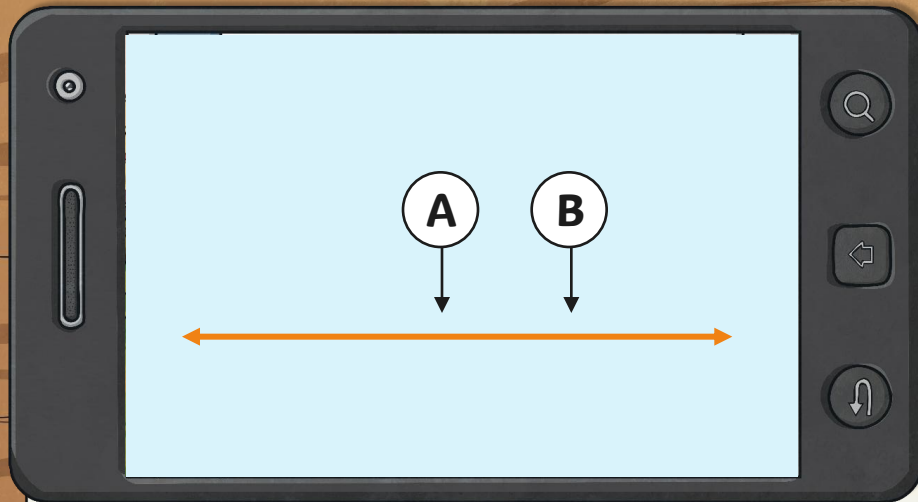
Use the information given to calculate each player's score.



Different Scales



Some friends are playing Virtual Golf. Each arrow on the number line represents scores on a leader board. Players who score the least points win.



Andre's score (A) is a negative number between -5 and -10.

Bella (B) scored 4 more than Andre.

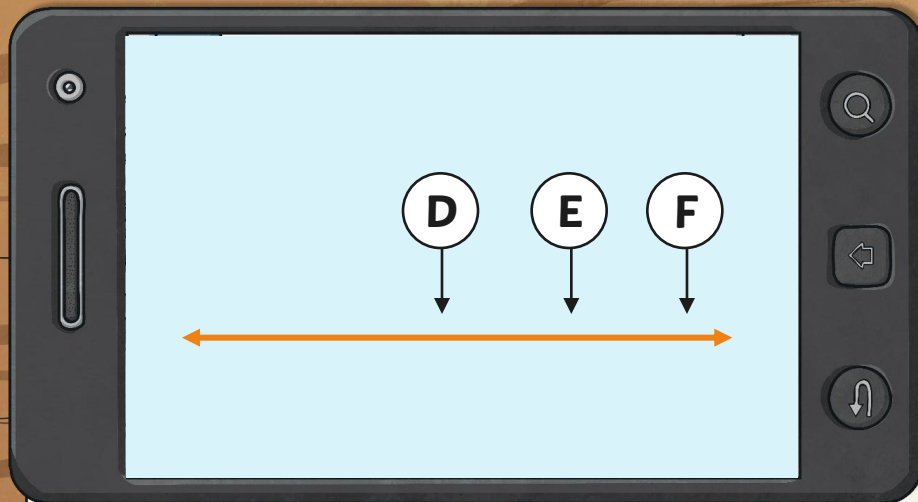
What could their scores be?
Find all possibilities.

A	B
-6	-2
-7	-3
-8	-4
-9	-5

Different Scales



Some friends are playing Virtual Golf. Each arrow on the number line represents scores on a leader board. Players who score the least points win.

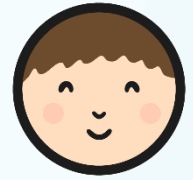


Dwayne -7
Emilee -3
Fredo 1

Emilee's score (E) is halfway between Dwayne's score (D) and Fredo's score (F). Emilee scored -3.

The difference between Dwayne's score and Fredo's score is 8.
Calculate the scores for Dwayne and Fredo.

Computer Conundrums Activity



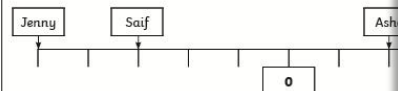
Can you solve the problems involving the different players' scores? Work out the scales for each level and answer the questions on your **Computer Conundrums Activity Sheet**.

Computer Conundrums

To interpret negative numbers in context.

Level 1

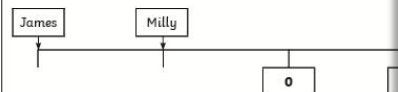
These players are all at level 1 of the computer game. Can you find their scores?



Jenny: Saif: Asha:

Level 2

At level 2 these players' scores are shown on a different scale. Work out their scores.



James: Milly:

Level 3

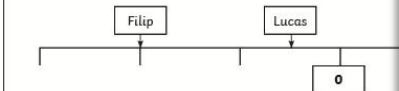
These players have made it to level 3 of the computer game. Find their scores.

Computer Conundrums

To interpret negative numbers in context.

Level 1

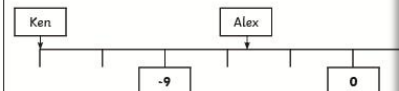
These players are all at level 1 of the computer game. Can you find their scores?



Filip: Lucas: Cara:

Level 2

At level 2 these players' scores are shown on a different scale. Work out their scores.



Ken: Alex: Asha:

Level 3

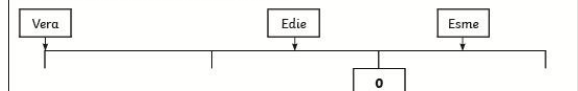
These players have made it to level 3 of the computer game. Find their scores.

Computer Conundrums

To interpret negative numbers in context.

Level 1

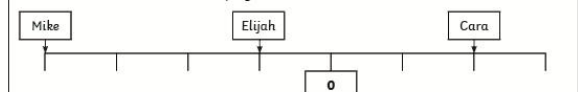
These players are all at level 1 of the computer game. The difference between Edie and Esme's scores is 20. Can you find each player's score?



Vera: Edie: Esme:

Level 2

At level 2 these players' scores are shown on a different scale. The difference between Mike and Cara's scores is 72. Work out each player's score.



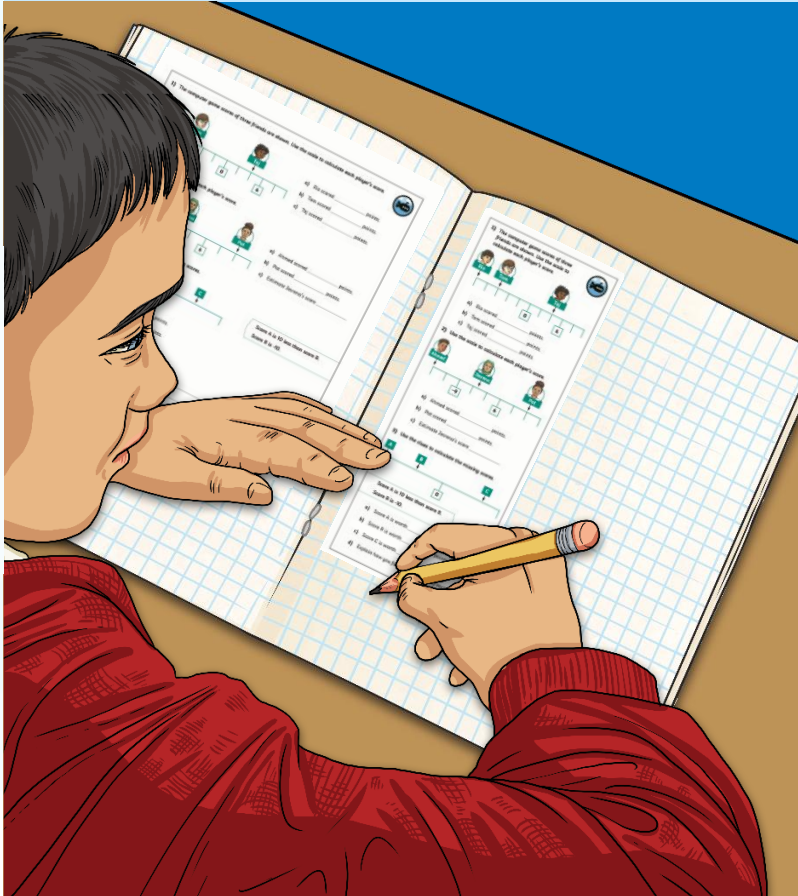
Mike: Elijah: Cara:

Level 3

These players have made it to level 3 of the computer game. The difference between John and

Diving into Mastery

Dive in by completing your own activity!



1) Some friends are playing a board game. Use the scale to calculate each player's score.

a) What is the score of the player who is 3 squares to the left of the starting point?

b) Use the scale to calculate the score of the player who is 5 squares to the right of the starting point.

2) Jared and his friends are playing a board game. Use the scale to calculate each player's score.

a) Which player has the highest score?

b) What is the score of the player who is 2 squares to the left of the starting point?

3) Jared and his friends are playing a board game. Use the scale to calculate each player's score.

a) What is the score of the player who is 3 squares to the left of the starting point?

b) Use the scale to calculate the score of the player who is 5 squares to the right of the starting point.

1) The computer game scores of three friends are shown. Use the scale to calculate each player's score.

a) Rio scored _____ points.
 b) Tom scored _____ points.
 c) Taj scored _____ points.

2) Use the scale to calculate each player's score.

a) Ahmed scored _____ points.
 b) Pat scored _____ points.
 c) Estimate Jesrena's score _____.

3) Use the clues to calculate the missing scores.

Score A is 10 less than score B.
 Score B is -10.

a) On the number line, what is the value of A?
 b) What is the value of B?
 c) Create a number line to show the values of A and B.
 d) Explain how you found out the value of each letter.

The Answer Is...



Can you use your **Blank Number Line** to create a challenge for your partner to identify a scale? The only rule? It must include -5!

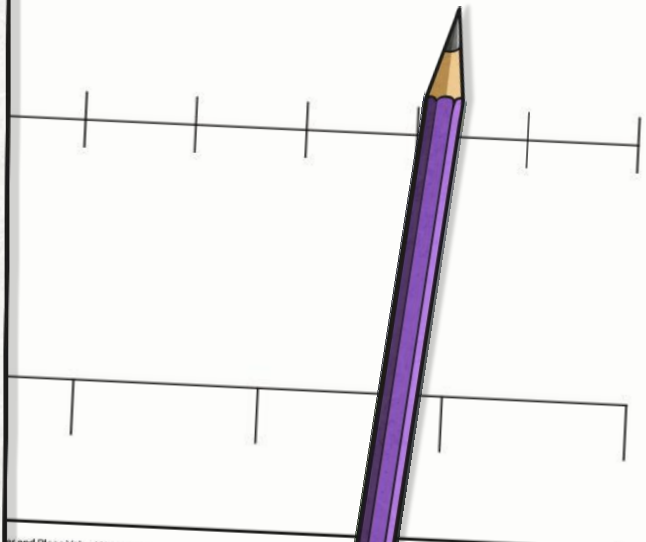
Add numbers to your number line.
Think carefully about the scale you
choose to use.

Draw an arrow in the correct place on
your number line so that the answer is -5.

You should have a different number line
to your partner. Swap number lines and
check that they do have -5. Can they
identify the rest of the scale?

Number Lines

Get negative numbers in context.



Aim

- I can interpret negative numbers in context.



Success Criteria

- I can identify negative numbers on different scales.
- I can find the difference between negative numbers using number lines.

