Maths

Number and Place Value

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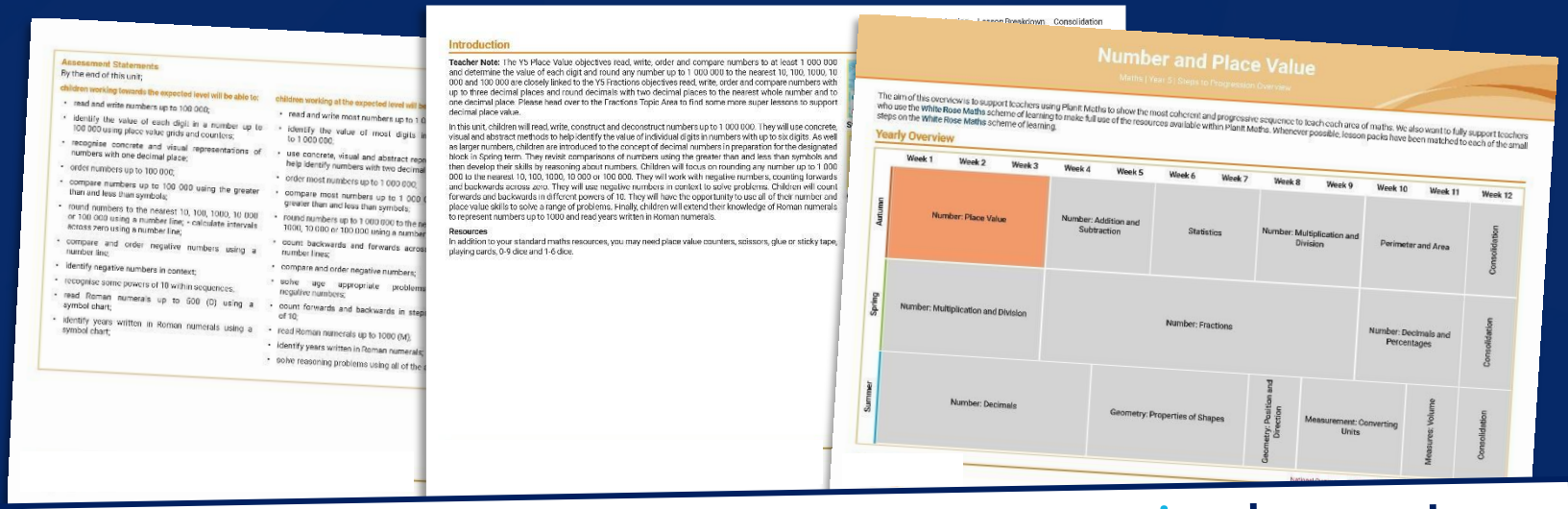
Need a coherently planned sequence of lessons to complement this resource?



See our Number and Place Value Steps to Progression document.

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Interpret Negative Numbers in Context

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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.

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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?

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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?

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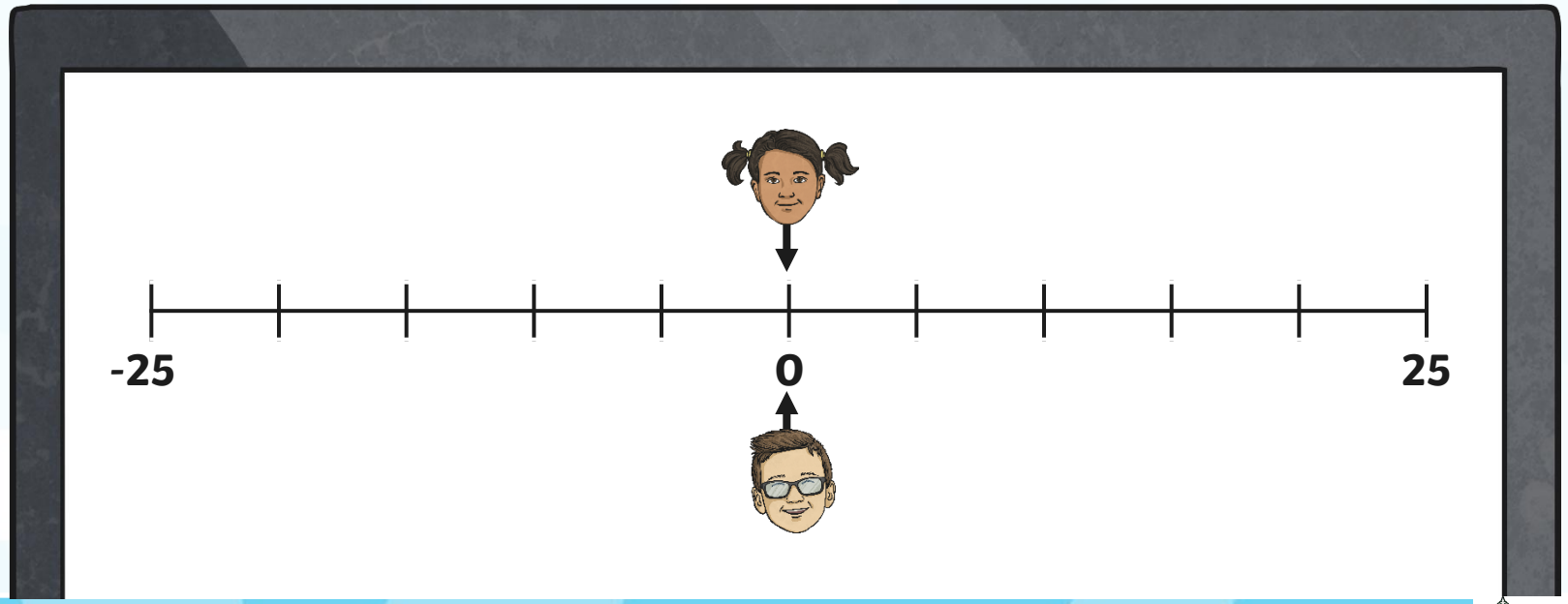
Computer Conundrums

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.



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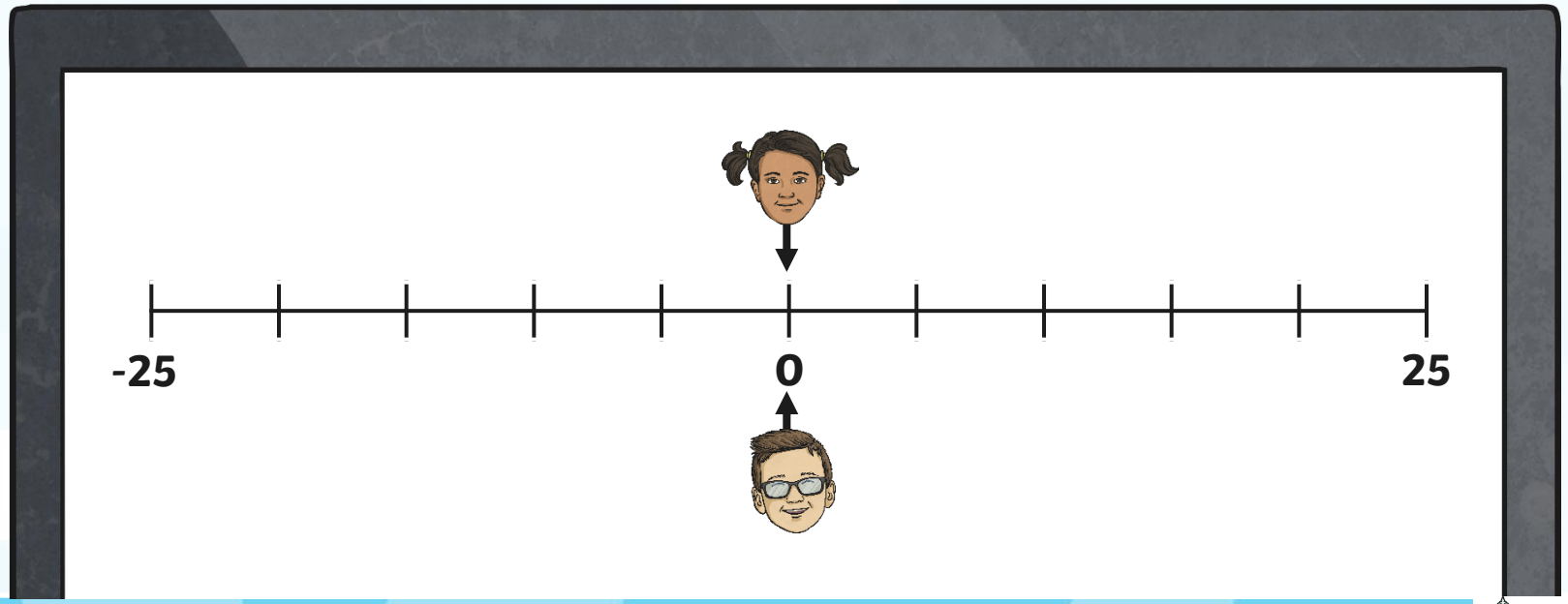
Computer Conundrums

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.



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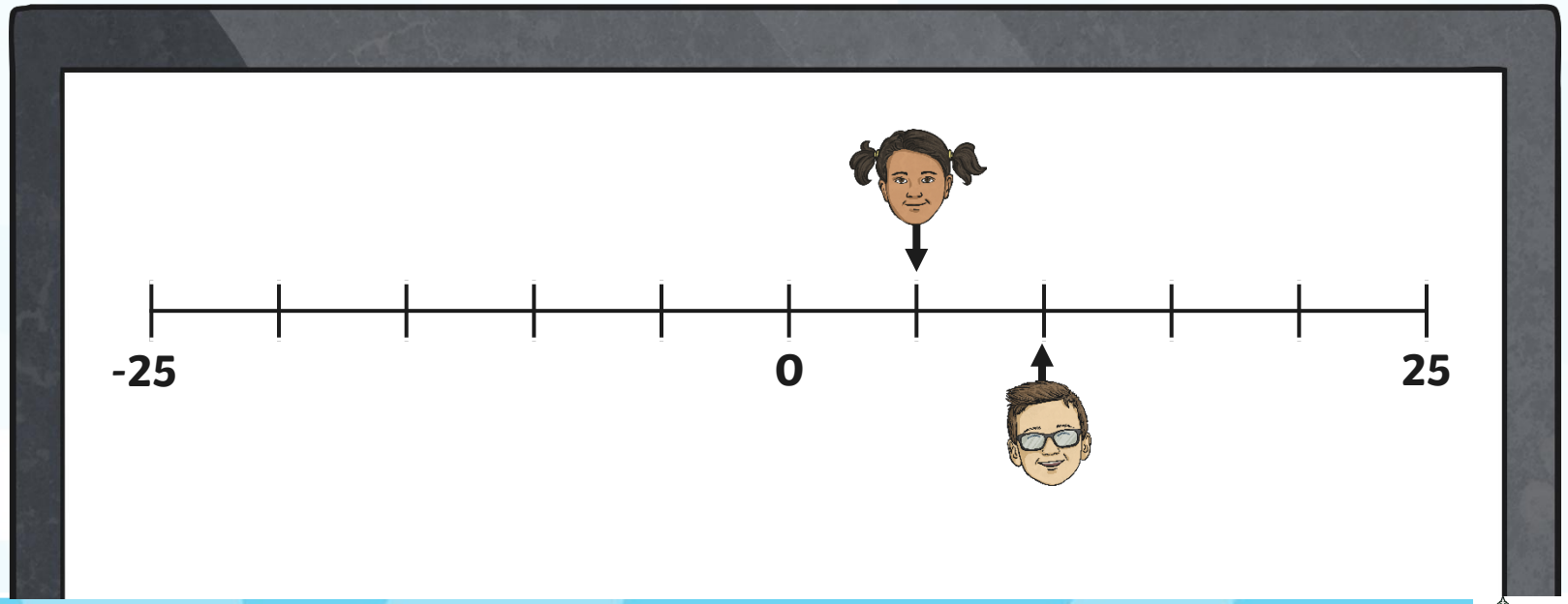
Computer Conundrums

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.



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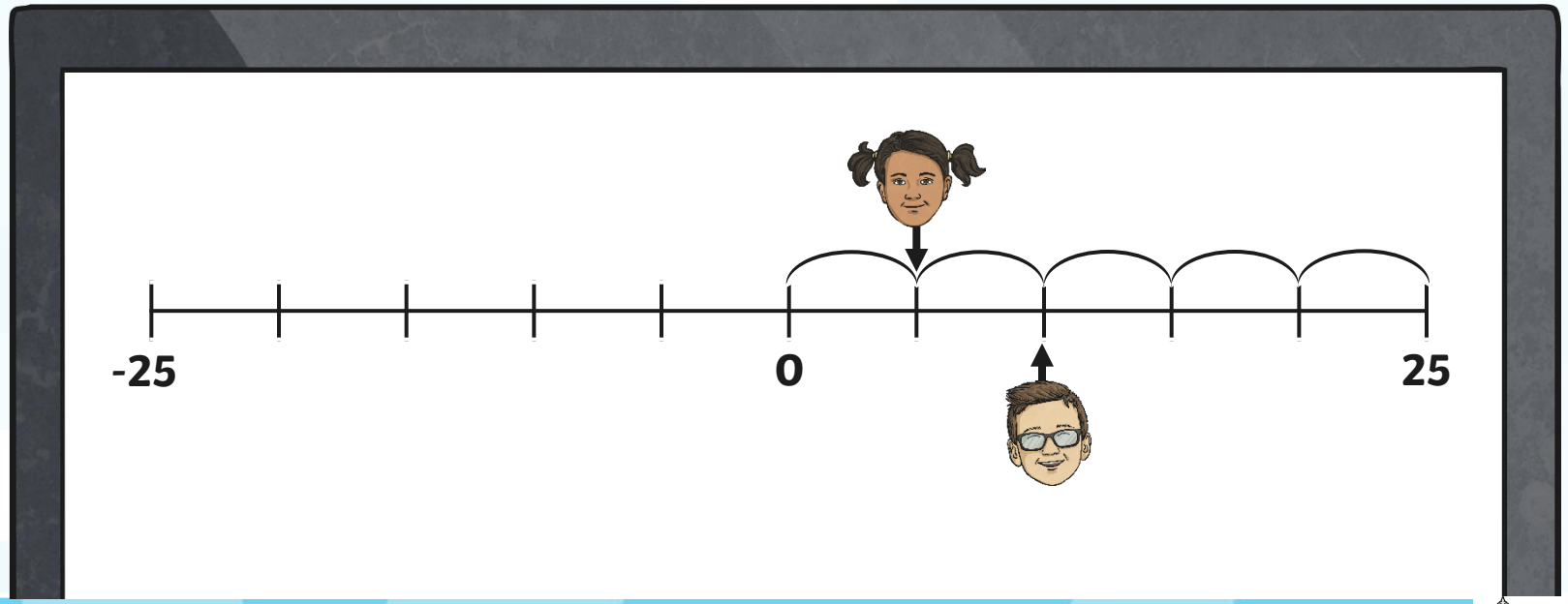
Computer Conundrums

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

There are 5 steps altogether.



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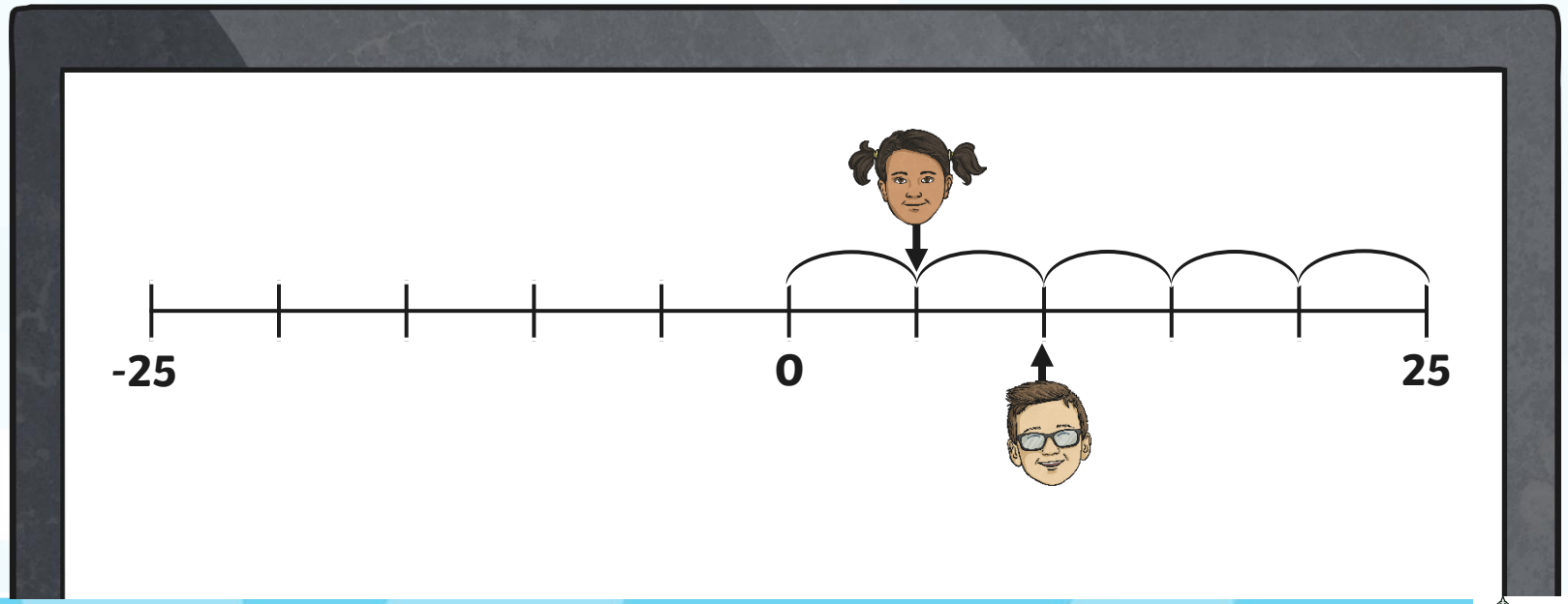
Computer Conundrums

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.



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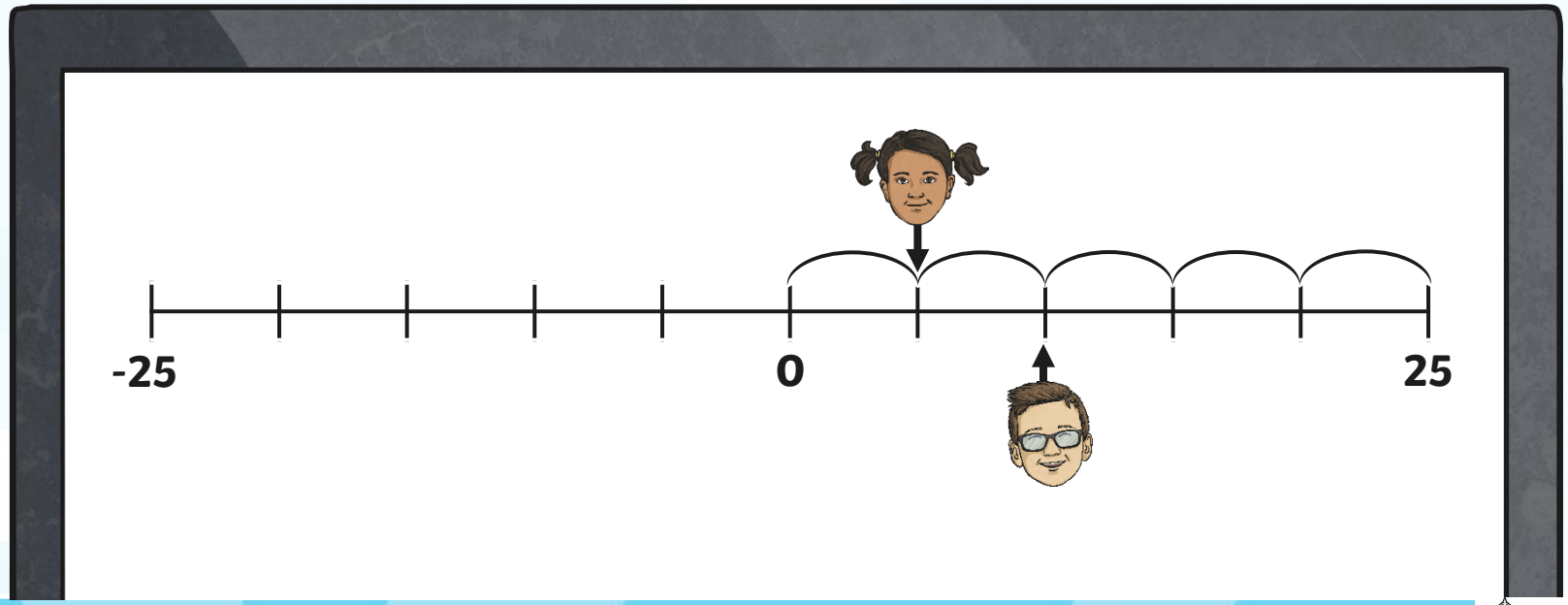
Computer Conundrums

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.



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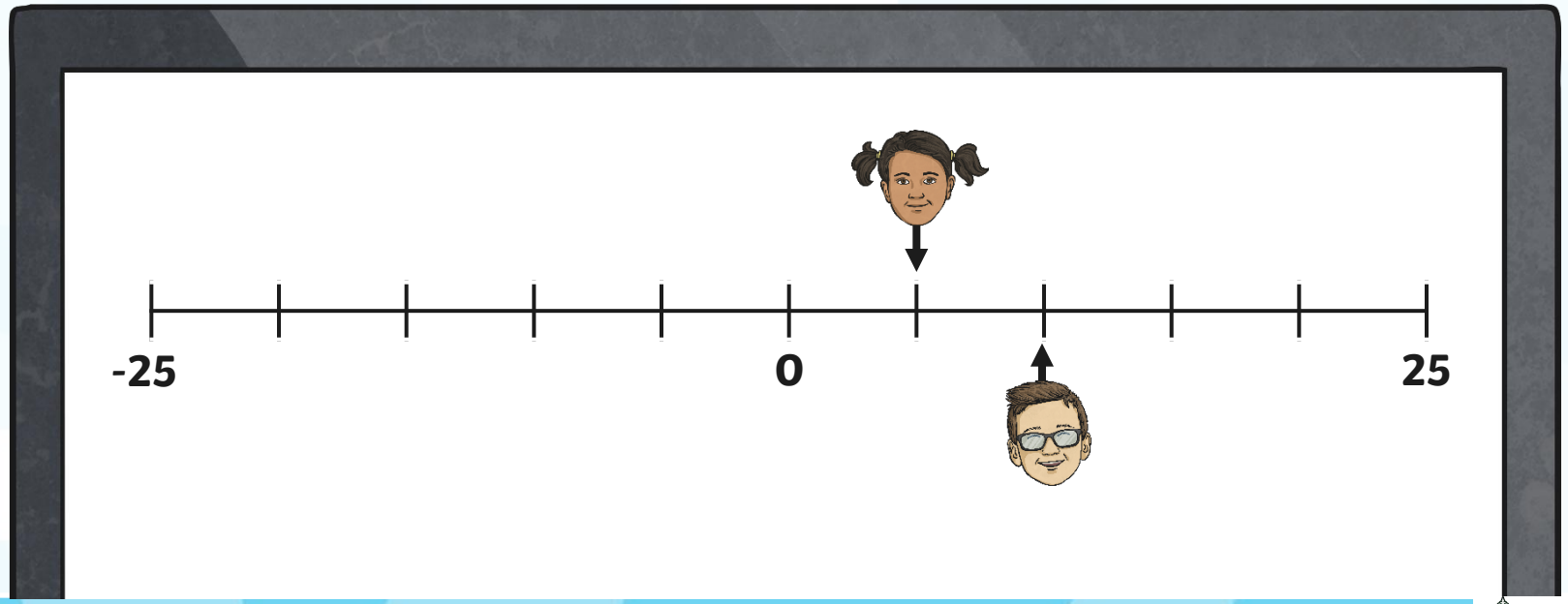
Computer Conundrums

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.



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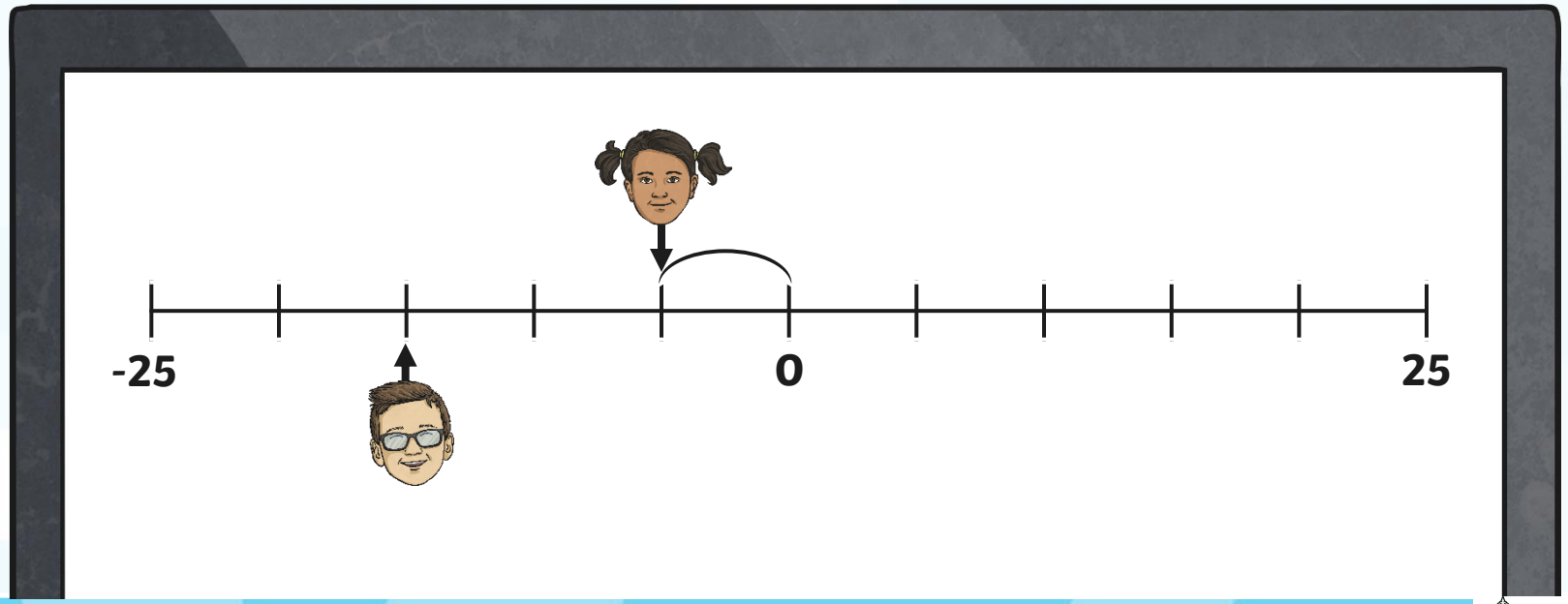
Computer Conundrums

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.



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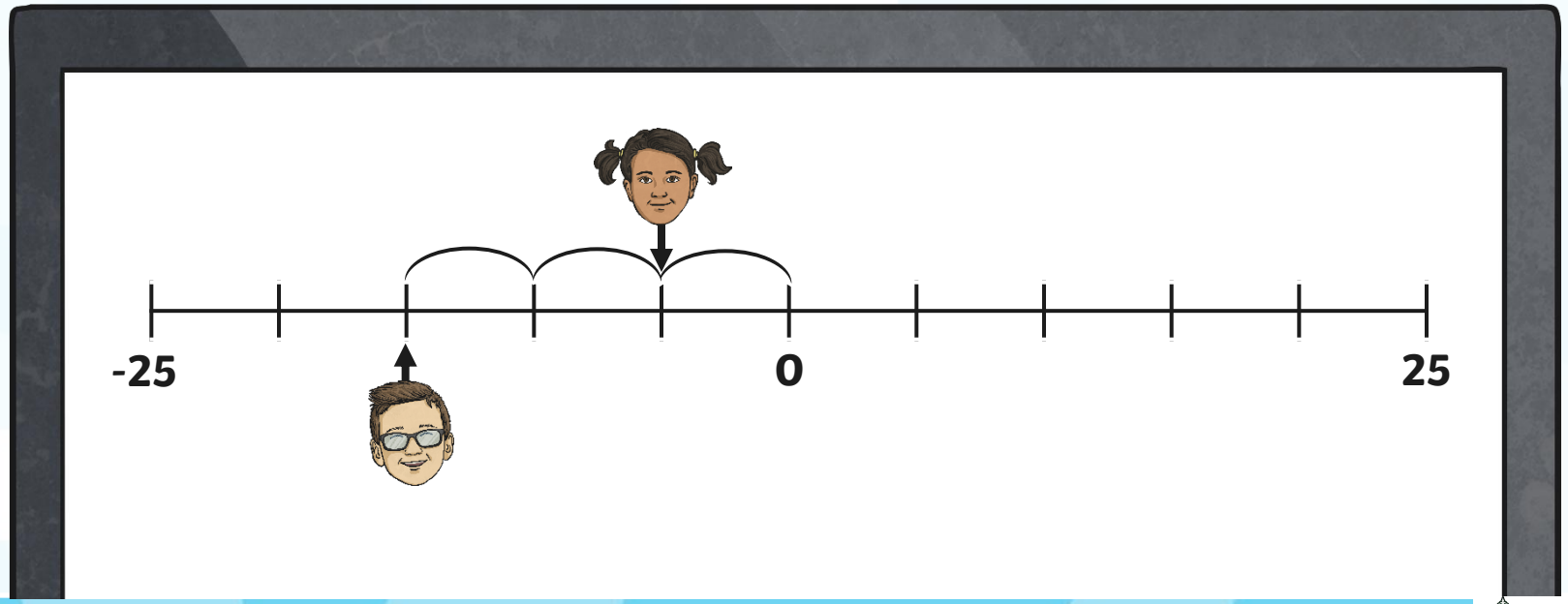
Computer Conundrums

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.



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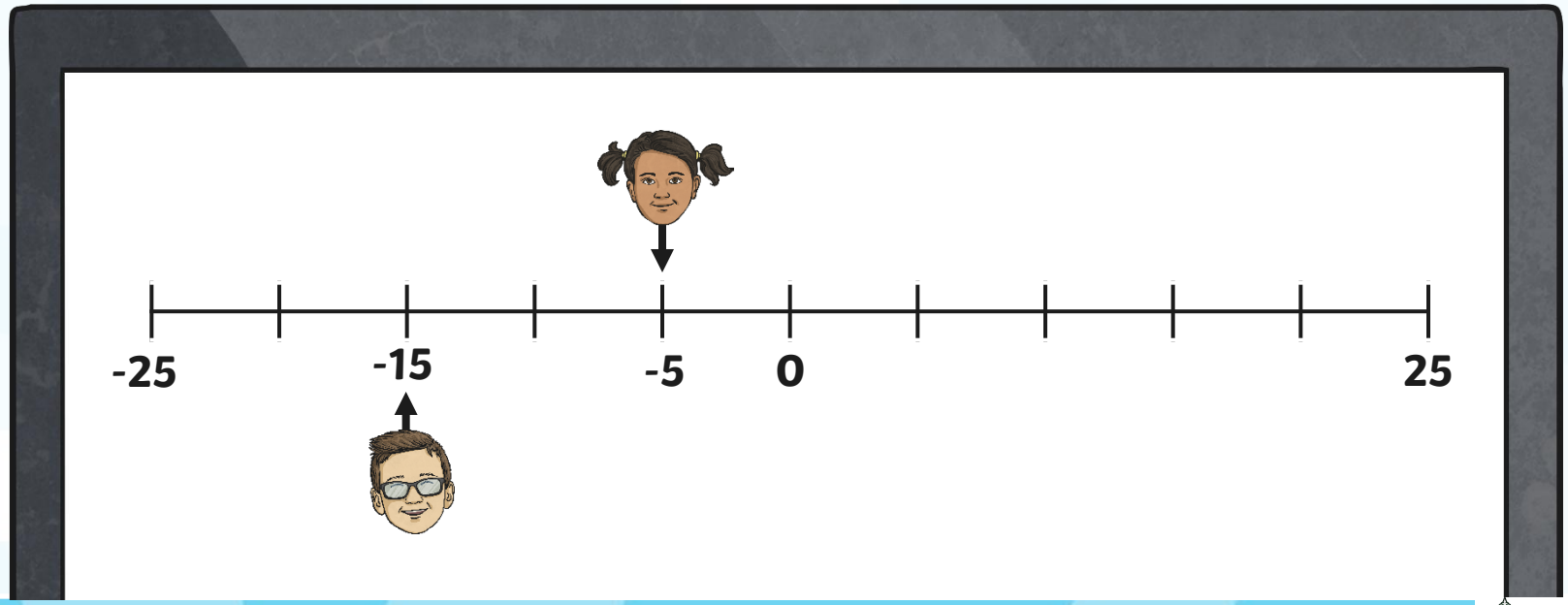
Computer Conundrums

Whole Class

Jamila has -5 points.

Edgar has -15 points.



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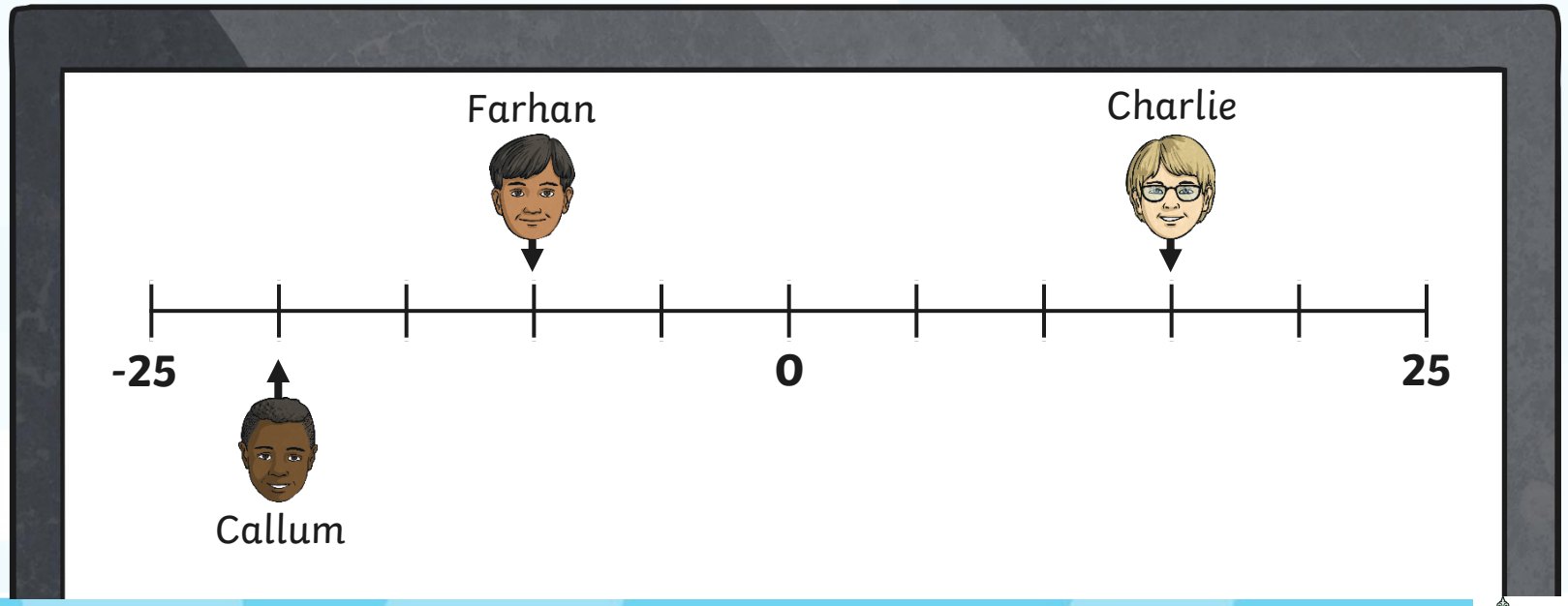
Computer Conundrums

Whole Class

Some more children play the game.

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



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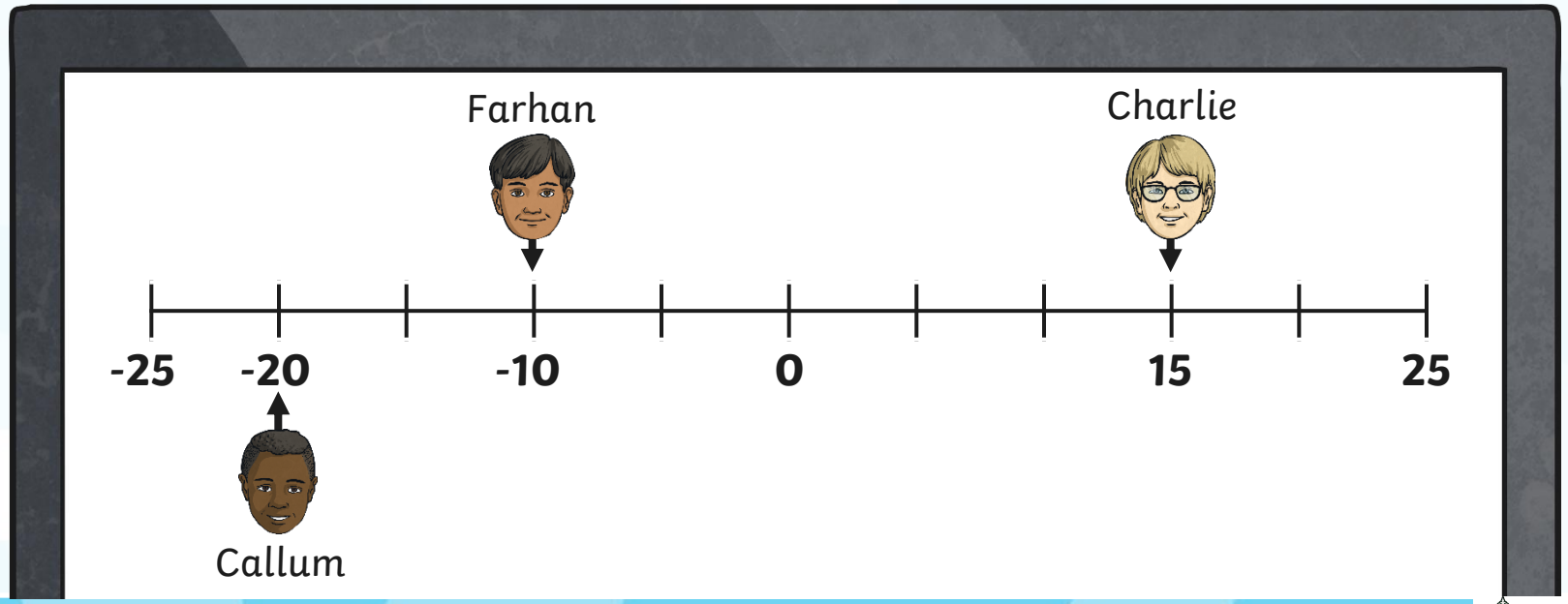
Computer Conundrums

Some more children play the game.

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



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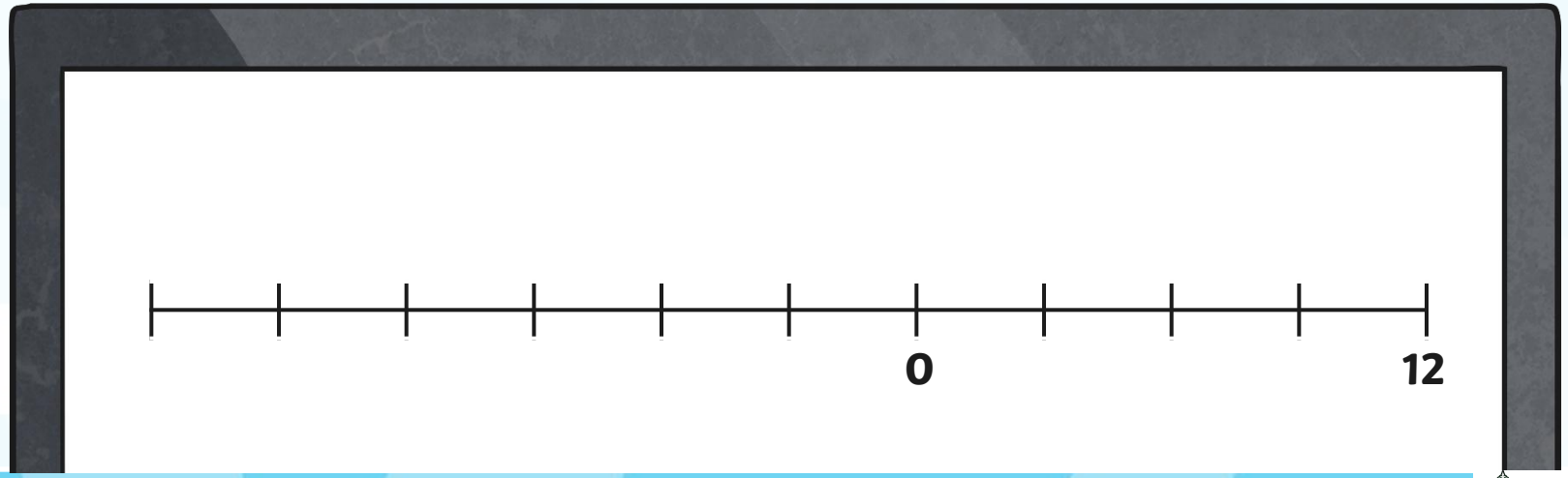
Different Scales

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.



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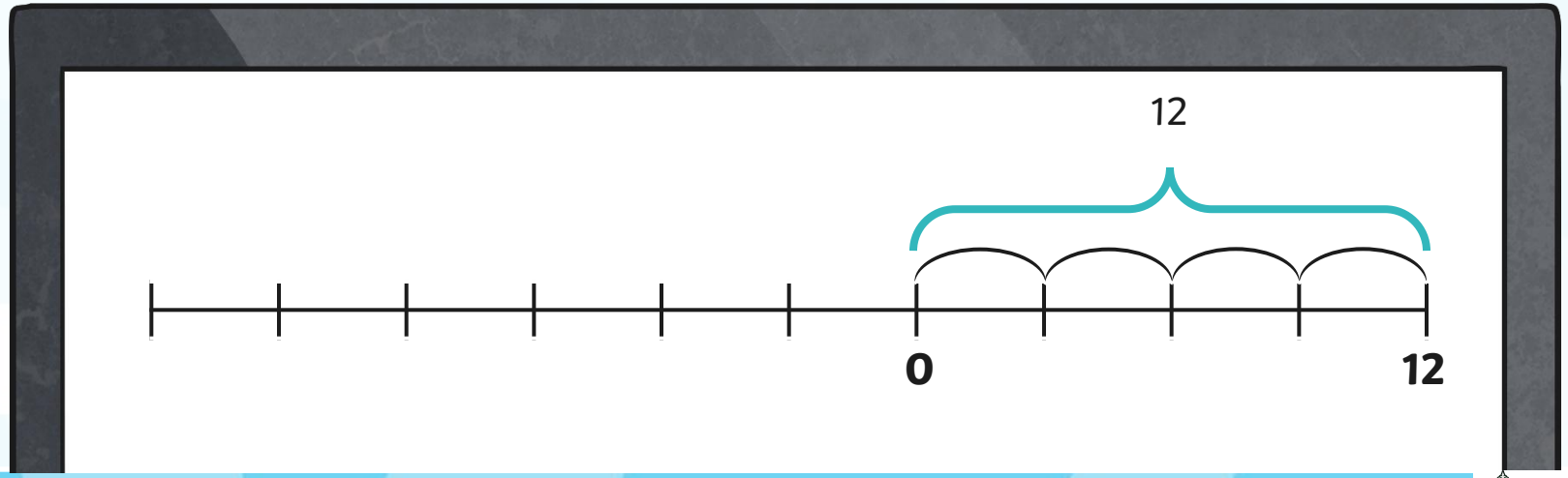
Different Scales

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.



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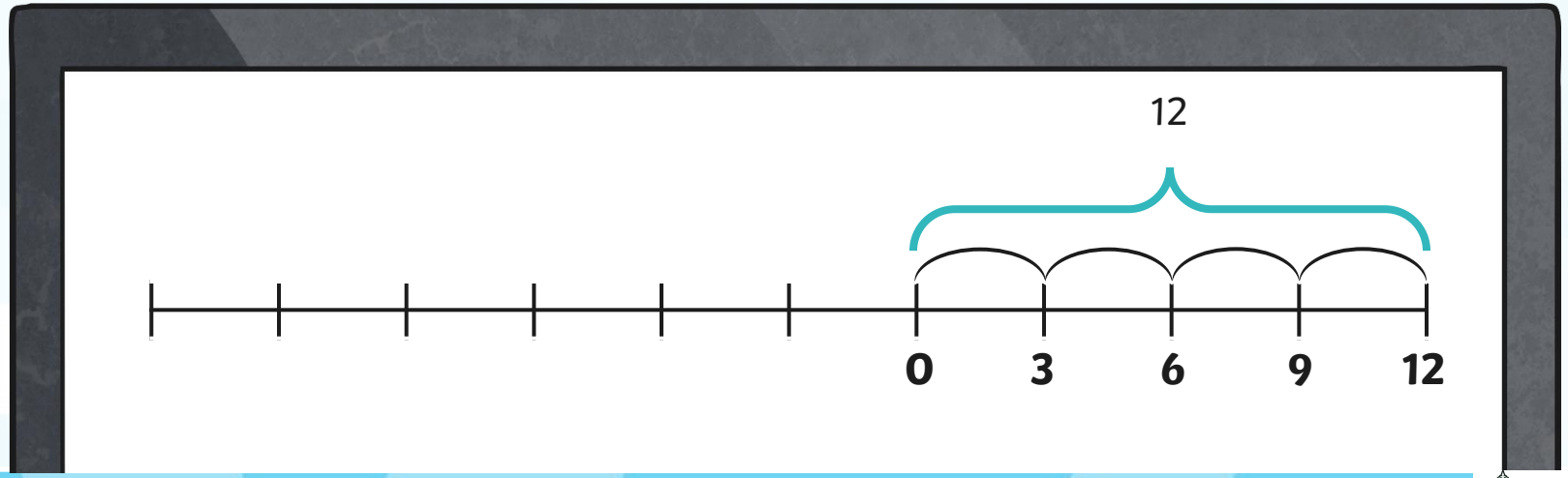
Different Scales

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.



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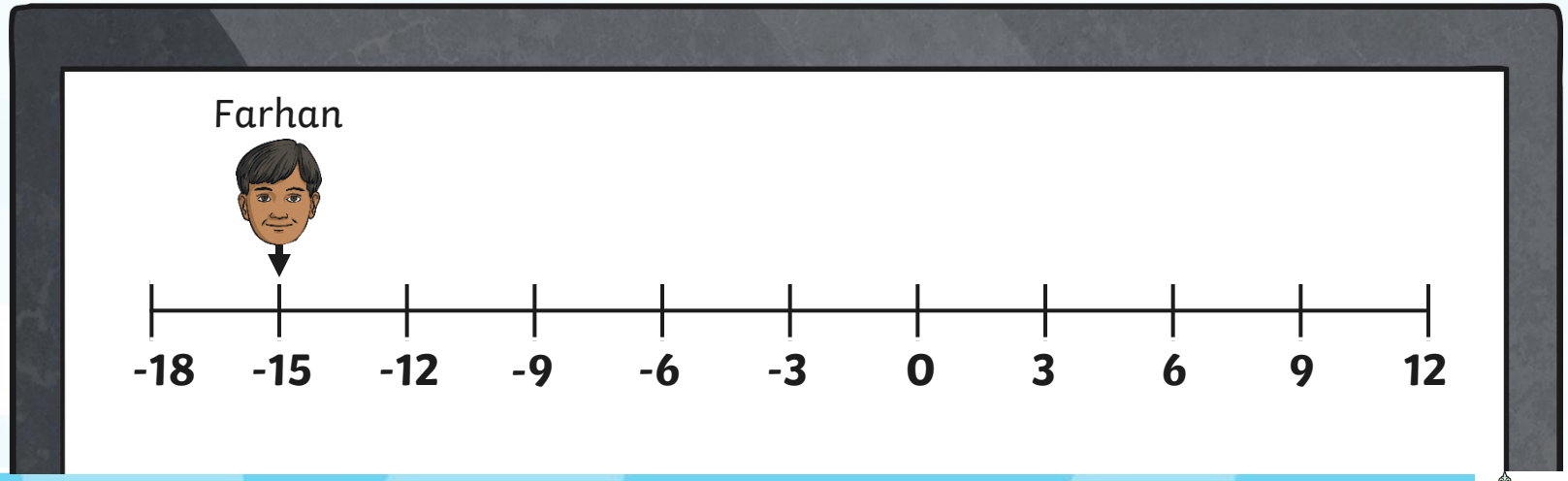
Different Scales

Whole Class

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.



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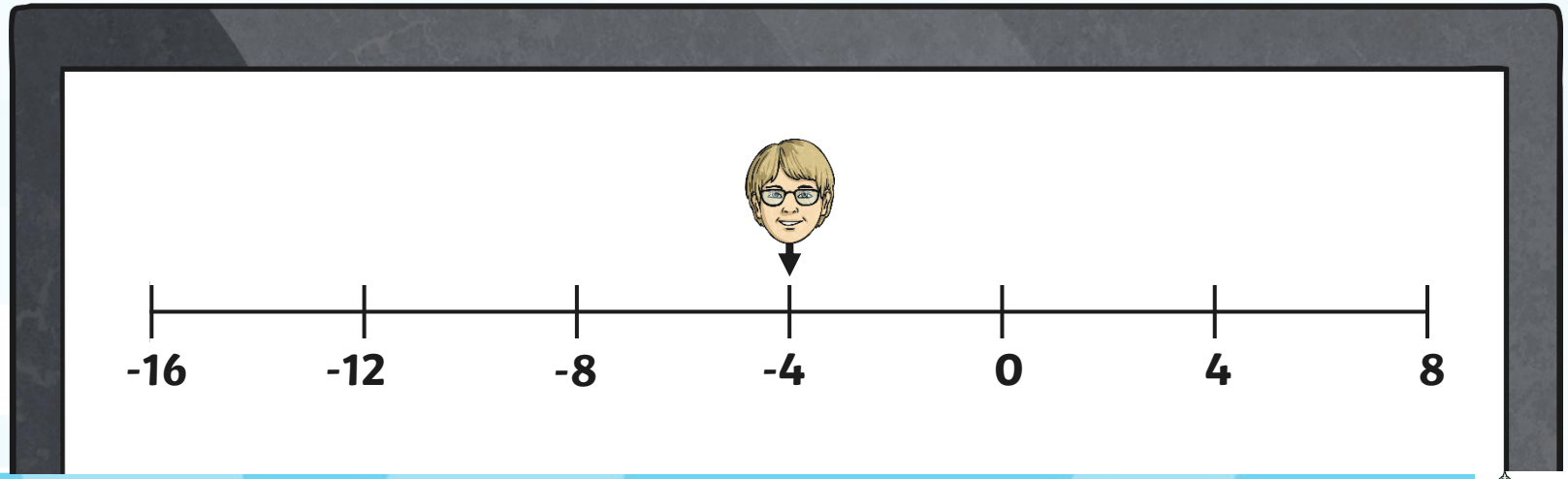
Different Scales

Whole Class

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.



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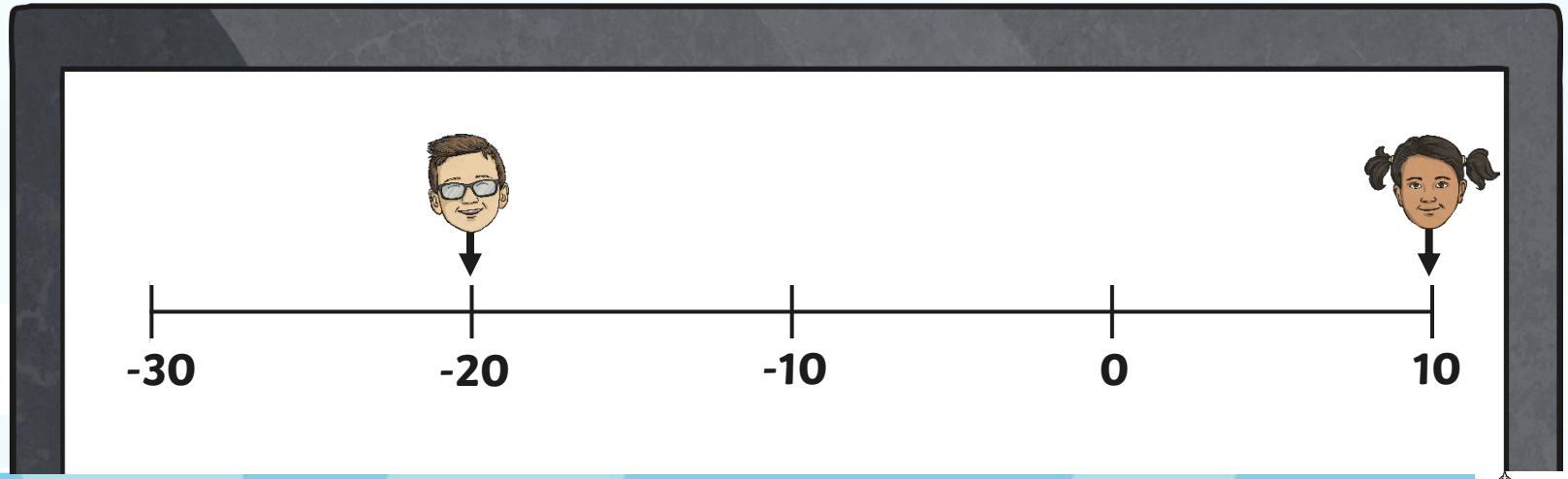
Different Scales

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.



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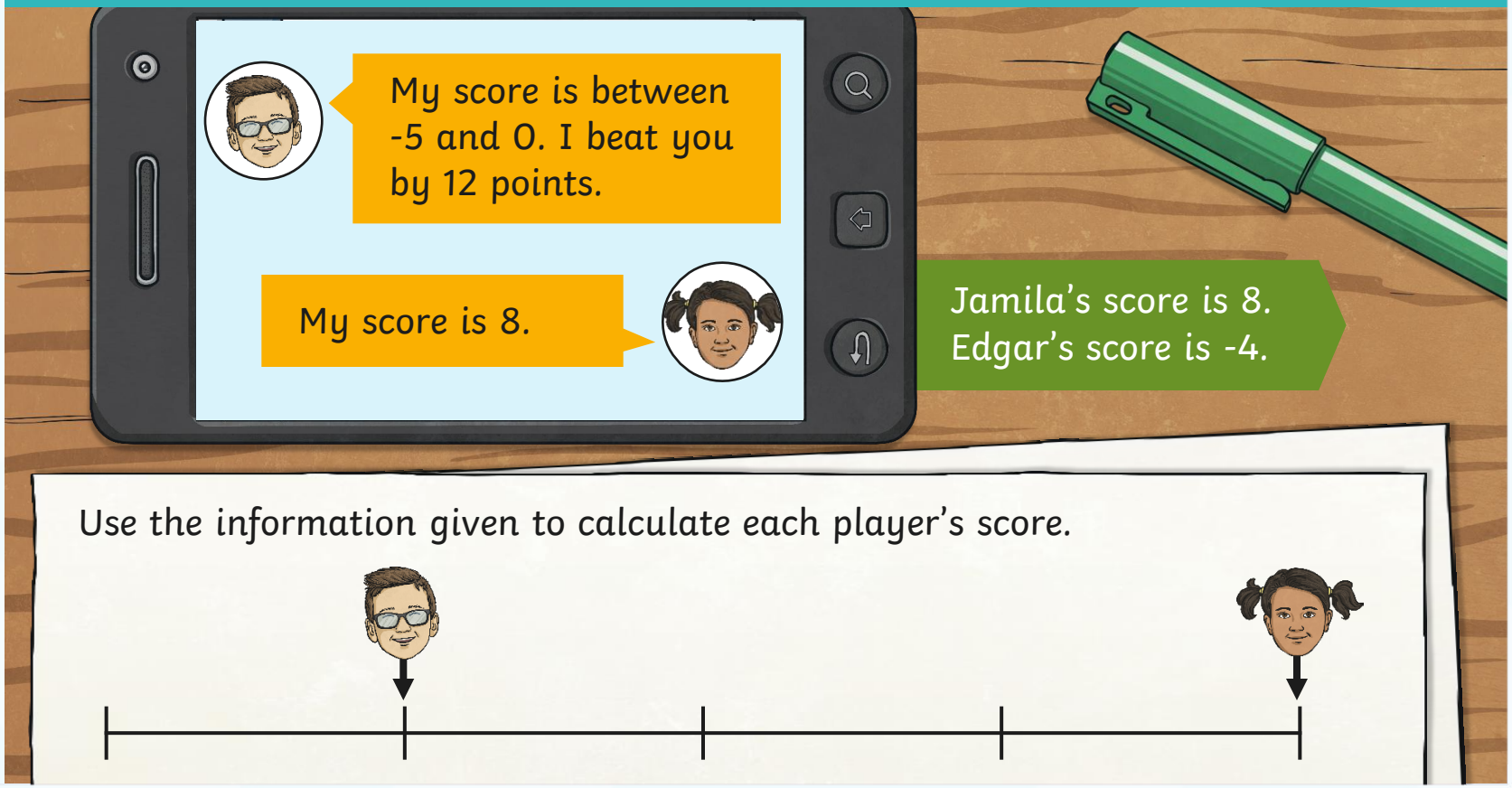
Different Scales

Whole Class

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



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

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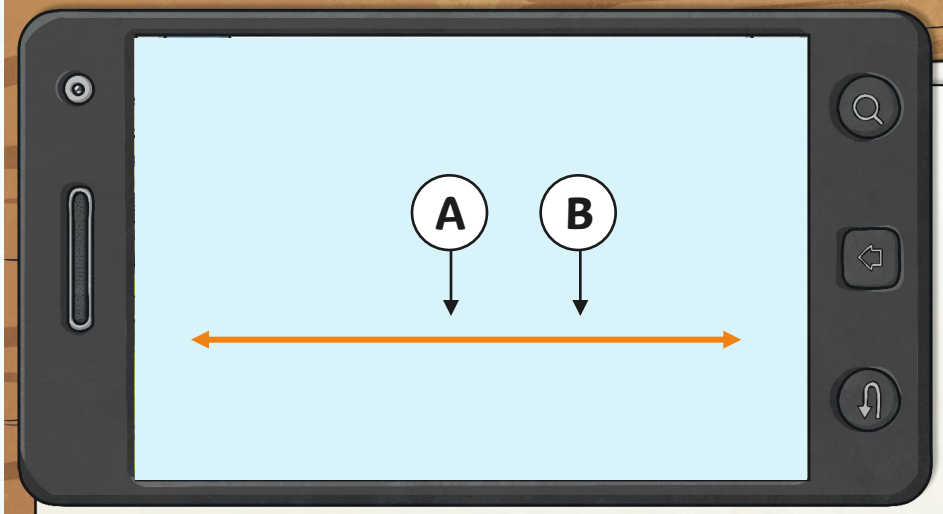
Different Scales

Whole Class

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

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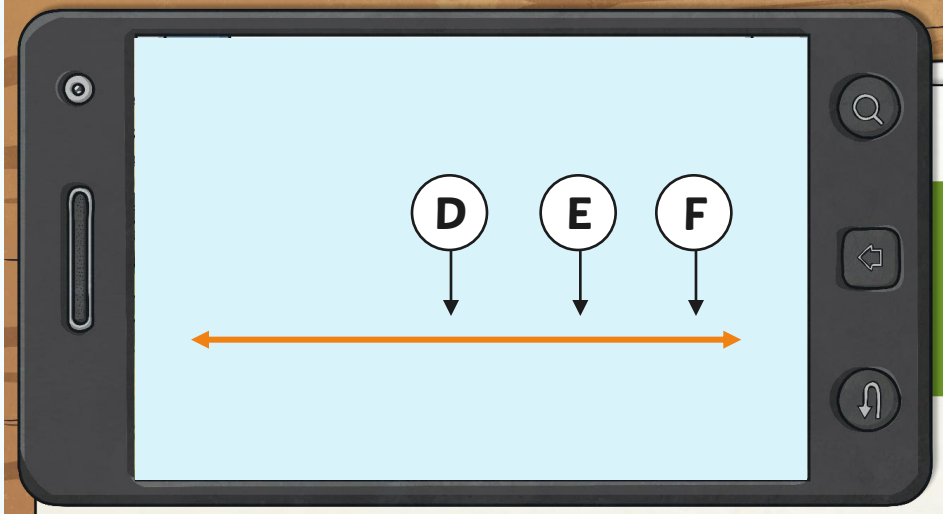
Different Scales

Whole Class

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.

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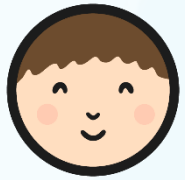
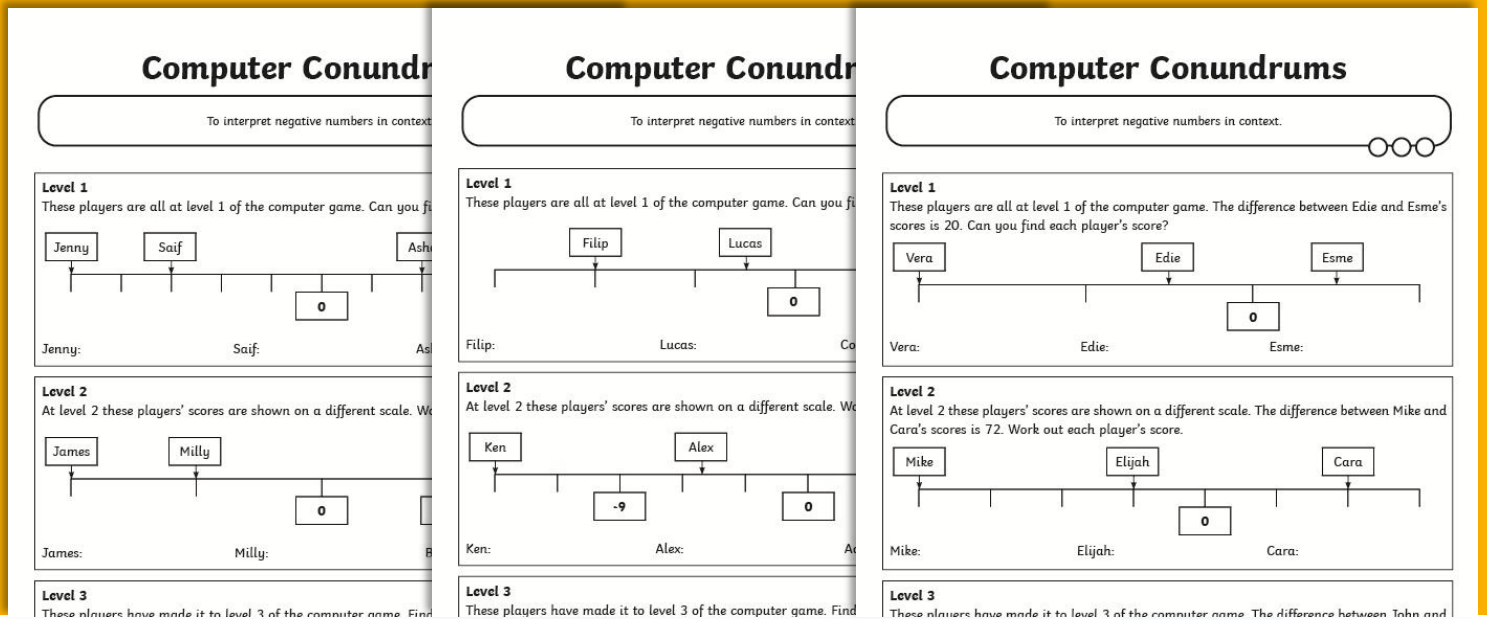
Computer Conundrums Activity



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 Conundr

To interpret negative numbers in context

Level 1

These players are all at level 1 of the computer game. Can you fi

Jenny Saif Ash 0

Jenny: Saif: As

Level 2

At level 2 these players' scores are shown on a different scale. We

James Milly 0

James: Milly:

Level 3

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

Computer Conundr

To interpret negative numbers in context

Level 1

These players are all at level 1 of the computer game. Can you fi

Filip Lucas 0

Filip: Lucas: Co

Level 2

At level 2 these players' scores are shown on a different scale. We

Ken Alex -9 0

Ken: Alex: A

Level 3

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

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 0

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 0

Mike: Elijah: Cara:

Level 3

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

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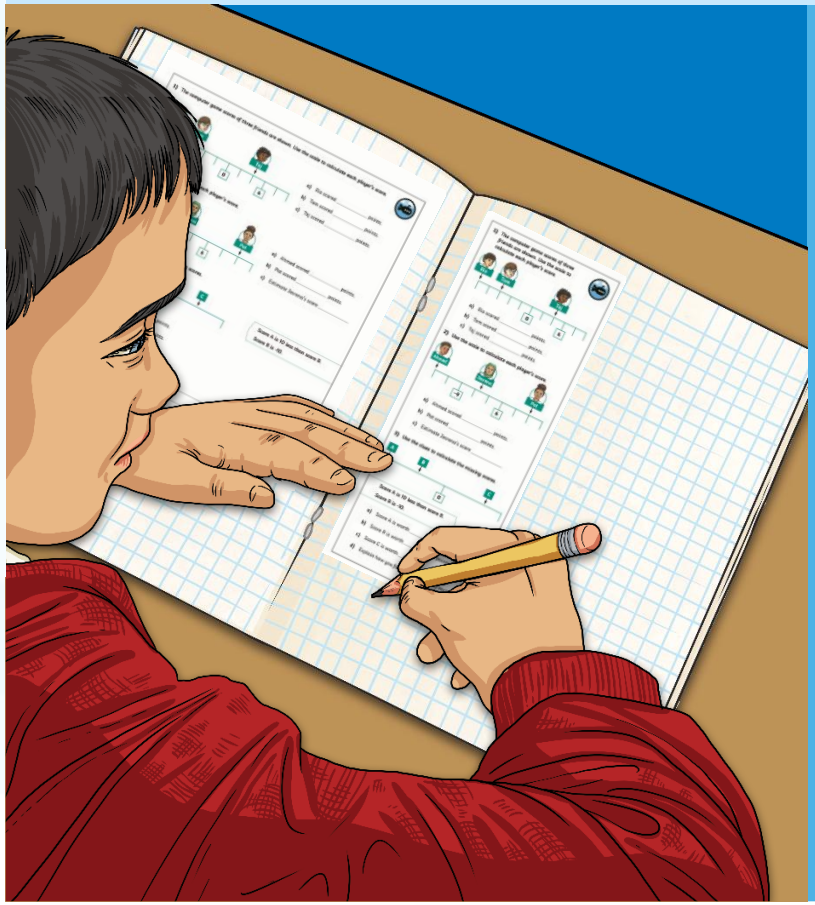
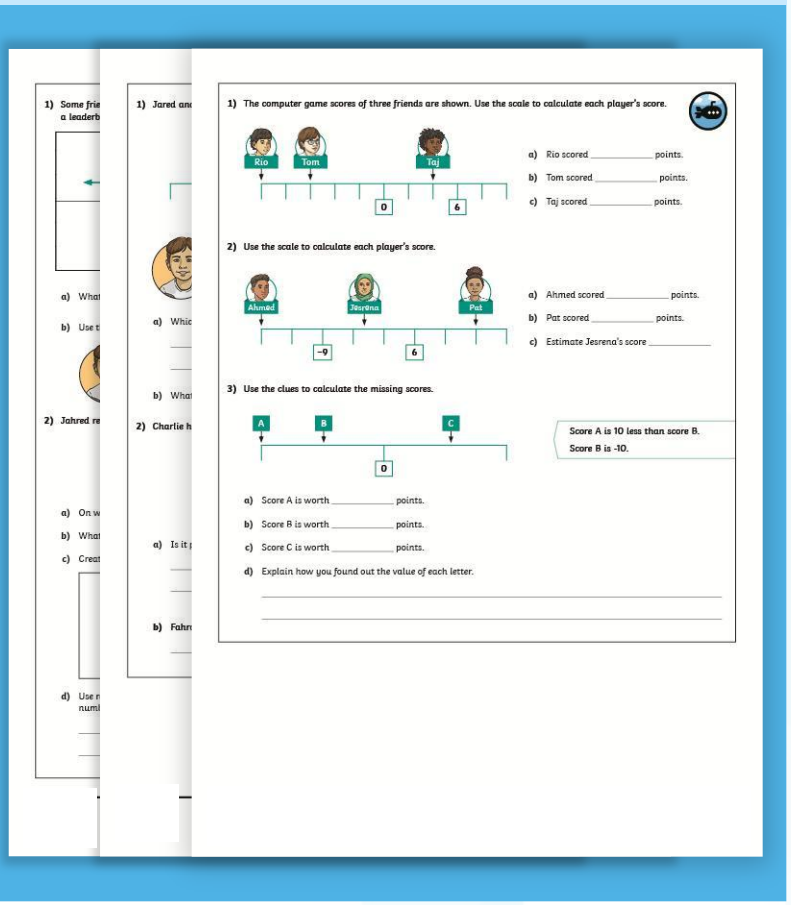
Diving into Mastery

Dive in by completing your own activity!





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

Rio Tom Taj

0 6

a) Rio scored _____ points.

b) Tom scored _____ points.

c) Taj scored _____ points.

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

Ahmed Jesrena Pat

−9 6

a) Ahmed scored _____ points.

b) Pat scored _____ points.

c) Estimate Jesrena's score _____

3) Use the clues to calculate the missing scores.

A B C

0

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

a) Score A is worth _____ points.

b) Score B is worth _____ points.

c) Score C is worth _____ points.

d) Explain how you found out the value of each letter.

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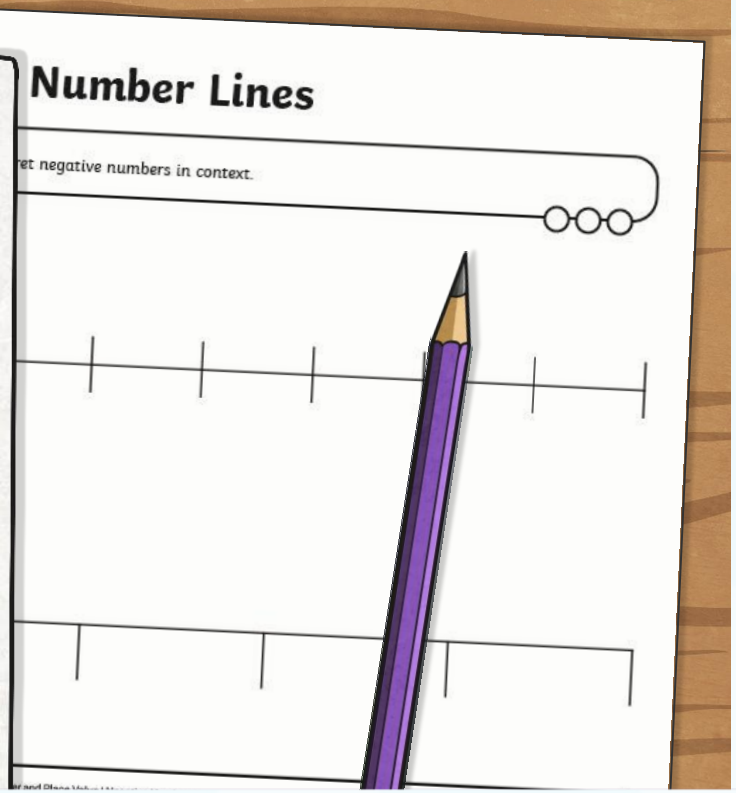
The Answer Is...

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?



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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.

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