

Maths

Number and Place Value

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

Lesson Breakdown

Below is our suggestion for the most coherent and progressive sequence to teach this area of PlanIt Maths, steps on the White Rose Maths scheme of learning although we have not aimed to mirror the exact order in the scheme.

Read, write, order and compare numbers (1): Powers of 10 up to 1 Mill
Children identify the relationships between powers of 10 from one thousand scaling with dividing and multiplying by powers of ten. This is also visually demonstrated using the correct language focus. The listing by of the concepts introduced and linking into Mastery resources include files

NC Statement: Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit.
Lesson Aim: To understand the relationship between powers of 10 from 1 hundredth to 10 million.

Read, write, order and compare numbers (2): Dividing Powers of 10 into
Using bar model representations and sentence stems will help children divide greater than 1000 into 2, 4, 5 or 10 equal parts. Children make connections to 10. The Powers of 10 in Equal Parts Measurement Game uses measuring to concept. Fluency, reasoning and problem solving questions are included in

NC Statement: Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit.
Lesson Aim: To divide powers of 10 into 2, 4, 5 and 10 equal parts.

Read, write, order and compare numbers (3): Place Value of Whole Num
Children identify the value of digits in numbers up to 10 000 000 using the Ge By using arrow cards to help them combine and compose numbers. Children can be written in an addition calculation in different ways as addition is commutative game to match partitioned and complete numbers. Mastery sheets p

NC Statement: Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit.
Lesson Aim: To partition and compose numbers up to 10 000 000.

Introduction

In this unit, the children read and write numbers up to 10 000 000 and continue to identify the value of individual digits in a number. They revisit comparisons of numbers using the greater than and less than symbols and then further develop their skills by reasoning about numbers. Children will focus on rounding numbers to any given degree of accuracy and will also investigate reasoning problems based on rounding numbers. They will work with negative numbers, ordering and comparing them and calculating intervals across zero. They will use negative numbers in context to solve problems. Finally, children will have the opportunity to use all their number and place value skills to solve a range of problems.

Resources
Dice, Gattegno charts, place value charts, place value counters, whiteboards and markers.

Assessment Statements
By the end of this unit, children working towards the expected level will be able to:

- read and write numbers up to 1 000 000;
- identify the value of each digit in a number up to 1 000 000;
- identify the value of a digit in numbers with two decimal places;
- order numbers up to 1 000 000;
- compare numbers using the greater than and less than symbols;
- round numbers to a required degree of accuracy using a number line;
- calculate intervals across zero using a number line;
- compare and order negative numbers;
- solve simple problems involving negative numbers in context;
- solve simple reasoning problems using all of the above.

children working at the expected level will be able to:

- read and write numbers up to 10 000 000;
- identify the value of each digit in a number up to 10 000 000;
- identify the value of a digit in numbers with two decimal places;
- order numbers up to 10 000 000;
- compare numbers to a required degree of accuracy using a number line;
- calculate intervals across zero;
- solve problems involving negative numbers in context;
- solve reasoning problems using all of the above.

Number and Place Value
Maths | Year 6 | Skills to Progress Overview

The aim of the 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, Subtraction, Multiplication and Division					Fractions		Geometry: Position and Direction	Consolidation
Spring	Number: Decimals		Number: Percentages		Number: Algebra		Measurement: Converting Units		Measurement: Perimeter, Area and Volume		Number: Ratio	Consolidation
Summer	Geometry: Properties of Shapes		Problem Solving			Statistics			Investigations			Consolidation

Estimating on a Number Line



Aim

- To estimate numbers with up to 7 digits on number lines.

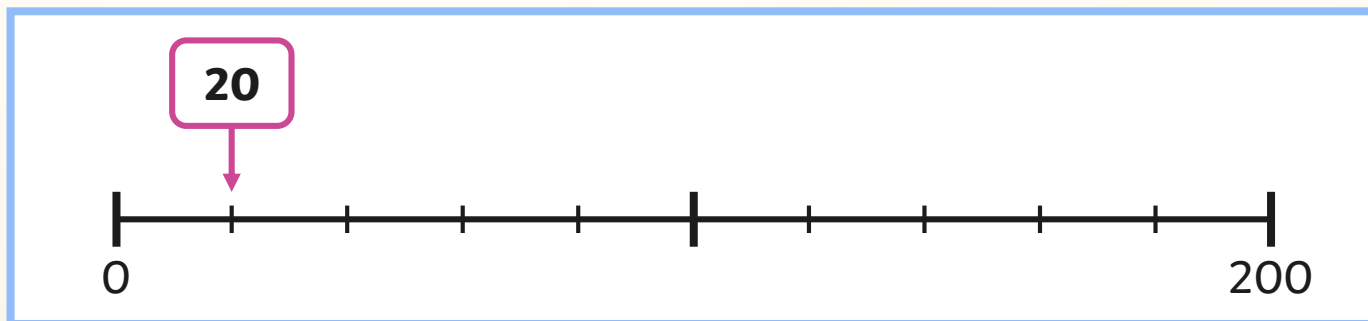
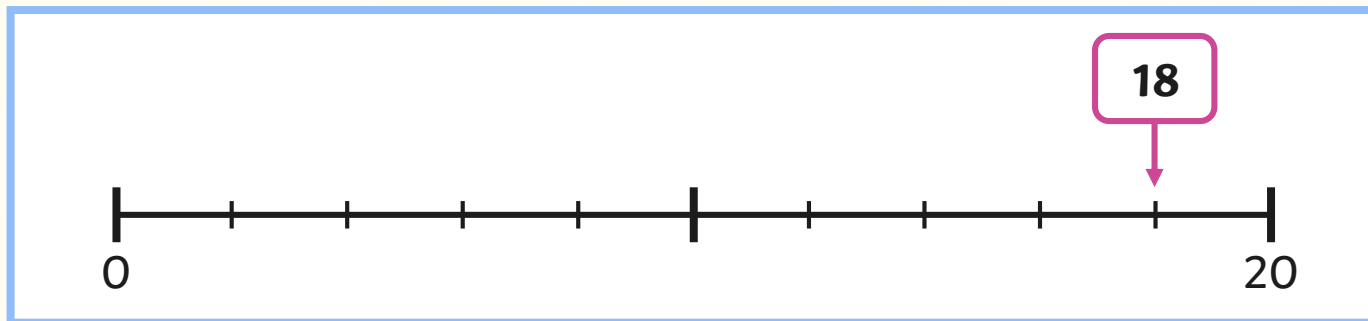
Success Criteria

- I can estimate where to place numbers with up to 7 digits on number lines.
- I can estimate the values of numbers with up to 7 digits indicated on number lines.
- I can use my understanding of dividing powers of 10 into equal parts to help with estimating.
- I know to use leading digits to estimate the position of a large number on a number line.

Remember It



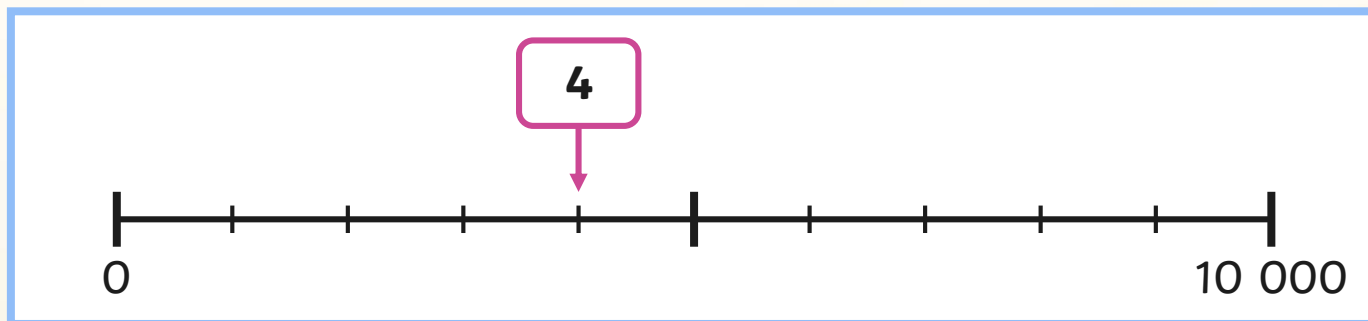
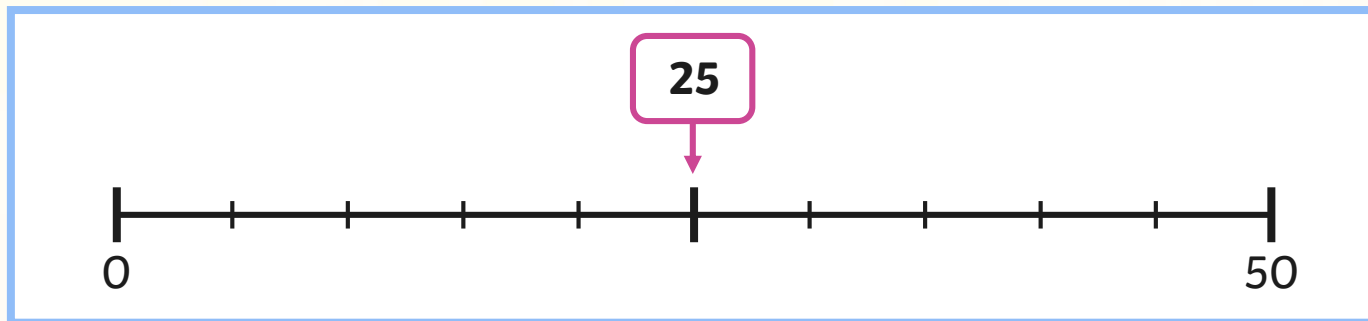
What value are the arrows pointing to on each number line?
Explain how you know.



Remember It



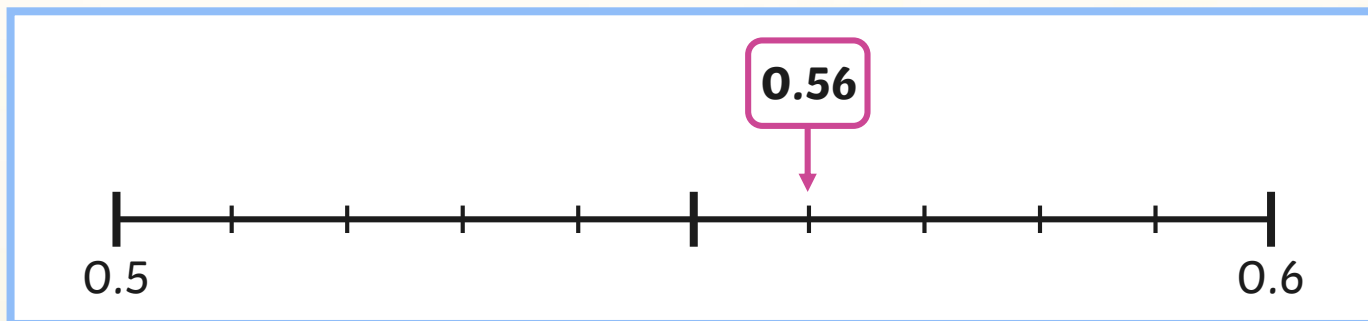
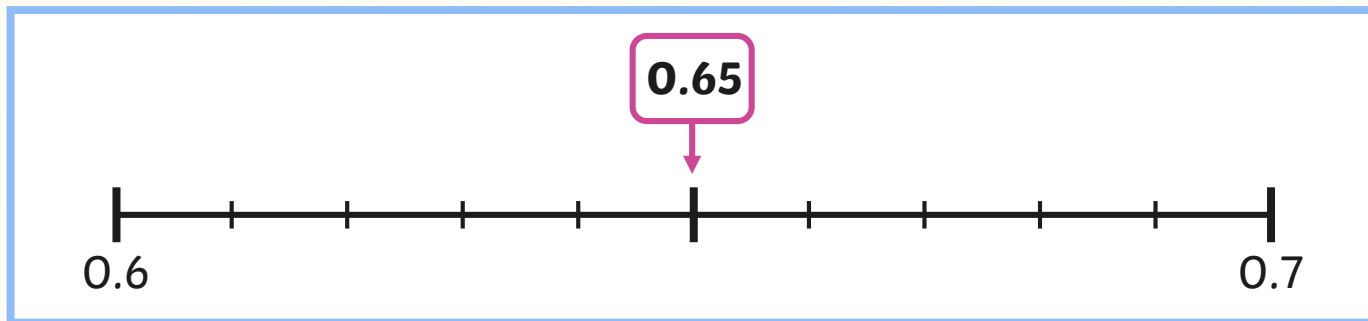
What value are the arrows pointing to on each number line?
Explain how you know.



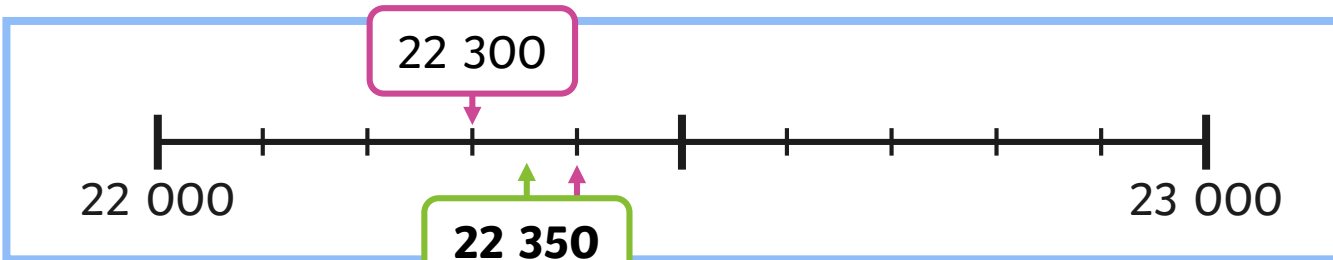
Remember It



What value are the arrows pointing to on each number line?
Explain how you know.



Placing Numbers on a Number Line



What place value skills can we use to estimate the position of 22 350 on this number line?

The number line is marked with the values of 22 000 and 23 000. This is a range of 1000.

Each increment on the number line represents 100.

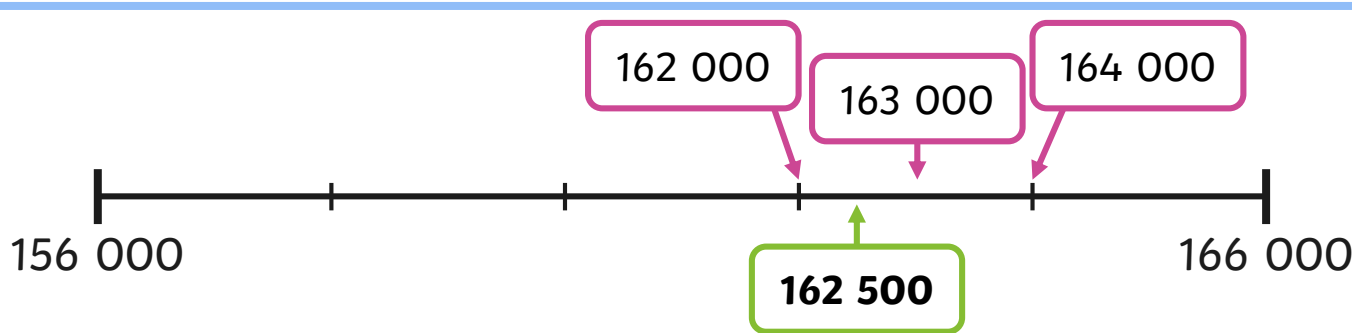
The number line is divided into 10 equal parts.

22 350 falls halfway between 22 300 and 22 400.





Placing Numbers on a Number Line



Each increment on the number line represents 2000.

and 166 000. This is a range

163 000 falls halfway between the increments.

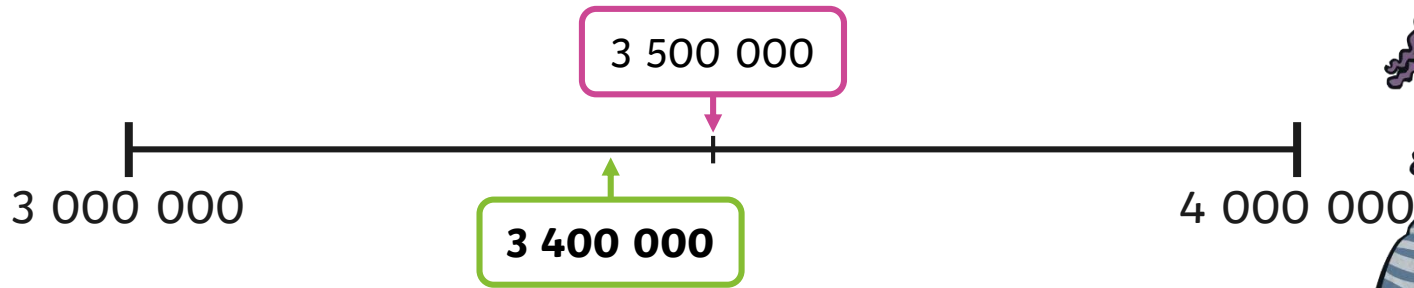
The number line is divided

What place value skills can we use to estimate the position of 162 500 on this number line?

162 500 falls halfway between 162 000 and 163 000.



Placing Numbers on a Number Line



Each increment on the number line represents 500 000.

3 400 000 is closer to 3 500 000 than 3 000 000.

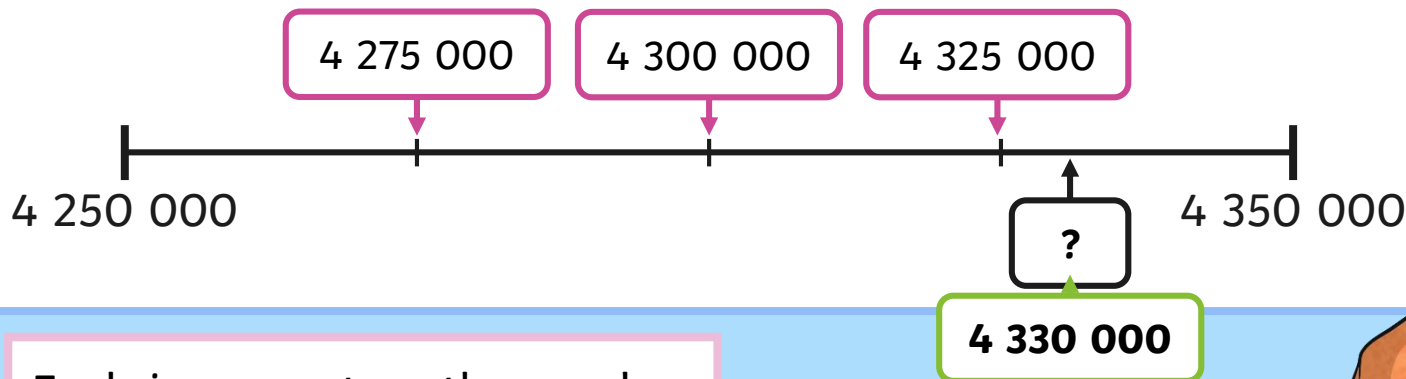
The number line is divided into

The greater the increment, the less accurate we can be in our estimation.

What place value skills can we use to estimate the position of 3 400 000 on this number line?



Identifying Numbers on a Number Line



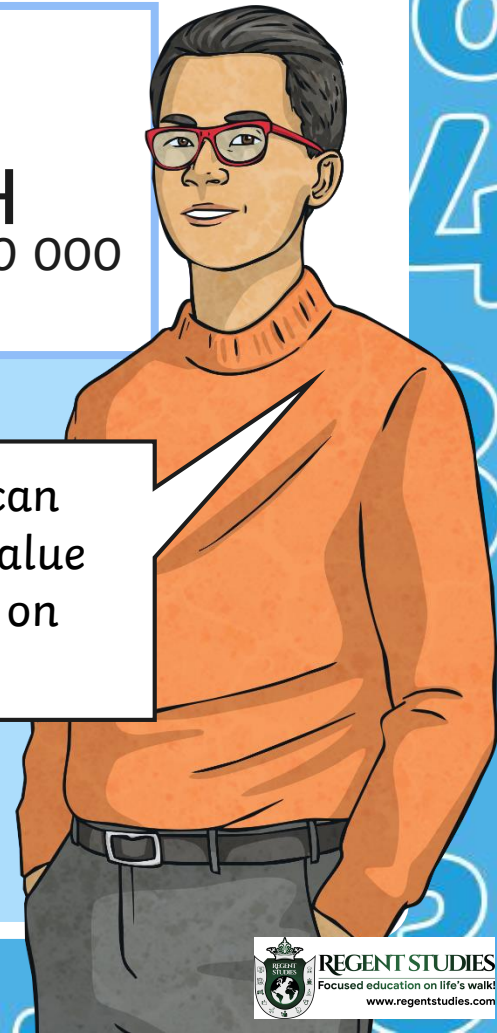
Each increment on the number line represents 25 000.

and 4 350 000. This is a

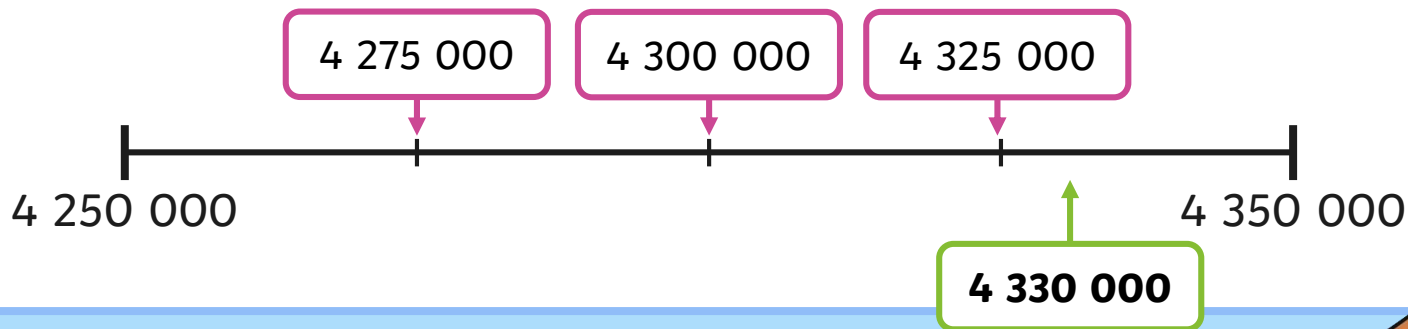
The number is closer to 4 325 000. A sensible estimate would be 4 330 000.

The greater the increments, the less accurate we can be in our estimation.

What place value skills can we use to estimate the value of the number indicated on the number line?



Identifying Numbers on a Number Line

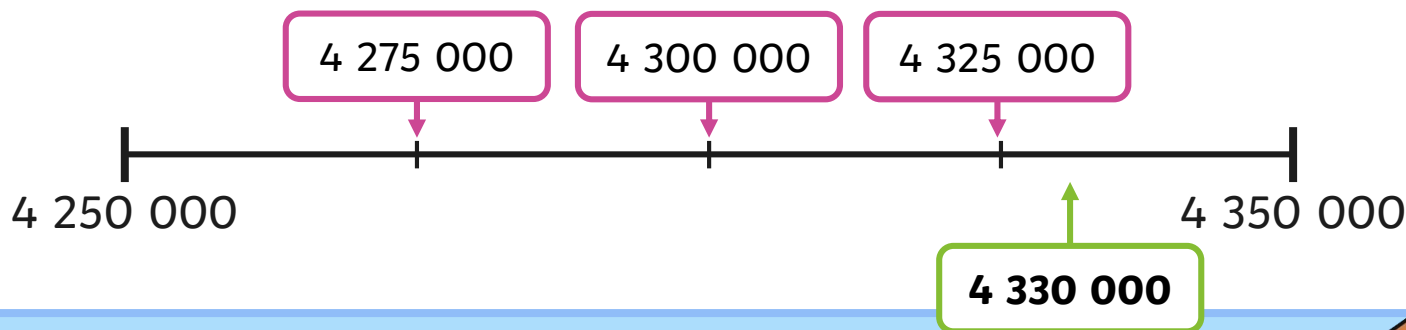


Estimation (or estimating) is the process of finding an estimate, or approximation, which is a value that is close enough to the actual answer to be useable.

Should I expect to be spot on with my estimate? Why not?

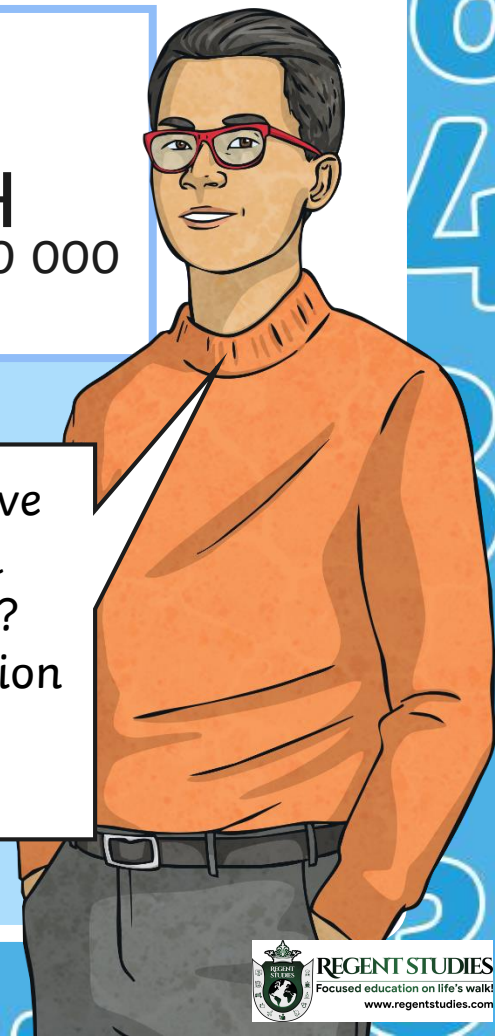


Identifying Numbers on a Number Line



To estimate the value of a number on a large-value number line, think about the digits in the larger place value positions. Accuracy of estimation decreases as you try to estimate the digits in smaller place value positions.

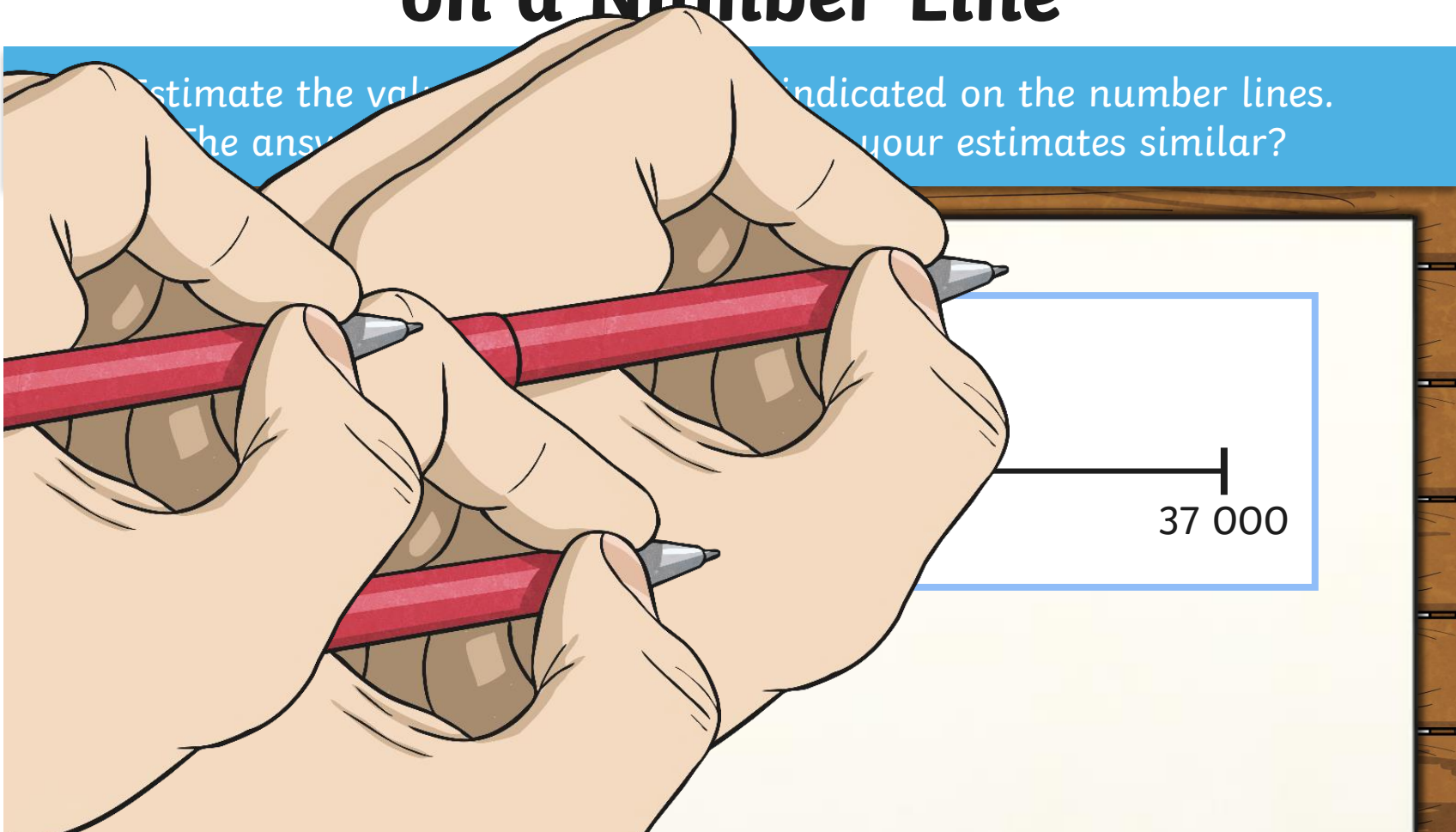
Why do you think I gave an estimate that was a multiple of a thousand? Why would an estimation of 4 339 124 not have been sensible?



Identifying Numbers on a Number Line



Estimate the value indicated on the number lines.
The answers to your estimates similar?



Estimating on a Number Line

Line Bingo Game



76 000 475 000

10 000 7 200 000

0 100 000

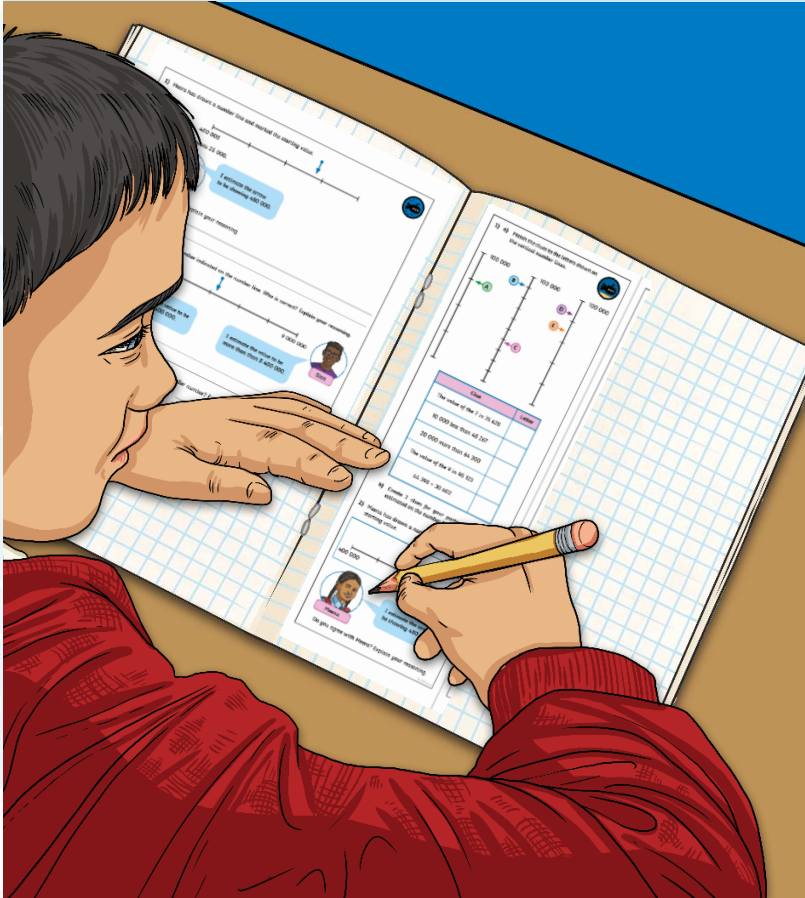
?

0 100 000

?

Diving into Mastery

Dive in by completing your own activity!



1) a) Match the number to the vertical number line.

100 000
0
A

Each interval is 10 000.

Do you agree?

2) Meera has started a number line. The value of the number is 10 000. The value of the number is 20 000. The value of the number is 30 000. The value of the number is 40 000. The value of the number is 50 000. The value of the number is 60 000. The value of the number is 70 000. The value of the number is 80 000. The value of the number is 90 000. The value of the number is 100 000.

b) Create a number line to estimate the value of the number.

2) Meera has started a number line. The value of the number is 10 000. The value of the number is 20 000. The value of the number is 30 000. The value of the number is 40 000. The value of the number is 50 000. The value of the number is 60 000. The value of the number is 70 000. The value of the number is 80 000. The value of the number is 90 000. The value of the number is 100 000.

1) Meera has started a number line. The value of the number is 10 000. The value of the number is 20 000. The value of the number is 30 000. The value of the number is 40 000. The value of the number is 50 000. The value of the number is 60 000. The value of the number is 70 000. The value of the number is 80 000. The value of the number is 90 000. The value of the number is 100 000.

1) Draw an arrow to estimate these numbers on the number lines.

a) 27 000
0 100 000

b) 70 000
0 100 000

c) 850 000
0 100 000

d) 3 000 000
0 100 000

2) Which letter is the best estimate for 6550 on this number line? Explain your reasoning.

6000 7000
A B C

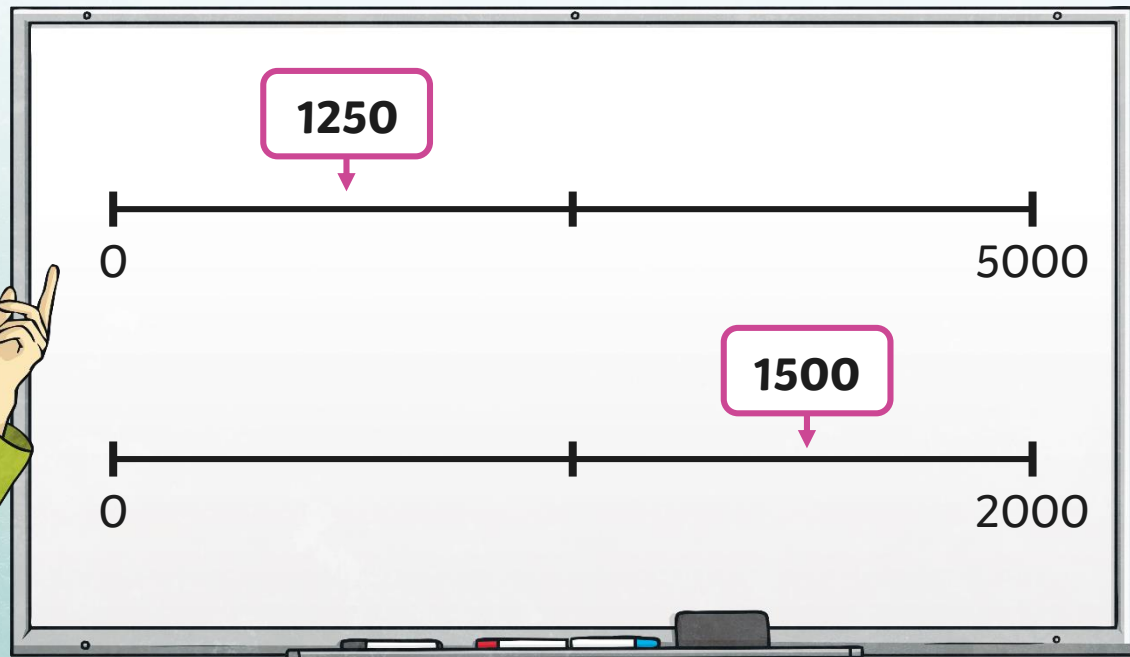
3) Estimate the values.

300 000 400 000
A B C D

Compare It



Which number line shows the biggest number? Explain your reasoning.



Aim



- To estimate numbers with up to 7 digits on number lines.

Success Criteria

- I can estimate where to place numbers with up to 7 digits on number lines.
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- I can use my understanding of dividing powers of 10 into equal parts to help with estimating.
- I know to use leading digits to estimate the position of a large number on a number line.

765.395289873

991 6789 78 096

8 562 853 2234

309 31 238 948

9 5698 435 -31

63 567 892 2.542