

Unit 2

Ordering, estimating and rounding

Five daily lessons

Primary

National Strategy

Year 2
Spring term

This Unit Plan is designed to guide your teaching.

You will need to adapt it to meet the needs of your class.

Unit Objectives

Year 2

- **Read and write whole numbers to at least 100** in figures and words.
- Compare two given two-digit numbers, say which is more or less and give a number which lies between them.
- Use and begin to read the vocabulary of estimation and approximation; give a sensible estimate of at least 50 objects.

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Link Objectives

Year 1

- **Read and write numerals from 0 to at least 20.**
- Compare two familiar numbers, say which is more or less, and give a number which lies between them.
- Understand and use the vocabulary of estimation. Give a sensible estimate of a number of objects that can be checked by counting (e.g. up to about 30 objects).

Year 3

- **Read and write whole numbers to at least 1000 in figures and words.**
- Compare two given three-digit numbers, say which is more or less and give a number which lies between them.
- Read and begin to write the vocabulary of estimation and approximation. Give a sensible estimate of up to about 100 objects.

Resources needed to teach this unit:

- Resource sheet 2.1
- Activity sheet 2.1
- OHT 2.1
- OHTs 2.2-2.4 (originally from *Resources for Teaching Number* in the first INSET box 'Professional development 1 and 2')
- ITP 'Ordering numbers'
- ITP 'Measuring cylinder' (from the Y4-6 Unit Plans CD or www.standards.dfes.gov.uk/primary/numeracy)
- 100 bead string
- 0-100 number line
- 0-50 number line
- Place value cards
- Dice – marked with single digits
- Dice – marked with tens
- 1p and 2p coins
- Objects to estimate and containers
- 80 cm ribbon
- Counting stick
- Paper clips
- Strips of paper/card 30 cm long
- Strips of paper 10 cm long
- Whiteboards

Also see Models and Images Chart:

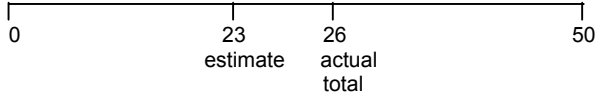
- Ordering numbers to 100.

(Key objectives in bold)

Planning sheet	Day One	Unit 2 <i>Ordering, estimating and rounding</i>	Term: <i>Spring</i>	Year Group: 2
Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/ Focus Questions
<p>Count on and back in ones from any number up to 100.</p> <p>Read and write whole numbers to at least 100 in figures and words.</p> <p>VOCABULARY count on count back after greater than less than even odd multiple</p> <p>RESOURCES Whiteboards</p>	<ul style="list-style-type: none"> Count on and back from various numbers to 100. Use whiteboards to answer: <div>Q What number comes after 12, 15, 7, 4, 23, 54?</div> Ask the children to write in words and figures: <ul style="list-style-type: none"> – an even number less than 20; – a number greater than 8 and less than 15; – an even number greater than 30 and less than 50; – a multiple of 2 greater than 30 and less than 50. 	<p>Read and write whole numbers to at least 100 in figures and words.</p> <p>VOCABULARY sixty seventy eighty ninety sixty-one, sixty-two... seventy-one, seventy-two... eighty-one, eighty-two... ninety-one, ninety-two...</p> <p>RESOURCES Resource sheet 2.1 (cut into 'cards' and some blank cards) Whiteboards Bead string</p>	<ul style="list-style-type: none"> Count in tens from 0 to 50. Remind the children that they learned how to write these words last term. Ask the children to write the words for 10, 20, 30, 40, 50 on their whiteboards. Check these. Write on the board sixty, seventy, eighty, ninety. <div>Q What do you notice?</div> <p>Draw out that unlike twenty, thirty, forty, fifty, the numbers sixty, seventy, eighty and ninety are spelt by writing 'ty' after the number of tens.</p> Write 77 in words on the board: seventy-seven. Ask the children to partition the number into tens and ones: 7 tens and 7 ones. Ask a child to find it on the class number line. <div>Q Which number comes next?</div> Ask the children to write 65 in figures and words. Ask a child to find it on the class number line. Ask which number comes next. <p>Repeat with other numbers in this decade.</p> Ask the children to write 52 in figures and words. Ask a child to find it on the class number line. Ask which number comes next. <p>Repeat with other numbers in this decade.</p> Use the cards made from Resource sheet 2.1. Ask the children to work in pairs. One child picks a card and says the number and the other child writes the number in words. They also have to say which number comes next. They take turns to write and say. If they use all the cards they should make up some of their own. <div>Q If I ask you to write ninety-seven in figures, how do you know which digits to use?</div> 	<ul style="list-style-type: none"> Use a bead string to make a number e.g. 68. <p>Ask what number it is.</p> <div>Q How do you know what number it is?</div> <p>Encourage the children to check by counting the beads in tens and ones.</p> <p>Ask a child to write it on the board.</p> Repeat using various numbers asking the children to write the numbers in words on their whiteboards. <div> <p>By the end of the lesson, children should be able to:</p> <ul style="list-style-type: none"> read numbers to 100 e.g. 3, 5, 11, 19, 32, 50; read numbers written as words e.g. twenty, thirty-three, fifty-six; write numbers in figures and words e.g. 70, thirty-three. <p>(Refer to supplement of examples section 5, page 9.)</p> </div>

Planning sheet		Day Two	Unit 2 <i>Ordering, estimating and rounding</i>	Term: <i>Spring</i>	Year Group: 2
Oral and Mental			Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/ Focus Questions	
<p>Count on and back in ones and tens from any number up to 100.</p> <p>Read and write whole numbers to at least 100 in figures and words.</p> <p>VOCABULARY ones, tens twenty-nine thirty-nine forty-nine ... ten, twenty, thirty, forty...</p> <p>RESOURCES 0 to 100 number line Whiteboards</p>	<ul style="list-style-type: none"> Count in tens from 0 to 100. Count on in ones from 25 to 33. Show this on the number line. Count on from 38 to 43. Show this on the number line. <p>Count on from 48 to 53. Show this on the number line.</p> <p>Point out the tens numbers which they have counted and the counting in tens. Write sixty-nine on the board. <p>Q What comes next?</p> <p>Ask children to write the answers on their whiteboards. Write the word fifty-nine. <p>Q What comes next?</p> <p>Children answer on their whiteboards. Repeat with other numbers ending in 9. </p></p></p>	<p>Read and write whole numbers to at least 100 in figures and words.</p> <p>Compare two given two-digit numbers, say which is more or less and give a number which lies between them.</p> <p>VOCABULARY more less between digit</p> <p>RESOURCES Place value cards OHT 2.1 Dice marked with tens Dice marked with ones</p>	<ul style="list-style-type: none"> Write eighty-four and seventy-three on the board. Ask a child to write these numbers in figures. <p>Q Which is more? How do you know? Which digit do you look at to find the larger number?</p> <ul style="list-style-type: none"> Write 23 and 32 on the board. <p>Q Which is more? How do you know? Which digit do you look at to find the larger number?</p> <p>Share the answers.</p> <p>Ask the children to discuss this in pairs and then take feedback. Show 23 and 32 using the place value cards. Demonstrate by partitioning that 32 is more because 30 is more than 20. Emphasise again that we look at the largest digit – the tens in this case – to show us that the whole number is more.</p> <p>Show 32 and 23 on the number line. Emphasise that we first look at the largest digit – the tens in this case – to show us that the whole number is more. Point to the numbers on the number line and show that 32 is more than 23.</p> <p>Q Show me a number on the number line that lies between 23 and 32.</p> <ul style="list-style-type: none"> Ask the children to work in pairs to choose an odd number that is greater than 40 and less than 75, and an even number greater than 45 and less than 70. Ask them to discuss with a partner which of the two numbers is less and how they know. <p>Share the answers.</p> <p>Q Which digit did you look at to find the smaller number?</p> <ul style="list-style-type: none"> Give two dice to each pair of children – one marked in tens and the other in ones. Children throw both dice and then write the number they make. They then mark and label the number on an empty number line. They then throw both the dice again and write the number and mark and label it on the empty number line. They write M under the number which is more and L under the number which is less. They then mark and label a number which lies between the two numbers, e.g. <div style="text-align: center;"> <p>0 34 50 76 100</p> <p style="margin-left: 100px;">L</p> <p style="margin-left: 200px;">M</p> </div> <p>They should repeat this, sketching a new 'empty number line' each time.</p>	<p>Q What was the smallest number you made? The largest?</p> <p>Q Which digit do we look at when we are finding out which number is more?</p> <ul style="list-style-type: none"> Show the word problems on OHT 2.1. Read the first question, ask the children to discuss the question with their partner and then 'vote' on the answer. <p>Q How did you decide on the answer?</p> <p>By the end of the lesson, children should be able to:</p> <ul style="list-style-type: none"> say which of two two-digit numbers is more or less and give a number which lies between them; explain how they worked out which was more/less. <p>(Refer to supplement of examples, section 5 page 11.)</p>	

Planning sheet		Day Three	Unit 2 <i>Ordering, estimating and rounding</i>	Term: <i>Spring</i>	Year Group: 2
Oral and Mental			Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities		Teaching Activities/ Focus Questions
<p>Count on in steps of 3 or 5 to at least 30.</p> <p>Know what each digit in a two-digit number represents and partition a two-digit number into a multiple of ten and ones.</p> <p>VOCABULARY count in fives count in threes partition ones tens digit multiple</p> <p>RESOURCES Whiteboards Number line 0-50</p>	<ul style="list-style-type: none"> Together count on in 5s, showing alternate hands for each five. Point to the fives on the number line as the children say the numbers. <p>Stop at a two-digit number and ask the children to partition the number.</p> <p>Q How many tens? How many ones? Will we ever get 6 ones? Why not?</p> <ul style="list-style-type: none"> Repeat, starting at different multiples of 5. After a few repetitions ask what they notice when they partition multiples of 5. They should see that the ones digit is always 0 or 5. Count in 3s. Point to these numbers on the number line as the children say the numbers. Stop at a two-digit number and ask the children to partition the numbers. <p>Q What do you notice about the ones digits this time?</p>	<p>Use and read the vocabulary of estimation and approximation; give a sensible estimate of at least 50 objects.</p> <p>VOCABULARY estimate close to exact exactly</p> <p>RESOURCES A tray of around 40 conkers or other objects OHTs 2.2 to 2.4 (from <i>Resources for Teaching Number</i> in the first INSET box) See-through containers with a range of objects 1p and 2p coins</p>	<ul style="list-style-type: none"> Show a tray of about 40 conkers or other objects. <p>Ask the children if they think there are enough for everyone in the class to have one.</p> <p>Q Roughly how many objects are there? How do you know?</p> <p>Explain that this is an 'estimate'.</p> <p>Discuss how we can use an estimate rather than a wild guess. Demonstrate by showing 5 objects.</p> <p>Q Are there more or fewer conkers than 5? Do you think there are as many as 100?</p> <ul style="list-style-type: none"> Repeat with another set of objects. In pairs agree an estimate. <p>Q Are there more or less than 5? More or less than 20?</p> <ul style="list-style-type: none"> Use the first three of the set of Spotty Sheets (OHTs 2.2 to 2.4) and ask the children to estimate how many spots are on each. <p>Q How did you estimate the number of spots? Did any of you see any groups of five?</p> <p>Demonstrate how roughly grouping the spots can help to inform the estimate.</p> <ul style="list-style-type: none"> Use the prepared sets of objects. Ask children to visit each set of objects, make an estimate of how many there are and record their estimates in their books. After most children have completed the task collect answers for each set. <p>Q How did you come to your estimate?</p> <ul style="list-style-type: none"> Ask children to find out how many are in the sets and compare their estimates with those of their partners. <p>Q Who was closest? How close should an estimate need to be to be a good estimate? Does it need to be exactly right? What would be a silly estimate?</p>		<ul style="list-style-type: none"> Show a handful of pennies on the OHP. <p>Q How much money is there?</p> <p>Then use two pence coins and pennies.</p> <p>Q How much is there now? How did you estimate?</p> <p>Count the money to see if they were close.</p> <ul style="list-style-type: none"> Show two amounts of money. <p>Q Which amount would you rather have?</p> <p>Count each amount to find which is the larger.</p> <p>By the end of the lesson, children should be able to:</p> <ul style="list-style-type: none"> estimate a number up to about 50 and explain how the estimate was made. <p>(Refer to supplement of examples, section 5, page 17.)</p>

Planning sheet		Day Four	Unit 2 Ordering, estimating and rounding	Term: Spring	Year Group: 2
Oral and Mental			Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/ Focus Questions	
<p>Know by heart the subtraction facts for each number to at least 10.</p> <p>VOCABULARY subtraction difference</p> <p>RESOURCES Whiteboards</p>	<ul style="list-style-type: none"> Ask quick-fire questions using subtraction facts to 10. <div>Q The answer is 7. What could the subtraction sentence be?</div> <p>Discuss answers.</p> <ul style="list-style-type: none"> Write some missing box number sentences: <p> $\square - 6 = 12$ $\square - 4 = 9$ $6 - 7 = \square$ $20 - \square = 4$ $\square - 10 = 12$ $\square = 9 - 4$ $\square = 19 - 5$ </p> <p>Ask the children to write the answers to each on their whiteboards.</p> <div>Q How did you work them out?</div>	<p>Use and read the vocabulary of estimation and approximation; give a sensible estimate of at least 50 objects.</p> <p>VOCABULARY estimate nearly close to just over/under exact</p> <p>RESOURCES Trays of objects Objects for the children to use for estimating Activity sheet 2.1 80 cm of ribbon Strips of paper 10cm long</p>	<ul style="list-style-type: none"> Refer back to the previous lesson and remind the children about estimating. Use a prepared tray of objects (up to 30). <div>Q How many objects are there? How did you decide?</div> <p>Collect answers and remind the children of how grouping helped in the last lesson.</p> <ul style="list-style-type: none"> Show some more objects (up to 30). <p>Ask the children to discuss in pairs how many objects there are. Take feedback and record some of the answers on the board. Ask one child to count them and another child to check. Record the answer.</p> <div>Q Which answer is closest? How do you know?</div> <p>Record the closest estimate and the actual number on a number line.</p> <div>Q What is the difference between the closest estimate and the actual number?</div> <p>Model by counting on the number line.</p>  <p>Draw out that the difference between the estimate and the actual number is 3.</p> <ul style="list-style-type: none"> Repeat this with a different amount of objects (up to 50). Ask the children to work in pairs and take two handfuls of objects (coins, construction pieces, pencils etc.), estimate how many there are and then count to find out the actual number. <p>They should record this on Activity sheet 2.1.</p>	<ul style="list-style-type: none"> Show the children a metre stick and say that it is 100 cm long. Show a piece of ribbon 80 cm long. Ask the children to estimate the length. <div>Q How did you estimate? Is it shorter or longer than the stick? Much shorter?</div> <p>Record some answers.</p> <ul style="list-style-type: none"> Ask a child to measure it and record the answer. <div>Q Which was the closest estimate?</div> <div>Q What is the difference between the closest estimate and the actual measurement?</div> <ul style="list-style-type: none"> Demonstrate finding the difference on a number line. Remind the children that the ribbon is 80 cm long. Ask them to discuss in pairs where you would cut it if you wanted a 50 cm piece. Ask one child to come and put a paper clip on the ribbon where they think 50 cm is. Check by measuring. <div>Q How do you know?</div> <p>HOMEWORK – Give each child a strip of paper 10 cm long. They should choose three objects in their house that look to be about 10 cm long. They should check the objects with the length of paper.</p> <div>By the end of the lesson, children should be able to:</div> <ul style="list-style-type: none"> record estimates on a number line and find the difference between the estimate and the actual number. <p>(Refer to supplement of examples, section 5, page 17.)</p>	

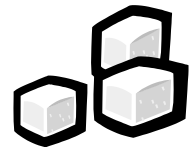
Planning sheet	Day Five	Unit 2 <i>Ordering, estimating and rounding</i>	Term: <i>Spring</i>	Year Group: 2
Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/ Focus Questions
<p>Use and read the vocabulary of estimation and approximation</p> <p>VOCABULARY estimate</p> <p>RESOURCES Counting stick Paper clips – one per child. Strips of paper 30 cm long – one per child</p>	<ul style="list-style-type: none"> Count in tens along the counting stick. Then put your finger in between 30 and 40 and ask what number this would be and why. Point to other positions between two marks. Give each child a strip of card 30 cm long. <p>Q How long do you think it is?</p> <ul style="list-style-type: none"> Ask the children to find out by measuring. Then give each child a paper clip and ask them to put the paper clip where 15 cm would come to. Ask them to compare with a friend where they have put the paper clip. Try other positions for the paper clip such as 10 cm. <p>Q How did you decide where to put the clip?</p>	<p>Use and read the vocabulary of estimation and approximation; give a sensible estimate of at least 50 objects.</p> <p>VOCABULARY estimate close to just over/under exact</p> <p>RESOURCES ITP 'Ordering numbers' Dice ITP 'Measuring cylinder' Whiteboards</p>	<ul style="list-style-type: none"> Ask the children what objects they estimated to be 10 cm long for their homework. <p>Q Did your estimates get better after the first few goes?</p> <ul style="list-style-type: none"> Use the ITP 'Ordering numbers' and choose 100 to start. <p>Pause the program between each number line.</p> <p>On the second number line ask the children where they think 37 should go and why. Ask a child to mark it on the board.</p> <p>Q How did you know?</p> <p>Draw out that 37 is less than 40 but more than 30, or 35 is between 30 and 40 so 37 is just a little more. Discuss how the beads above can help.</p> <ul style="list-style-type: none"> Choose other numbers and ask where they would be placed. Continue to the next number line and do the same kind of activities. <p>Q Can we be precise? Why not?</p> <p>Draw out that it is less precise because there are tens marked but the line above can help.</p> <ul style="list-style-type: none"> Demonstrate the Dicey Digits game by playing class against the teacher. <p>The children work in pairs and draw a number line with 0 and 100 marked on it. They use two single-digit numbered dice to generate two-digit numbers.</p> <p>Child 1 throws the dice, says the numbers and decides which is to be the tens digit and which is the ones digit. He/she says the number and marks it on the empty number line, writing the number above.</p> <p>Child 2 does the same.</p> <p>They repeat this until one child has three numbers on the line in a row without a number from his/her partner in between.</p> <p>Say that they will have to make decisions about which digit on the dice is a ten and which is a one according to where their other numbers are on the line and possibly to block their partner.</p>	<ul style="list-style-type: none"> Use the counting stick. Hold it vertically and ask the children to count in tens from the bottom . <p>Q What numbers would be between the marks?</p> <ul style="list-style-type: none"> Use the ITP 'Measuring cylinder' marked to 100. Turn on the tap and then stop it (or colour an amount in the cylinder). Ask the children to estimate how much liquid is in the cylinder. Find out by clicking the appropriate button. <p>By the end of the lesson, children should be able to:</p> <ul style="list-style-type: none"> estimate the position of a point on a number line. <p>(Refer to supplement of examples, section 5 page 17.)</p>

64	thirty-two	81
seventy	twenty-nine	43
sixty-six	58	eighty-four
ninety-one	92	43

1. What objects did you use? _____

My estimate _____

The actual number _____



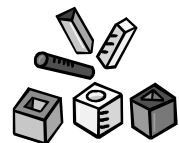
Now draw a number line and mark your estimate and the actual number on it.

The difference between my estimate and the actual number
is _____.

2. What objects did you use? _____

My estimate _____

The actual number _____

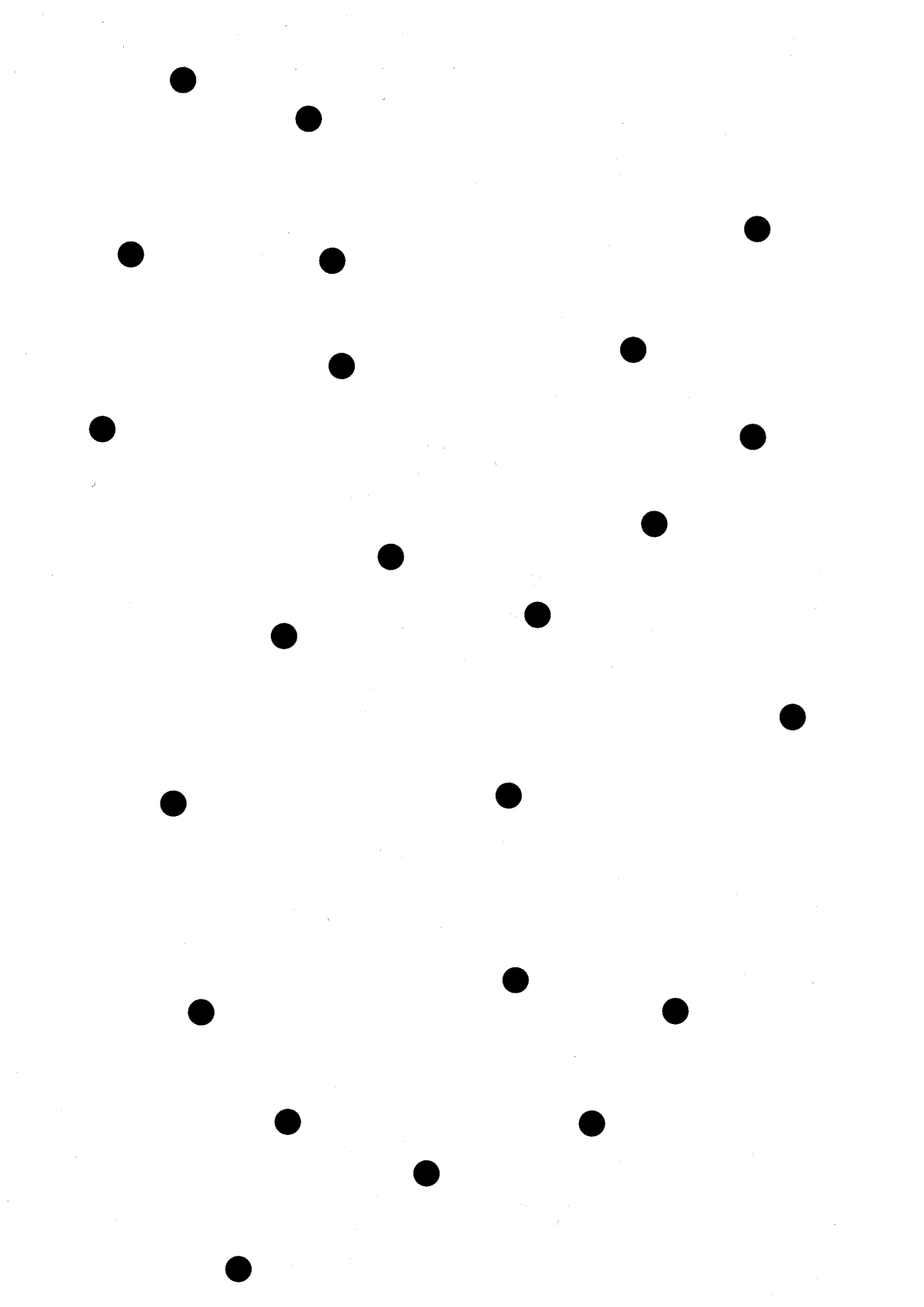


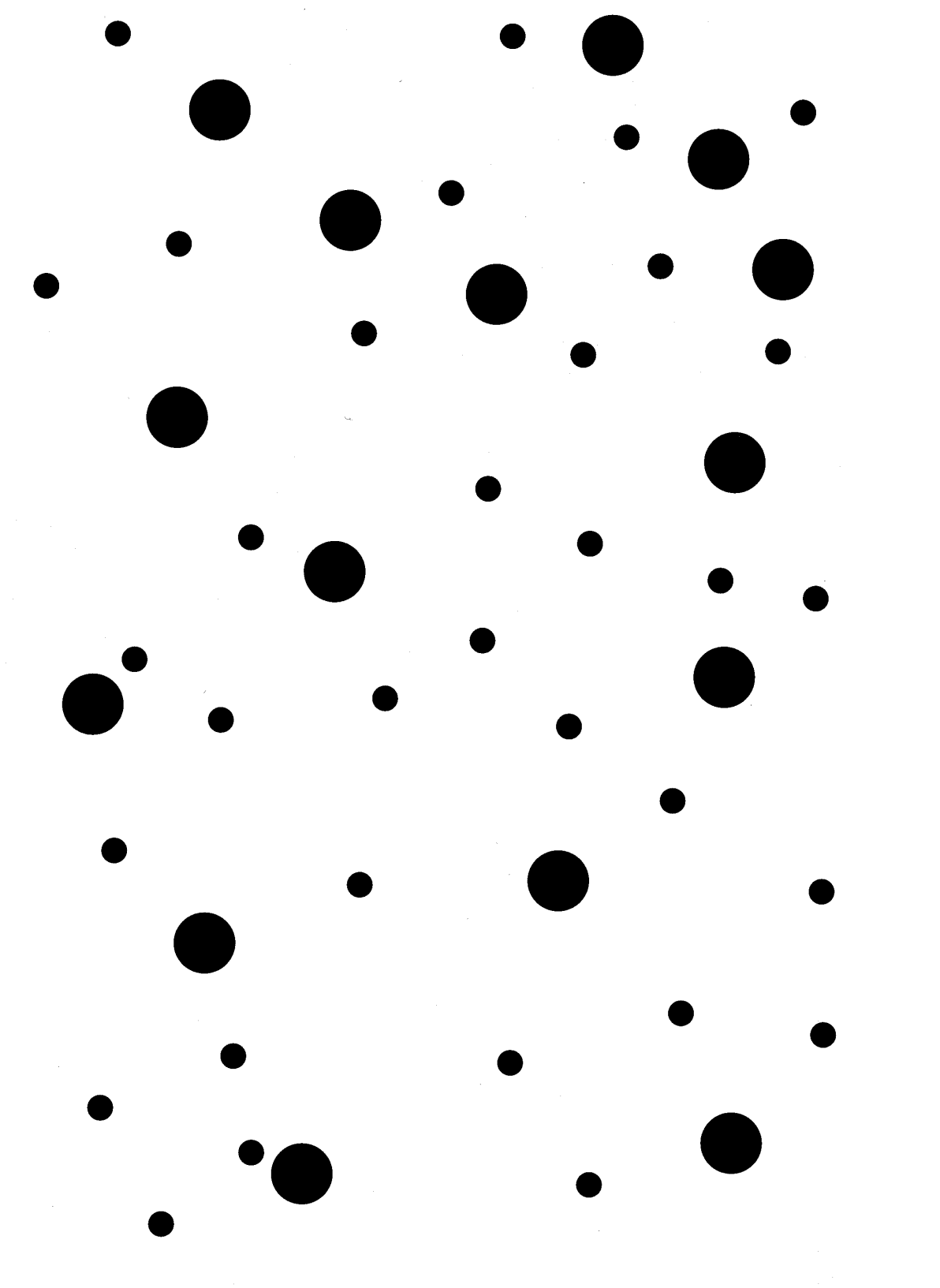
Now draw a number line and mark your estimate and the actual number on it.

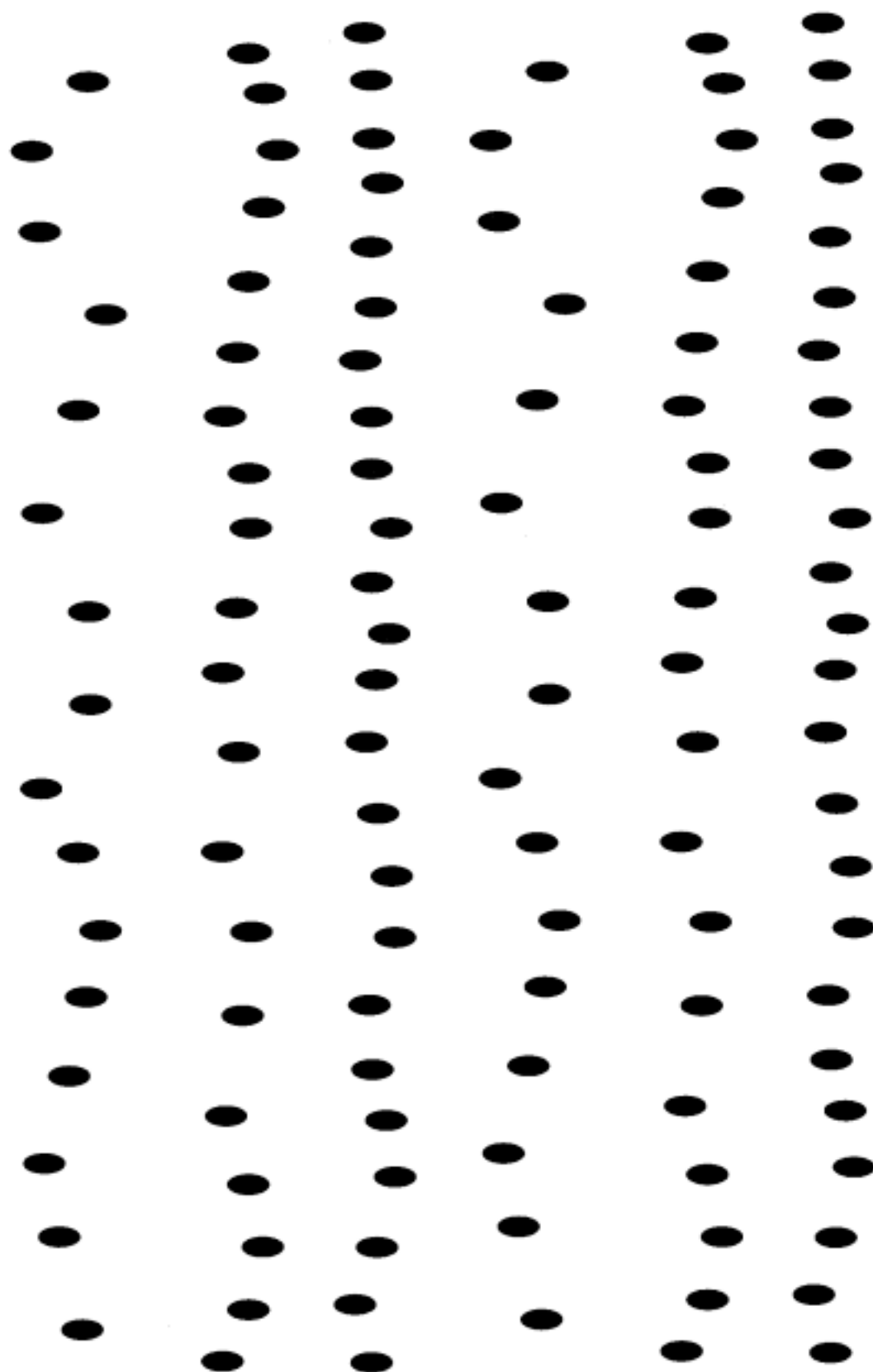
The difference between my estimate and the actual number
is _____.

Tell your partner how you worked out the answers to these problems.

1. Which is less: 28cm or 82cm?
2. Which is more: £31 or £13?
3. I am wrapping a parcel. I have two pieces of ribbon. One is 46cm long and the other is 64cm long. I need the longest piece. Which shall I use?
4. I got £23 for Christmas. My brother got £32. Who got more money?
5. It takes me 49 seconds to drink a glass of milk. It takes Ruth 53 seconds. Who drinks the milk faster?
6. Hannah took a longer time than me but a shorter time than Ruth. Think of a time she could have taken.







Year 2 Unit 2 (Spring term) Support Session 1

Place value and ordering

Objectives

Count on and back in ones from any number up to 100.

Read and write whole numbers to at least 100.

Vocabulary

tens

ones

digit

teen number

Resources

Place value cards

Re-usable

adhesive

Oral and mental starter

Say three consecutive numbers in the range 0-100. Ask the children to respond by saying the next three numbers.

For example:

Say 29, 30, 31.

Children say 32, 33, 34.

Say 96, 95, 94.

Children say 93, 92, 91.

Main activity

Stick the place value cards onto the board as shown:

1	2	3	4	5	6	7	8	9
---	---	---	---	---	---	---	---	---

10	20	30	40	50	60	70	80	90
----	----	----	----	----	----	----	----	----

Point to, then remove 60 and 7. Put the cards together and say that you have made the number 67.

Replace the cards.

Choose a child to come and point to the cards needed to make the number 24.

Check by removing the place value cards and making up the number.

Repeat asking different children to point to cards to make the numbers 32, 47, 52, 76, 99.

Explain that you are now going to quickly point to the tens card then a ones card and you want the children to call out the numbers you make.

Repeat this, avoiding making a teen number until the children are fluent. Point to 10 and 9.

Q Do we say ten-nine? What do we say?

Emphasise that we say nineteen.

Ask the children to say 'teen' numbers as you point to the chart.

Plenary

Write the numbers 13, 14, 15, 16, 17, 18, 19 on the board.

Explain that we call these numbers the 'tricky teens' because we have to say and write them carefully.

Write the multiples of 10 on the board.

Point to 90, then 19, asking the group to say the numbers clearly. Repeat for 18 and 80, 17, and 70.

Year 2 Unit 2 (Spring term) Support Session 2

Place Value and Ordering.

Objectives

Read and write whole numbers to at least 100 in figures.

Order whole numbers to at least 100.

Vocabulary

order
compare
more
less
two-digit
tens
ones

Resources

Place value cards
Re-usable adhesive
Whiteboards
A set of number cards 11, 12, 21, 13, 31, 14, 41, 15, 51, 16, 61, 17, 71, 18, 81, 19, 91 for each pair of children

Oral and mental starter

Stick the place value cards on the board as in Support Session 1.

Point to different cards (e.g. 60 and 2, 70 and 4, 10 and 3) and ask the children to write the two-digit numbers made on their whiteboards.

Remind the children about the 'tricky teens'.

Main activity

Stick the number cards 12 and 21 on the board, point to each number and ask children to say the number.

Q Which number is more?

Q How do you know?

Establish that we look at the tens number to compare two-digit numbers. Use place value cards to reinforce that the 2 in 12 is worth 2 ones and the 2 in 21 is worth 2 tens.

Give pairs of children the sets of number cards. Tell them to order the numbers from smallest to largest.

As the children order the cards talk to them about the place value of the digits in the numbers to rectify any misconceptions.

Plenary

As a group, stick one of the sets of cards in order from smallest to largest on the board.

Q Which is the largest number in this set of numbers?

Q Which number has 3 ones?

Q Which number has 4 tens?

Q Which numbers have 1 ten?

Q Which number comes before 12? After 12?