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# Year 4

## Small Steps Guidance and Examples

Block 1 – Number: Decimals









# Year 4 – 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			Measurement - Length and Perimeter	Number- Multiplication and Division			Consolidation
Spring	Number- Multiplication and Division			Measurement - Area	Fractions				Decimals			Consolidation
Summer	Decimals	Measurement- Money			Time	Statistics		Geometry- Properties of Shape		Geometry- Position and Direction		Consolidation

# Overview

## Small Steps

-  Make a whole
-  Write decimals
-  Compare decimals
-  Order decimals
-  Round decimals
-  Halves and quarters

## NC Objectives

Compare numbers with the same number of decimal places up to two decimal places.

Round decimals with one decimal place to the nearest whole number. Recognise and write decimal equivalents to  $\frac{1}{4}$ ,  $\frac{1}{2}$  and  $\frac{3}{4}$

Find the effect of dividing a one or two digit number by 10 or 100, identifying the value of the digits in the answer as ones, tenths and hundredths

# Make a Whole

## Notes and Guidance

Children make a whole from any number of tenths and hundredths.

They use their number bonds to ten and a hundred to support their calculations. Children use pictorial and concrete representations to support their understanding.

## Mathematical Talk

How many tenths make one whole?

How many hundredths make one whole?

If I have \_\_\_ hundredths, how many more do I need to make one whole?

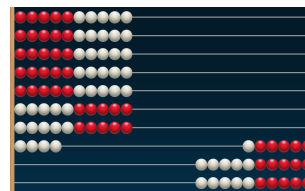
## Varied Fluency

- Here is a hundred square. How many hundredths are shaded in? How many more hundredths do you need to shade so the whole hundred square is shaded?

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

hundredths +  hundredths = 1 whole

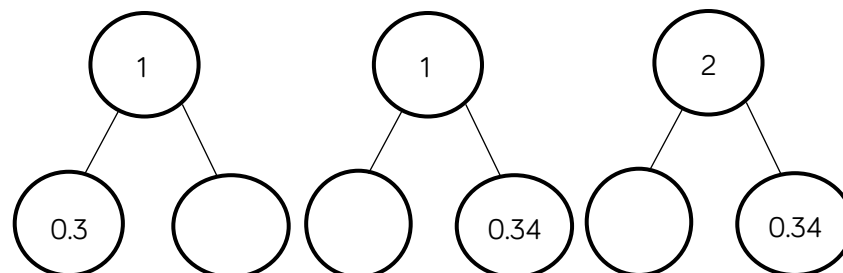
- Here is a Rekenrek with 100 beads. Each bead is one hundredth of the whole.



hundredths are on the left.  
 hundredths are on the right.

0.  + 0.  = 1

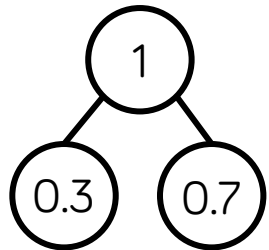
- Complete the part whole models.



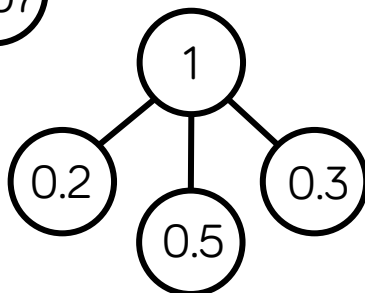
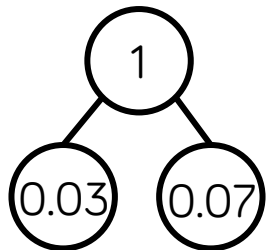
# Make a Whole

## Reasoning and Problem Solving

Which part whole model does not match the hundred square?



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



Explain your answer.

$0.03 + 0.07$  does not equal one whole so this one does not match.

Three bead strings are 0.84 m long altogether.

Would four bead strings be longer or shorter than a metre?

Explain how you know.

One bead string is 28 cm long.

$28 \text{ cm} = 0.28 \text{ m}$

$0.84 \text{ m} + 0.28 \text{ m} > 1 \text{ m}$

Therefore four bead strings will be longer than one metre.

## Write Decimals

### Notes and Guidance

Children use place value counters and a place value grid to make numbers with up to two decimal places.

They read and write decimal numbers and understand the value of each digit.

They show their understanding of place value by partitioning decimal numbers in different ways.

### Mathematical Talk

How many ones/tenths/hundredths are in the number?

How do we write this as a decimal? Why?

What is the value of the \_\_\_\_ in the number \_\_\_\_?

When do we need to use zero as a place holder?

How can we partition decimal numbers in different ways?

### Varied Fluency

- 1 What number is represented on the place value chart?

Ones	Tenths	Hundredths
	●	● ● ●
0	1	3

There are  ones,  
 tenths and   
hundredths.

The number is

- 2 Make the numbers on a place value chart and write down the value of the underlined digit.

3.47

2.15

0.6

25.03

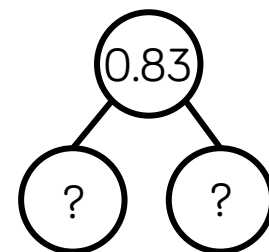
- 3 Fill in the missing numbers.

$$0.83 = \boxed{\phantom{00}} + 0.03$$

$$= \boxed{\phantom{00}} \text{ and 3 hundredths.}$$

$$0.83 = 0.7 + \boxed{\phantom{00}}$$

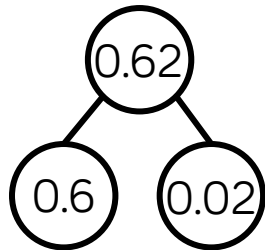
$$= 7 \text{ tenths and } \boxed{\phantom{00}}$$



## Write Decimals

## Reasoning and Problem Solving

Sally says there is only one way to partition 0.62



Prove Sally wrong by finding at least 3 different ways to partition 0.62

$$\begin{aligned}0.62 &= 0.5 + 0.12 \\0.62 &= 0.4 + 0.22 \\0.62 &= 0.3 + 0.32 \\0.62 &= 0.2 + 0.42 \\0.62 &= 0.1 + 0.52 \\0.62 &= 0 + 0.62\end{aligned}$$

Match each description to the correct number.



Charlie

My number has the same amount of tens as tenths.



Dylan

My number has one decimal place.



Megan

My number has two hundredths.



Jess

My number has six tenths.

46.2

2.64

46.02

40.46

Charlie: 40.46  
Dylan: 46.2  
Megan: 46.02  
Jess: 2.64

# Compare Decimals

## Notes and Guidance

Children apply their understanding of place value to compare decimals with up to two decimal places.

They will consolidate and deepen their understanding of 0 as a place holder and the exchange between one tenth for ten hundredths.

## Mathematical Talk

How many tenths does it have? What if you exchanged the one, how many tenths would it have then?

There are \_\_\_ tenths and \_\_\_ hundredths

The number is \_\_\_ . \_\_\_

\_\_\_ . \_\_\_ is \_\_\_\_\_ than \_\_\_ . \_\_\_ because ...

Can you use the digit cards to create two numbers which would have the greatest difference?

## Varied Fluency

- Write the decimals and compare using  $<$  or  $>$

Ones	Tenths	Hundredths
	• • • • •	• • • • •



Ones	Tenths	Hundredths
	• • • • •	• • • • •

- Complete the place value chart so that the statements are correct.

Ones	Tenths	Hundredths
• • • • •	• • • • •	• • • • •



Ones	Tenths	Hundredths

- Fill in the blanks

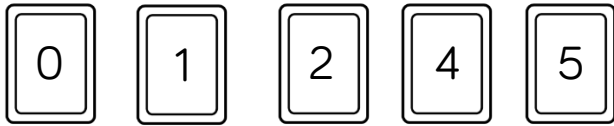
- 3.32 ☐ 3.23
- 0.14 ☐ 0.29
- 1.14 ☐ 0.64
- 5.5 ☐ 5.7
- 0.37  $<$  0. \_\_\_ 7
- 2.22  $>$  2. \_\_\_ 2
- 1. \_\_\_ 1  $>$  1. \_\_\_ 1
- 9.9\_\_\_  $<$  9.9\_\_\_



## Compare Decimals

## Reasoning and Problem Solving

Use each digit card once to complete the statement:



3.     >   .    

Can you find eight different possible solutions?

Some possible solutions:

$$3.12 > 0.45$$

$$3.24 > 1.05$$

$$3.45 > 1.02$$

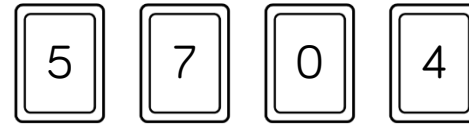
$$3.01 > 2.45$$

$$3.42 > 2.01$$

$$3.45 > 0.12$$

$$3.02 > 1.45$$

$$3.24 > 1.05$$



Use the digit cards to make the greatest possible number.

  .    

Use the digit cards to make the smallest possible number.

  .    

The greatest:

7.54

The smallest:

0.45

# Order Decimals

## Notes and Guidance

Children apply their understanding of place value to order decimals with up to two decimal places.

They will consolidate and deepen their understanding of 0 as a place holder, the inequality symbols and language such as ascending and descending.

## Mathematical Talk

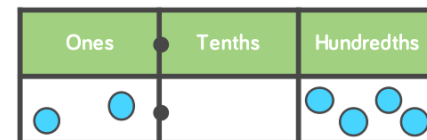
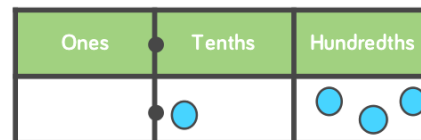
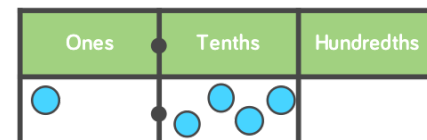
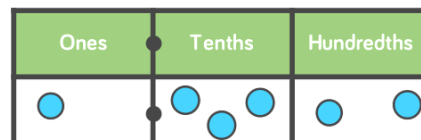
Which digit do you look at first when ordering decimals?

If two numbers with one decimal place are made with the same digits, will they always be equal? Prove it.

\_\_\_ . \_\_\_ \_\_\_ is \_\_\_\_\_ than \_\_\_ . \_\_\_ \_\_\_ because ...

## Varied Fluency

- Write the decimals, then place them in ascending order.



- Place the numbers in descending order.

46.2

2.64

46.02

40.46

- Fill in the blanks

• 3.32 ○ 3.23 ○ 2.32

• 0.1\_\_ &lt; 0.1\_\_ &lt; 0.15

• 1.11 ○ 1.12 ○ 1.13

• 1.9\_\_ &lt; 1.9\_\_ &lt; 2.01

• 4.44 ○ 4.34 ○ 4.04

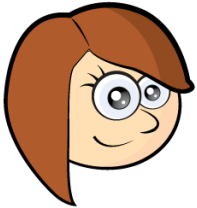
• 6.67 &gt; 6.\_\_7 &gt; 6.37

## Order Decimals

### Reasoning and Problem Solving

#### Spot the Mistake

Tallulah is ordering some numbers in ascending order:



$1.2 < 0.21 < 0.32 < 0.69 < 0.84$

Can you explain her mistake?

1.2 is the largest because it has 1 one.  
Tallulah has ignored the digit in the ones column because the rest of them are in ascending order.

Some children have planted sunflowers and they are measuring their heights.

Child	Height
Beth	1.23 m
Tony	0.95 m
Rachel	1.02 m
Kate	1.2 m
Faye	99 cm
Emma	0.97 m

Order the children based on their heights in both ascending and descending order.



Ascending:  
Tony, Emma, Faye,  
Rachel, Kate, Beth

Descending:  
Beth, Kate, Rachel,  
Faye, Emma, Tony

## Round Decimals

### Notes and Guidance

Children round decimals with 1 decimal place to the nearest whole number.

They look at the position of a decimal on a number line to help them see which whole numbers the decimal lies between.

Children look at the digit in the tenths column to help understand the rule of whether to round a number up or down.

### Mathematical Talk

Which whole numbers does the decimal lie between?

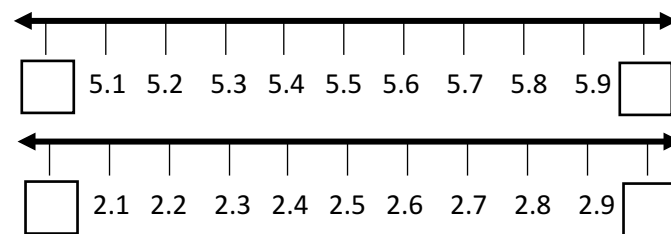
Which whole number is the decimal closer to on the number line?

Which column do we focus on when rounding to the nearest whole number?

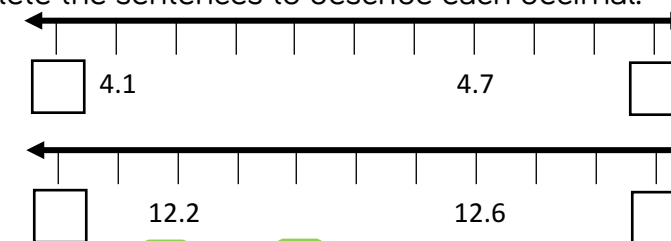
Which digits in the tenths column round down to the nearest whole number? Which digits in the tenths column round up to the nearest whole number?

### Varied Fluency

- 1 Which whole numbers do the decimals lie between?



- 2 Complete the sentences to describe each decimal.



$\boxed{\phantom{00}}$  is closer to  $\boxed{\phantom{00}}$  than  $\boxed{\phantom{00}}$

$\boxed{\phantom{00}}$  rounds to  $\boxed{\phantom{00}}$  to the nearest whole number.

- 3 Circle the numbers that round up to the nearest whole number.

4.5   3.7   2.3   4.2   16.8   1.9

## Round Decimals

### Reasoning and Problem Solving

Two numbers with 1 decimal place round to 23 to the nearest whole number. The numbers add together to make 46.

What could the two numbers be?

The numbers could be:

22.6 and 23.4  
22.7 and 23.3  
22.8 and 23.2  
22.9 and 23.1

A number with one decimal place rounded to the nearest whole number is 45.

What could the number be?

The number could be:

44.5, 44.6, 44.7,  
44.8, 44.9, 45.1,  
45.2, 45.3 or 45.4

# Halves and Quarters

## Notes and Guidance

Children write  $\frac{1}{2}$ ,  $\frac{1}{4}$  and  $\frac{3}{4}$  as decimals. They use concrete and pictorial representations to support the conversion.

Children use their knowledge of equivalent fractions to write fractions as hundredths and then write the fractions as halves or quarters.

## Mathematical Talk

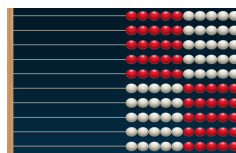
How would you record your answer as a decimal and a fraction?

Can you represent one quarter using decimal place value counters?

Can you represent three quarters using counters on a place value grid?

## Varied Fluency

- 1 Here is a Rekenrek with 100 beads.

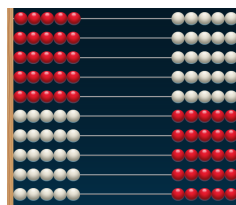


out of 100 beads are red.  
 out of 100 beads are white.  
 are red, and  are white.

Half of the beads are red and half are white.

$\frac{1}{2} = \frac{50}{100} = \frac{5}{10} = 0.5$  so  $\frac{1}{2}$  is  as a decimal.

- 2 The beads are split equally on each side of the Rekenrek.



There are 4 equal groups.  
 1 out of 4 equal groups =  beads.  
 1 out of 4 equal groups =   $\frac{\quad}{100}$

$\frac{1}{4} = \frac{\quad}{100} = \quad$

What fraction is represented by 3 out of the 4 groups?

Can you write this as a decimal?

$\frac{3}{4} = \frac{\quad}{100} = \quad$

## Halves and Quarters

### Reasoning and Problem Solving

Louisa says:

If I know  $\frac{1}{2}$  is 0.5 as a decimal, I also know  $\frac{3}{6}$ ,  $\frac{4}{8}$  and  $\frac{6}{12}$  are equivalent to 0.5 as a decimal.

Explain Louisa's thinking.

Louisa has used her knowledge of equivalent fractions to find other fractions that are equivalent to 0.5

True or False?

$$\frac{1}{2} = 1.2, \frac{1}{4} = 1.4 \text{ and } \frac{3}{4} = 3.4$$

Explain your answer.

False. The numerator and denominator have been placed either side of the decimal point rather than dividing the numerator by the denominator to find the decimal equivalent.