ORIGO STEPPING STORES STUDENT JOURNAL SAMPLE

Engaging student pages accompany each lesson within *ORIGO Stepping Stones*. In the Student Journal for this year level, there are two pages for each lesson.

For more information on program content for *ORIGO Stepping Stones* Year 4 visit *origoeducation.com/stepping-stones*.

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Exploring Equivalent Fractions with Tenths and Hundredths



How many tenths do you need to shade?

How could you change the picture to show hundredths?

Step UpI. Each square is one whole. Draw lines and shade parts to show the first fraction. Then draw extra lines to help you identify the equivalent fraction in tenths.



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11.1

2. Each square is one whole. Draw lines and shade parts to show the first fraction. Then draw extra lines to help you identify the equivalent fraction.



3. Complete the diagrams to show the equivalent fractions.



Step Ahead

Complete each sequence to show equivalent fractions.



Δ

2 Introducing Decimal Fractions

Look at this picture.

Each square is one whole. What amount is shaded?

What are the different ways you can write this number without using words?

When fractions have a denominator that is 10, 100, 1000 and so on, they can easily be written in a place-value chart.

A number such as $2 \frac{\frac{1}{10}}{10}$ can be written like this.

The red dot is called a **decimal point**. The decimal point is a mark that identifies the ones place.

Where have you seen numbers written with a decimal point?

Ones	tenths
2	4

point used for prices like \$3.95.

l've seen a decimal

Sometimes packets of food use a decimal point for weights like 3.5 kg.



Look at the expanders below.

How would you say the number that each expander shows?



How do these numbers relate to mixed numbers and common fractions?

Why do you need to show the decimal point when the expander is completely closed?

A **decimal fraction** is a fraction that is written with no denominator visible. The position of a digit after the decimal point tells what the invisible denominator is.



II.2

Step Up

I. Each square is one whole. Read the fraction name and shade the squares to match. Write the decimal fraction on the open expander.



Δ

II.3 Locating and Comparing Tenths

Look at the number line below. The distance between each whole number is one whole.



What fraction is the orange arrow pointing to? How do you know?



What fraction is the green arrow pointing to? Can you write it as a common fraction and as a mixed number? Why?

What would it look like on an expander?

Think about how you compare 267 and 305 to work out which number is greater. Which place do you look at first? A zero is used in the ones place when the amount is less than I. This makes it easy to quickly see whether it is a whole number or a fraction.

Think about the fractions indicated by the arrows on the number line above.

What do they look like as decimal fractions?

Which is greater?

How can you tell by looking at their places?



Use the masses of these fruit and vegetables to answer the questions on this page.



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Exploring Hundredths

Each large square represents one whole.

11.4

How many columns are in the shaded square? What fraction of one whole does each column show?



Shade the first four columns of the other red square. What is the total shaded now? Start from the bottom and shade five small squares in the next column. How much is shaded now? What number is now shown by the shaded parts?

How many hundredths are in one whole? How do you know?



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2. Shade each picture to match the description. Then write how much more needs to be shaded to make one whole.



Writing Hundredths as Decimal Fractions (without Teens or Zeros)

Each large square represents one whole. How can you colour them to show one and seventy-six hundredths without counting each hundredth?



I would colour all the first square to show one whole. Then I'd colour 7 columns to show 7 tenths and then colour 6 small squares to show 6 hundredths.

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Write the number above on these two expanders.



Which expander helps you to read the number? Why?

Which digit is in the tenths place? ... hundredths place?

Look at this place-value chart.

What do you notice about the places on either side of the ones place?

Write one and seventy-six hundredths on the chart.

Ten Thousands	Thousands	Hundreds	Tens	Ones	tenths	hundredths	

Step Up

I. Each large square is one whole. Colour the squares to show the number. Then write the number on the expanders and as a mixed number.

two and twenty-eight hundredths

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2. Complete the missing parts. Each large square is one whole.

a.		
	ones	hundredths
		100
b.		
	2 ones 9	3 hundredths
		100
C		
	ones	hundredths
	147	100
d.	ones	hundredthe
		$\left \frac{85}{100} \right $

Step Ahead

Read the clues. Write a matching numeral on the expander.

a. I am greater than five and less than seven. I have more in the tenths place than in the hundredths place.
I have more in the ones place than in the tenths place.

tenths

hundredths

 b. I am less than nine and greater than four. The digit in the tenths place is a multiple of 3. The digit in the hundredths place is greater than the digit in the ones place.



ones



How will you write each number on the expander?





Step Up I. Complete the missing parts.



2. Read the number name. Then write the number on the expander.



3. Write each number in words.

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4. Write the matching decimal fraction and mixed number.



Comparing and Ordering Hundredths

Six students had a throwing competition using a ball made of scrunched paper. They measured the distance of their throws in metres and fractions of a metre. This table shows the results.

Student	Anna	Cole	Peta	Franco	Sumi	Amos
Distance (m)	2.21	1.84	3.49	I.22	4.10	3.13

Mark the length of Peta's throw on this number line. How did you work out the position?



Was Sumi's throw longer or shorter than Peta's? How did you work it out?



II.7

When I said each number name aloud it was really easy to work it out.

I looked at the value of the digit in the ones place first.



Which student threw the greatest distance? How do you know? Mark and label all the throws on the number line.

Step Up

Five students had a throwing competition. They played three rounds. Use this data to help you answer the questions on page 26I.

Student	Blake	Lela	Kayla	Carter	Luis
Round I (m)	3.45	4.06	3.38	3.21	4.30
Round 2 (m)	3.87	4.15	3.50	3.86	4.51
Round 3 (m)	3.18	4.27	3.42	2.97	4.04

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I. Write the greatest distance that each student threw.

	Blake	Lela	Kayl	a	Cart	ter	Luis
	m	m		m		m	m
				Roi	und 2		Round 3
•	Write the distand students' throws	ce of these for Round 2	Blake		m	\bigcirc	m
	and Round 3 . Then write < or >	to make	Lela		m	\bigcirc	m
	each statement	true.	Kayla		m	\bigcirc	m
			Carter		m	\bigcirc	m
			Luis		m	\bigcirc	m

3. Write the names of the students from **shortest throw** to **longest throw** for each round. Write the distance below each name.

ROUND I	m	m	m	m	m
ROUND 2	m	m	m	m	m
ROUND 3	m	m	m	m	m

a. Use 0, I, and 2 to write four different decimal fractions. **Step Ahead** Use each digit once in each numeral. **b.** Loop the least number in blue. c. Loop the greatest number in red.

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II.8 Solving Problems Involving Mass

This table shows data about some adult bears.

How many kilograms heavier is the largest grizzly bear than the largest of each of the other bears? How do you know?

How many kilograms lighter is the smallest sun bear than the smallest of each of the other bears? How did you work out the answers?

Bear	Mass (kg)
Black bear	60–300
Giant panda	75–130
Grizzly bear	360–680
Sloth bear	80–140
Polar bear	400–600
Sun bear	27–65

What is the difference in the masses of these bears?



largest sun bear and largest sloth bear

smallest panda bear and smallest grizzly bear

Step Up Use this bar graph to answer Questions I to 4 on page 263.





DRAFT



2. Color the mass pieces you would need to make one kilogram.



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II.IO Revising Litres and Introducing Millilitres

What do you know about this pan balance picture?

How many grams are in the box on the right?



Complete this sentence to describe the picture.



What would the balance picture look like for this sentence?

One kilogram divided equally among 5 is ______g each.



What balance picture would show tenths of a kilogram on the left? How do you know?

Step Up I. Write the mass in kilograms on each package.

a. Noo grams of flour is the same as $I = \frac{1}{2} \int \frac{1}$

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2. Draw a line to match each mass piece to the correct label.







II.II Using Relative Position to Work with Kilograms



Which masses can you show on this number line? How do you know?



Mark and label $\frac{1}{2}$ kg on the number line. What is the total of $\frac{1}{2}$ kg and $1\frac{1}{4}$ kg? Which tins can you use to show the total?

Step UpI. Write the missing numbers on the line below. Then draw lines to show where each mass falls on the line.





3. Draw lines to show where each mass is on the scales.





Look at the tins of fruit in Question I. Draw and label other tins on the left side of these scales to make the balance picture true.



Pears 300 g YEA

II.I2

Using a Mental Strategy to Solve Problems Involving Grams

Which two items balance one-half of a kilogram? How did you work it out?

How can you work out if the total mass of these four items is heavier than or lighter than one kilogram?



I know that the soap and cake mix together make 500g. The cheese slices and the toothpaste are less than that so the total must be lighter than one kilogram.

How can you work out the difference between the mass of the cheese slices and the mass of the soap?

I started at 125 and counted on 75 to 200 and then another 10 to 210. The difference is 85 g.



CAKE MIX

375 q

TOOTHPASTE 220 c

SOAD

125 a

2100

How can you work out how much heavier the toothpaste is than the soap?

Write a number sentence to show your thinking.

Step Up

I. Record the mass of each book. Then use the numbers to answer Questions 2 and 3 on page 270.



 Work out the total mas a. Encyclopedia and Novel 	s. Record your thinking. b. Dictionary and Novel	c. All three books
g	g	g
3. Write the answers to the answer and the answer	ese. Record your thinking.	
a. How much heavier is the encyclopedia than the dictionary?	b. How much lighter is the novel than the dictionary?	c. What is the mass of three novels?
g	g	g
d. What is the mass	e. How many novels	f. How much heavier
of two dictionaries?	one encyclopedia?	than one encyclopedia?



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