



Shine

Maths

Sample learning sequence

A learning sequence is a unit of intervention content. The learning sequences are arranged in a specific order and contain instructions tailored to teachers and teaching assistants.

Each learning sequence includes:

- Prepare, Do, Review introductory sections
- Teacher guided activities and worksheets
- Quiz and answers

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RSASSESSMENT
FROM HODDER EDUCATION

The number 2 indicates the suggested order of this learning sequence for this particular Area of Learning in Year 5. There are also learning sequences 1 and 3 for this Area of Learning.

The Prepare, Do, Review introductory pages explain how to use the different elements of the learning sequence.

Shine Maths Year 5 Fractions 2

The overview provides a summary of the content of the learning sequence so that you can see – at a glance – if it covers the desired content.

Overview

This learning sequence focuses on **ordering fractions and solving simple problems with fractions**. It contains:

- lesson activity plans with key subject knowledge, questions and vocabulary
- worksheets to support pupils with their understanding of mathematical content and provide opportunities to consolidate learning
- a quiz and answers.

The use of this learning sequence should stem from an identified need, highlighted through ongoing assessment.

Activities

Activity 1 Ordering Fractions

Activity 2 Practising ordering fractions

Activity 3 Introducing mixed numbers and improper fractions

Activity 4 Solving problems with fractions

A range of practical resources needed for each activity is listed on each activity page.

The activities within the learning sequence are listed here. This can be used as a checklist to ensure that all content from the learning sequence has been covered. Alternatively, it can be used to cherry-pick individual activities to address a specific teaching need.

This section includes the possible misconceptions, potential errors and stumbling blocks that are most likely to occur within the learning sequence, preparing you to tackle these issues should they arise.

Watch outs

Some children:

- may need reminding what 'denominator' means and what the denominator in a fraction denotes, e.g. the 8 in $\frac{5}{8}$ means there are 8 parts
- will need help to understand that the larger the denominator, the smaller the part of a whole it represents
- need reminding to read the problems carefully and identify the important information.

There are other misconceptions that could affect children's performance in this area of learning or in tests in general. These misconceptions are explored in detail, along with suggestions on how to address them, in the Year 5 guidance document.

This section offers guidance on how to prepare for the learning sequence.

PREPARE

Shine Maths Year 5 Fractions 2

The teacher guidance includes detailed notes on the activities for each session of the learning sequence and can be used as a lesson plan for the session. The activities include sequential questions, advice about potential responses from the children and tips for consolidating or furthering their understanding.

Timetable

- Day 1 Activity 1
- Day 2 Activity 2
- Day 3 Activity 3
- Day 4 Activity 4
- Day 5 Quiz

These sessions are intended to be fast paced and interactive. Each activity is designed to last around 15 minutes. Use your judgement. You will need to

Teacher guidance

The activity pages provide teacher guidance notes and they can be used as a lesson plan for the session. The activities include sequential questions, advice about potential responses from the children and tips for consolidating or furthering their understanding. Children are encouraged to explain their thinking and how they arrived at answers and to share their strategies.

Written to provide you with maximum support, mathematical language has been incorporated into the activity questions so that children hear and learn the vocabulary modelled in context. Key words are highlighted in bold to help you identify and model the correct language.

Subject knowledge is reinforced in the activity pages through the **Tip** and **Watch out** features, which provide guidance on teaching strategies and how to address any misconceptions that may arise.

A quiz has been included to check what children can do independently and to show their progress within the learning sequence.

Refer to the Shine Guidance for each year group for more support and useful information.

DO

This section details which activities to do each day and the suggested order of teaching. It provides a quick insight into how long the learning sequence will take in total and which activities will take longer to complete individually.

Worksheets

The activity worksheets are embedded within the activity teaching sessions. The worksheets provide an opportunity for children to practise and consolidate the skills and knowledge they learn in the session. Each activity worksheet has been developed specifically to support children's learning as part of the lesson. The teacher guidance notes indicate when to distribute the worksheets and how to use them.

These sheets could be kept in a digital folder or exercise book to substantiate teacher assessment.

There are supporting worksheets for each teaching session.

This section includes all of the necessary information to teach the learning sequence.

Shine Maths Year 5 Fractions 2

This quiz has been included to check what children can do independently and to show their progress within the learning sequence. The answers to the quiz are included at the end of this learning sequence to allow for quick, easy and accurate marking.

Outcomes

By the end of this learning sequence, children should be able to:

- order fractions by size
- identify equivalent fractions
- solve simple problems involving fractions.

The outcomes are listed at the end of the units. They outline what each child should achieve by the end of the learning sequence. The outcomes form the success criteria for the whole learning sequence and provide something for you to assess against.

Quiz and answers

Carefully observe children as they tackle the quiz and note the strategies they use. Encourage children to make jottings and/or use practical resources, if needed. Studying how the children tackle the questions will provide insight into their understanding.

The answers to the quiz are included at the end of this learning sequence to allow for quick, easy and accurate marking. Marking could be done in a group, with children exploring why errors were made and how correct answers were achieved. Encourage children to explain their thinking and strategies to each other for both correct and incorrect answers.

Next steps

High to full score: This quiz result indicates that a child's knowledge and understanding for this learning sequence is now secure. Return to quality-first, whole-class teaching.

A few errors: If a child has made a few errors in the quiz, it is likely that they misunderstood one of the teaching points from the learning sequence, such as the role of the denominator in identifying the relative sizes of fractions. Ask the child to explain how they found the answer to the question in order to pinpoint the concept they misunderstood. Remember that it could be that certain aspects of the curriculum have not been taught yet and reteach it in a one-to-one session.

Use the Shine Review sheets to record feedback and monitor progress for individual pupils or small groups. Save and print as many as you need per learning sequence.

Many errors: If a child has made many errors, this could indicate that the work is fundamentally at the wrong level for the child. If this is the case, locate a relevant teaching sequence from a lower year group to teach the child in a one-to-one session. You may also consider having a discussion with the SENDCO at your school about the child and whether any other measures can be put in place to support them.

Next steps can be broken down into three sections, each relating to pupil performance in the quiz that is taken at the end of the learning sequence.

REVIEW

This section details how to review the learning sequence and how to move the children forward after they have completed it.

Day 1

Activity 1: Ordering fractions

- ★ Place three cards from Worksheet 1 on the table: $\frac{1}{2}$, $\frac{3}{4}$, $\frac{2}{8}$.
- ★ Ask the children to **order** them, using questioning as a support: *What does the **denominator** tell us about the fractions?* (How many parts the whole has been divided into.) *What does the **numerator** tell us?* (How many parts there are.) *Which fraction is the largest? Which fraction is the smallest? Can you use your fraction wall (from Term 1) to help you?*
- ⚠ **WATCH OUT:** The children may initially assume that $\frac{2}{8}$ is the largest because eight is larger than four and two. Use the fraction line to help explain why this is not the case.
- ★ Place the fraction cards face down on the table. Choose three cards and place them face up. Ask the children to order the fractions from largest to smallest on their boards.
- ★ Ask the children to show their boards and discuss their answers. Ask the children who used the correct order to explain how they did it to the rest of the group.
- ★ *Did you choose the card with the largest denominator and the smallest numerator first? Did you group the cards by numerator or denominator? Did you look for equivalent fractions?*

OBJECTIVES

- Compare and order fractions whose denominators are all multiples of the same number
- Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths

RESOURCES

- Activity 1: Worksheet 1, cut into cards; whiteboards; fraction line

The teacher guidance includes detailed notes on the activities for each session of the learning sequence and can be used as a lesson plan for the session. The activities include sequential questions, advice about potential responses from the children and tips for consolidating or furthering their understanding.



Worksheet 1

Photocopy and cut into cards.

There are supporting worksheets for each teaching session. The worksheets provide an opportunity for children to practise and consolidate the skills and knowledge they learn in the session. These sheets could be kept in a digital folder or exercise book to substantiate teacher assessment.

Fraction cards



$$\frac{1}{2}$$

$$\frac{1}{4}$$

$$\frac{1}{8}$$

$$\frac{2}{4}$$

$$\frac{2}{2}$$

$$\frac{4}{4}$$

$$\frac{8}{8}$$

$$\frac{3}{4}$$

$$\frac{1}{16}$$

$$\frac{8}{16}$$

$$\frac{2}{8}$$

$$\frac{5}{8}$$

$$\frac{4}{16}$$

$$\frac{2}{16}$$

$$\frac{3}{8}$$

$$\frac{7}{8}$$

$$\frac{10}{16}$$

$$\frac{7}{16}$$

$$\frac{4}{8}$$

$$\frac{6}{8}$$

Day 2

Activity 2: Practising ordering fractions

- ★ Explain that the children are going to cross a river full of crocodiles by jumping from rock to rock. Hand out Worksheet 2 to illustrate this idea!
 - ★ Give each pair of children a set of fraction cards showing $\frac{1}{3}$, $\frac{1}{2}$, $\frac{1}{6}$, $\frac{1}{12}$, $\frac{1}{9}$. Ask them to **order** the fractions from largest to smallest. They can use the fraction line to help them. Place the cards on the floor in order.
 - ★ Next, ask another pair of children to cross the river, using the fraction cards laid down as their 'stepping stones', and say if the order is correct or incorrect (if so, they have fallen in and been eaten by the crocs!).
 - ★ Finally, write the fractions onto the rocks in the picture on Worksheet 2.
 - ★ Give the children another three or four cards to add to the cards they already have and ask them to put the new set in order of size.
-  **TIP:** The children will need to look at the numerator as well as the denominator. Use the fraction line to help.
- ★ Again, ask another pair to 'cross the river' on the stepping stones. *Are they in the right order?*
 - ★ Discuss how the children decided on the order of the fractions.

OBJECTIVES

- Compare and order fractions whose denominators are all multiples of the same number
- Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths

RESOURCES

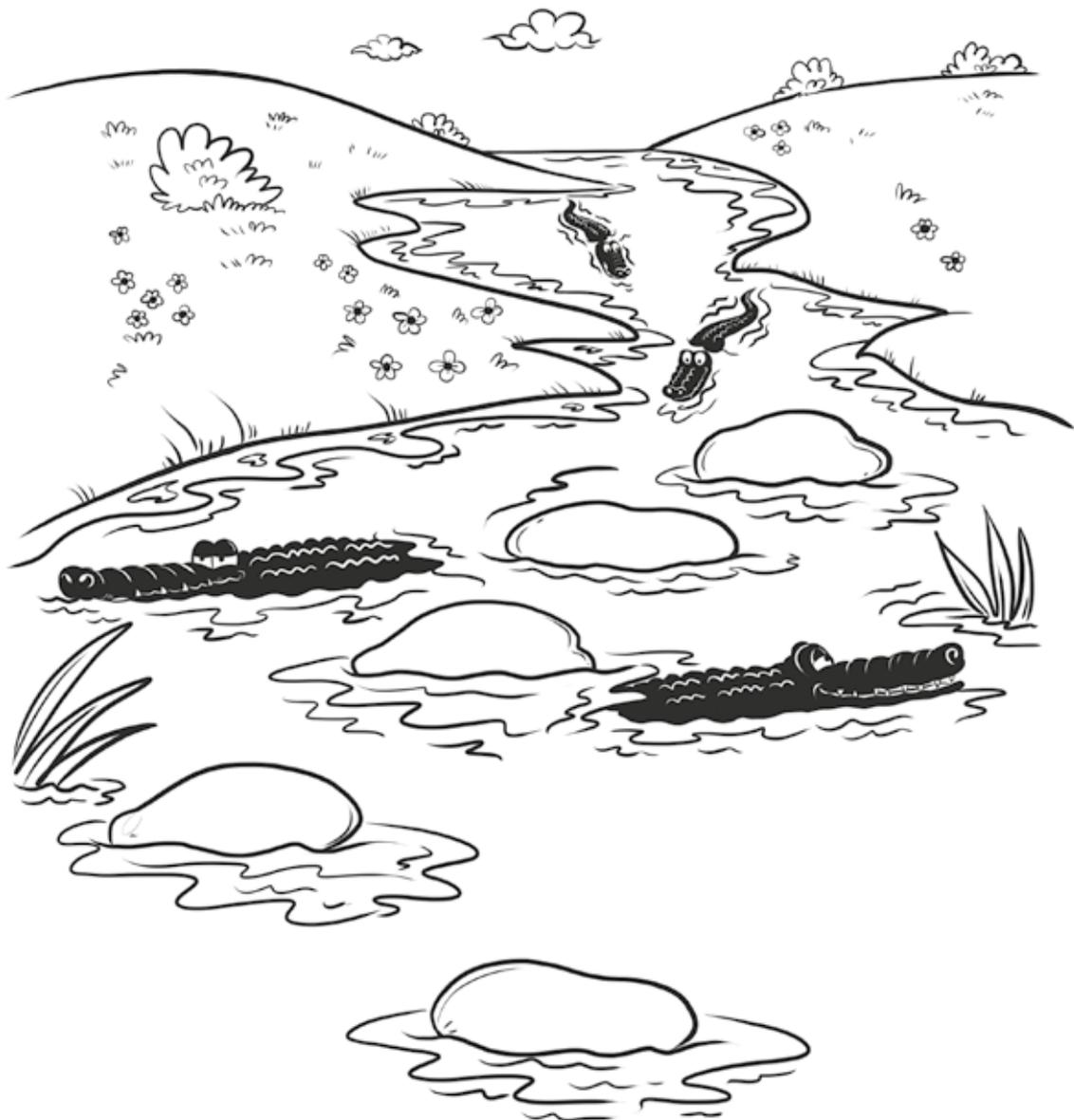
- Activity 2: Large space if possible such as hall or corridor; A5 fraction cards, one set per pair; Worksheet 2; fraction line



Worksheet 2

Name _____ Date _____

Ordering fractions in Croc Creek



Day 3

Activity 3: Introducing mixed numbers and improper fractions

★ Write $\frac{1}{4} + \frac{2}{4}$ on the board. Ask a child to say the question aloud. Ask the children to add them on their whiteboards. ($\frac{3}{4}$)

✓ **TIP:** You could show the fractions using concrete resources or a picture to help the children to visualise the question.

★ Now write $\frac{2}{4} + \frac{3}{4}$ on the board and ask a child to say it aloud.

★ Ask: *Can anyone add these together?* ($\frac{5}{4}$) *What does $\frac{5}{4}$ mean?* You are looking for the children to say that it is more than one because four-quarters make a whole one.

★ Explain that it is a whole one and a quarter and is written $1\frac{1}{4}$.

★ Write $\frac{3}{8} + \frac{7}{8}$ for the children to add on their boards. ($\frac{10}{8}$) *Can you write it as a **whole number** and a **fraction**?* ($1\frac{2}{8}$)

✓ **TIP:** Tell the children that we call this a **mixed number** because there is a whole number and fraction.

★ Finish with $\frac{3}{6} + \frac{5}{6}$. Find the answer as a mixed number.

★ Model the process again showing how $\frac{3}{6} + \frac{5}{6} = \frac{8}{6}$. Six-sixths make a whole so the answer is $1\frac{2}{6}$.

OBJECTIVES

- Compare and order fractions whose denominators are all multiples of the same number
- Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths
- Recognise mixed numbers and improper fractions

RESOURCES

- Activity 3: Fraction pieces if available; whiteboards

Day 4

Activity 4: Solving problems with fractions

- ★ Give each child a 100 square. Ask the children what each square is worth as a **fraction** ($\frac{1}{100}$).
- ★ *How many squares make $\frac{1}{10}$?* (Ten) Ask a child to explain how they know that ten squares is $\frac{1}{10}$.
- ★ TIP: The children can colour in the squares if necessary but the main function of the 100 square is as a visual prompt.
- ★ *How many squares is $\frac{1}{5}$? How many squares is $\frac{4}{10}$?*
- ★ Give each child a copy of Worksheet 3.
- ★ Look at the first question. Ask the children to discuss the problem in pairs and highlight the main facts.
- ★ Refer back to the question: *Which is the cheapest bag of sweets?* Encourage the children to **estimate** their answer.
- ✓ **TIP:** Encourage the children to estimate before calculating to help them to refine their estimates over time.
- ★ Work through the question with the children so that they understand the process.
- ★ *First, let's work out how much the Jazzy Chocs will cost. We need to find out what $\frac{1}{5}$ of £3.00 is (60p) and then subtract this from £3.00 to find the cost (£2.40). Now let's work out the cost of the Gummy Bears. We need to find $\frac{1}{10}$ of £4.50 (45p) and then find $\frac{3}{10}$ by multiplying $\frac{1}{10}$ by 3 (£1.35) and then subtract this from the original price (£3.15) Now we must compare the prices to work out which one is cheaper.*
- ★ Model each stage of the calculation on the board and then ask them to find the final answer.
- ★ Now ask the children to complete the next four questions from the worksheet independently.
- ★ As they are working, move around the group to see how they are using their knowledge of fractions to solve the problems.
- ! **WATCH OUT:** The children may struggle to draw the necessary information from the problem. Help them to identify the important information and then see if the children can find the answers.
- ★ Once the children have completed the worksheet, work through the answers together. Give the children the opportunity to explain their processes as well as offering their answers.

OBJECTIVES

- Order fractions and solve simple problems with fractions

RESOURCES

- One 100 square per child; Worksheet 3



Worksheet 3

Name _____ Date _____

Solve the problem

1. A sweet shop has a range of deals. Sam wants to know which bag of sweets will be the cheapest, before he buys any.

Jazzy Chocs cost £3.00 per bag but have $\frac{1}{5}$ off this week.

Gummy Bears cost £4.50 per bag with $\frac{3}{10}$ off this week.

Which bag of sweets is the cheapest?



2. The police stop a car that is travelling at $\frac{1}{6}$ over the speed limit of 30mph.

How fast was the car going?

3. A chip shop sells fish and chips in 3 different portion sizes.

A child portion is £4.00.

An adult portion is $\frac{1}{8}$ more.

An extra-large portion is $\frac{2}{8}$ more.

- a) How much does an adult portion cost?

- b) How much does an extra-large portion cost?

4. Charlotte is painting her hotel.

She needs 20L of paint for the first-floor bedrooms.

She needs $\frac{3}{5}$ more paint for the ground floor.

How much paint will she need for the ground floor?

5. Ramesh loves to play on the games console.

He plays for 3 hours on Monday.

He plays for $\frac{6}{9}$ of this time on Tuesday.

How long does Ramesh play his console for on Tuesday?

6. Josie, Lara and 2 friends are sharing a cake. Lara cuts it into uneven pieces. She takes $\frac{1}{4}$ for herself.

a How many 8ths should Josie take to have the same amount of cake as Lara?

b How many 16ths should each friend take to have the same amount of cake as Lara and Josie?

7. Toby and Josh get £2 each in pocket money. Toby has spent $\frac{1}{4}$ of his money. Josh has spent the same amount. How much has Josh spent?

a $\frac{1}{16}$

b $\frac{4}{8}$

c $\frac{2}{6}$

d $\frac{2}{8}$



Quiz

Name _____ Date _____

1. Put these fractions in order of size, starting with the smallest.

$$\frac{3}{4} \quad \frac{1}{7} \quad \frac{2}{20} \quad \frac{1}{2} \quad \frac{2}{5}$$

2. Fill in the missing numbers.

a) $\frac{2}{4} = \frac{\square}{8}$

b) $\frac{5}{20} = \frac{\square}{4}$

c) $\frac{\square}{2} = \frac{6}{12}$

3. Harry had 20 sweets.

He gave a quarter of them to Tariq.

How many sweets did Harry have left?

4. Erica had a bowl with 45 raspberries.
She shared them with her friends Isla and Emily.

a) What fraction did each girl get?

b) How many raspberries did each girl get?

5. 'True' or 'False'?

a) $\frac{5}{8} > \frac{1}{4}$

b) $\frac{4}{10} = \frac{8}{20}$

c) $\frac{7}{21} > \frac{1}{3}$

d) $\frac{3}{4} > \frac{5}{20}$

e) $\frac{7}{4} = 1\frac{3}{4}$

f) $\frac{5}{3} = 1\frac{2}{3}$

This quiz has been included to check what children can do independently and to show their progress within the learning sequence.



Answers

1. $\frac{2}{20}$ $\frac{1}{7}$ $\frac{2}{5}$ $\frac{1}{2}$ $\frac{3}{4}$

2. a) 4
b) 1
c) 1

3. 15

4. a) $\frac{1}{3}$ b) 15 raspberries

5. a) True
b) True
c) False (they are equivalent)
d) False
e) True
f) True

The answers to the quiz are included at the end of this learning sequence to allow for quick, easy and accurate marking.

Marking could be done in a group, with children exploring why errors were made and how correct answers were achieved. You might wish to encourage the children to explain their thinking and strategies to each other for both correct and incorrect answers.