

Part

# Fractions: Lesson 4

Whole

Identifying, representing and comparing unit fractions  
and non-unit fractions, part 2

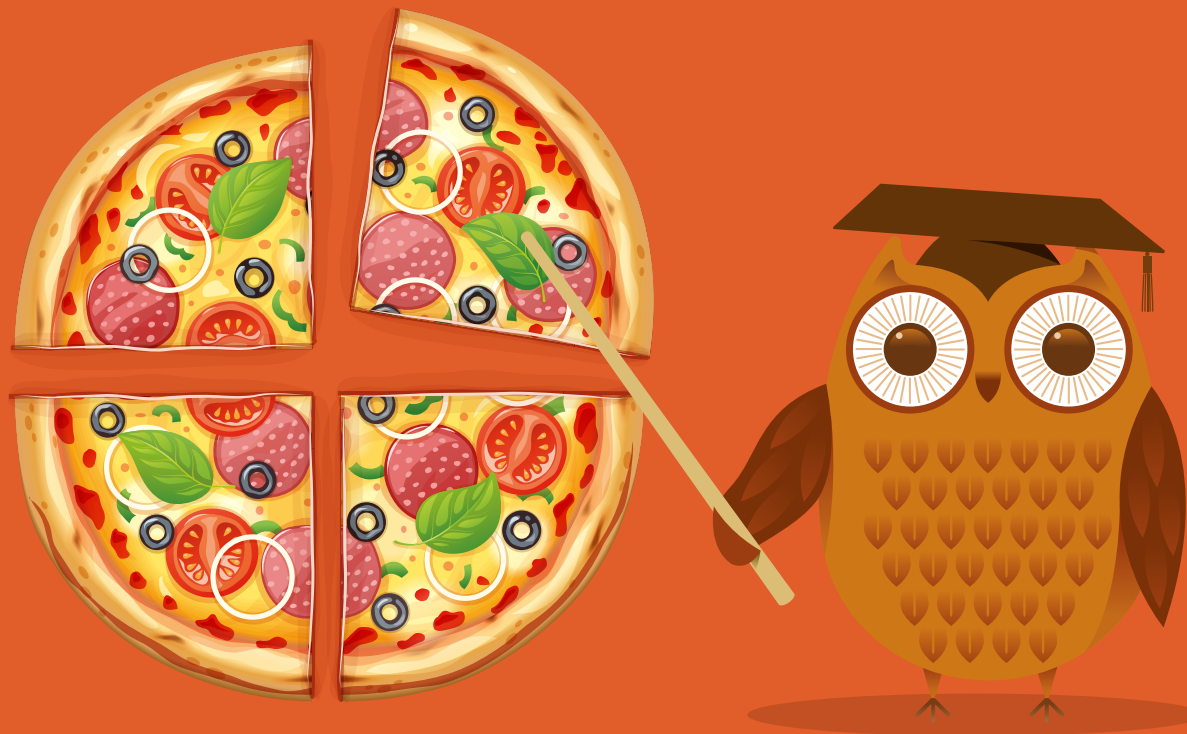
Maths KS2 Years 3 and 4

Unit  
fraction

Non-unit  
fraction

One  
half

Equal  
parts



# Maths Lesson 4: Fractions

Identifying, representing and comparing unit fractions and non-unit fractions

## Maths

### Key Stage 2 Years 3 and 4

## Learning Objectives:

To deepen understanding that:

- if the size of a unit fraction is known, the size of the whole can be worked out by repeated addition of that unit fraction.
- All non-unit fractions are made up of more than one of the same unit fraction.
- Non-unit fractions are written using the same convention as unit fractions. A non-unit fraction has a numerator greater than one.
- When the numerator and the denominator in a fraction are the same, the fraction is equivalent to one whole.
- All unit and non-unit fractions are numbers that can be placed on a number line.

## Curriculum Link

To solve problems that involve fractions.

## Keywords from Lesson 1, 2 and 3

Part. Whole. Fraction. Equal parts. Unequal parts. Dividing bar. Denominator. Numerator. One half. One third. One quarter. One sixth. One eighth.

## Keywords for Lesson 4

**Unit fraction. Non-unit fraction.**

The last two keywords can be found in printable format at the end of this PDF, for your learning wall.



### You will need the following resources for this lesson:

- Scissors, pencil, whiteboard and whiteboard pens
- Cuisenaire rods
- Activity 1: Spinner from Handout 1 and either Cuisenaire rods or Cuisenaire strips from Handout 7
- Activity 2: Handouts 2, 3, 4 cut up onto cards for matching game
- Activity 3: Handout 5, 1 per child
- Activity 4: Spinner from Handout 1, spinner from Handout 6, Handout 7, Handout 8 (the gameboard), Cuisenaire rods or Handouts 9, 10, 11, 12 cut up at fraction parts.
- Plenary: Jug, Clear plastic bottle, some water or orange squash, counting stick for slide 13

### PowerPoint presentation

The accompanying PowerPoint has the following learning points:

- Slides 1, 2 introduce the lesson, the learning aims and the key words.
- Slides 3 to 5 introduce the key idea that **if the size of a unit fraction is known, the size of the whole can be worked out by repeated addition of that unit fraction.**
- Slide 3 models the pupil activity. The stem sentence should be repeated during this slide. You may wish to use a Cuisenaire rod to demonstrate this. You can also link this to multiplicative reasoning through the final stem sentence showing how many times longer the whole is.

**The whole is divided into x equal parts.**

**Each equal part is one xth of the whole.**

**My whole is x times as long as the part.**

Slide 3 includes a prompt note: If my yellow rod is one quarter of my whole, then my whole will have four equal parts. What would it look like?

### Activity 1 (using Handout 1)

- Slide 4 introduces the independent follow-up task where children will spin the spinner, on Handout 1, which will tell them how many parts are the whole. Encourage the children to reason how long they think the whole would be. For example, if I know that my whole has been divided into four equal parts and this is one of those parts, then the whole must be four times as long, etc.

**Timing:** approximately 10 minutes.



### Activity 2 (using Handouts 2, 3 and 4)

- Slide 5 introduces a game to consolidate this understanding, like rummy, where each player needs to collect a family of cards. Handouts 2, 3 and 4 (you may have to print more than one copy) need to be cut up into individual cards for this matching game. They are then shuffled together, dealt out and the remaining cards put into a pile in the middle. The rules for the game are also on the slide.

**Timing:** Allow approximately 5 minutes for this game.

- Slides 6 to 9 introduce **non-unit fractions, which are fractions made up of more than one of the same unit fractions**, and explain how non-unit fractions are recorded and how **non-unit fractions relate to the repeated addition of unit fractions which have the same denominator**.

### Activity 3 (using Handout 5)

- Slide 6 shows an example of Handout 5. Give each child a copy of this handout (a paper strip divided into fifths). Ask how many equal parts their shape has; each part is one fifth.
- Slide 7 – on showing this slide, ask the children to fold their paper strip to show  $\frac{1}{5}$ . Now repeat and ask the children to show two lots of one fifth. Explain that two lots of one fifth is also called two fifths. Ask the children to fold their paper strip to show three lots of one fifth etc.  
Show the stem sentences. **I have .... lots of one fifth. I have.... fifths.** Encourage children to say BOTH sentences.
- Slide 8 – on showing this slide, count along the tenth number line. Start by counting one-tenth, two one-tenths, three one-tenths, etc. Point as you go. Then count in non-unit tenths: one tenth, two tenths, three tenths, etc.
- Slide 9 – on showing this slide, ask the children how many tenths are blue? Encourage the children to answer using the two stem sentences on the slide: **There are ..... one-tenths. There are .... Tenths.** This slide is animated to show 4 different amounts of tenths.

**Timing:** Allow approximately 10 minutes for this activity

### Activity 4 (using Handouts 1, 6, 8, 9, 10, 11 and 12)

- Slide 10 introduces Activity 4. Model the game first. Children can play the game in pairs or in small groups. They spin the two spinners to find out which fraction they will be collecting and how many they need. They then collect their fractions using Handouts 9, 10, 11 and 12. The winner is the first person to make four whole shapes on the gameboard (Handout 8).  
Children say the stem sentence as they pick up their fraction parts. **E.g: I have three one-quarters. I have three quarters.**



Key questions to support :

- How many do you have?
- How many more one-fifths do you need to make your whole?
- What happens if you have more than five one-fifths?

Allow pupils to play the game a couple of times.

**Timing:** Allow approximately 10 minutes for this.

### Plenary (Slides 11 to 13)

Here the key ideas that non-unit fractions are written using the same convention as unit fractions and a non-unit fraction has a numerator greater than one will be explored.

- Slide 11 – on showing this slide, explain that we have been looking at fractions as operators, for example a quarter of this shape, a fifth of this shape. However, it is important to emphasise that fractions are also numbers. Repeat the same activity from the plenary of lesson 3.

Ask the children to shout STOP when the container is  $\frac{1}{4}$  full. Then ask a child to come and put a marker at this point and write  $\frac{1}{4}$ . Repeat for  $\frac{2}{4}$ ,  $\frac{3}{4}$  and  $\frac{4}{4}$ . Explain how this shows a specific point on the bottle rather than the size of a part. Also draw attention to the fact that when the orange juice reached  $\frac{4}{4}$  the container was full. So when the numerator and the denominator are the same, the fraction is one whole.

Say the stem sentence together. When the numerator and the denominator are the same this is one whole.

Now add a zero to the bottom of the bottle to indicate when the bottle is empty.

The instructions are also supplied in the notes section of the PowerPoint.

- Slide 12 relates the one quarters to addition and is animated to show how  $\frac{1}{4}$  and  $\frac{1}{4}$  together are the same as  $\frac{2}{4}$ .
- Slide 13 shows this as a linear representation on a number line. You could model this on a counting stick to reiterate this further.

Ask the children to count in quarters to  $\frac{4}{4}$  then emphasize how  $\frac{1}{4}$  plus  $\frac{1}{4}$  is equal to  $\frac{2}{4}$  etc.

**Timings:** approximately 15 minutes.

The instructions are also supplied in the notes section of the PowerPoint.

- Slide 14 is a review slide for you to annotate on your interactive whiteboard or to collect what children reflect they have been learning about.

The coloured underlined ideas are the key ideas from this lesson. They indicate opportunities for pupil talk indicated throughout the PowerPoint.

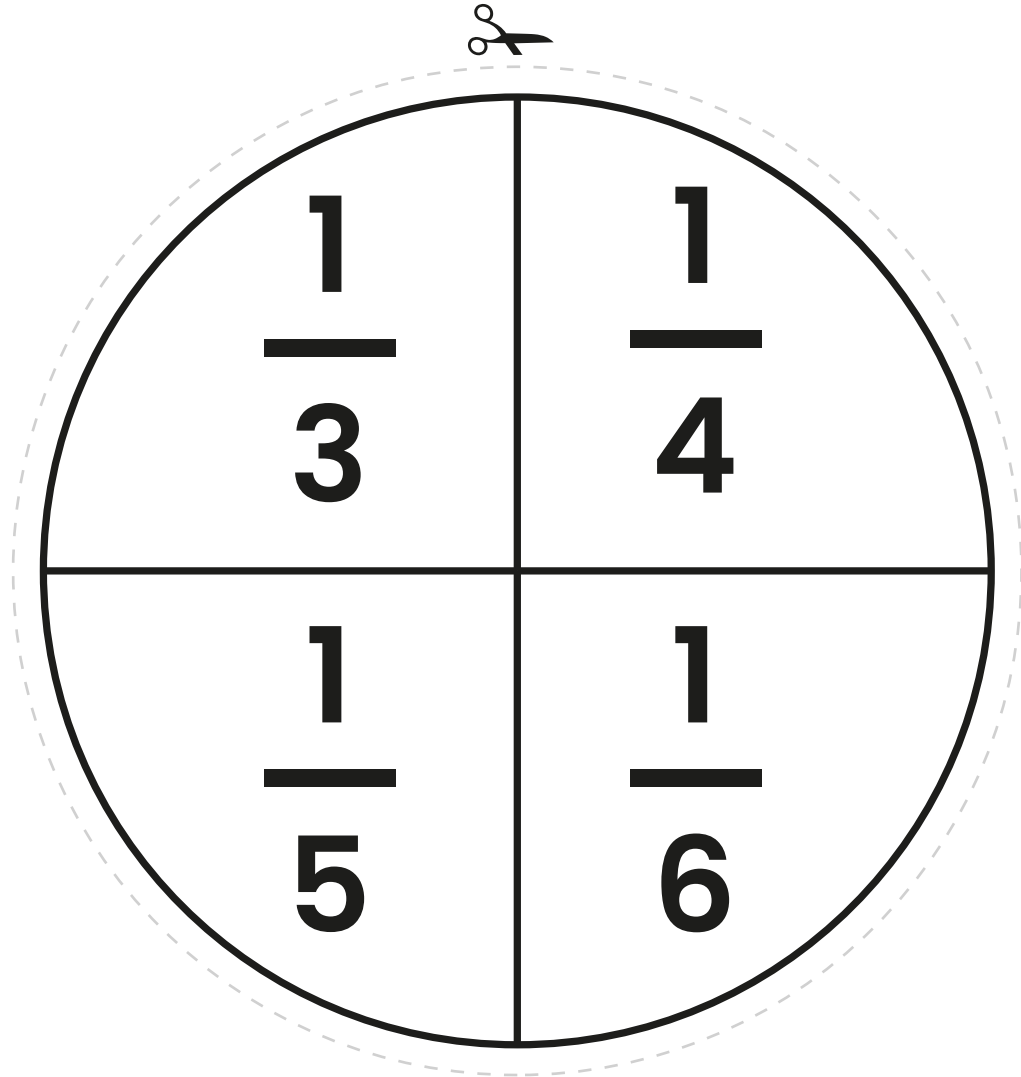
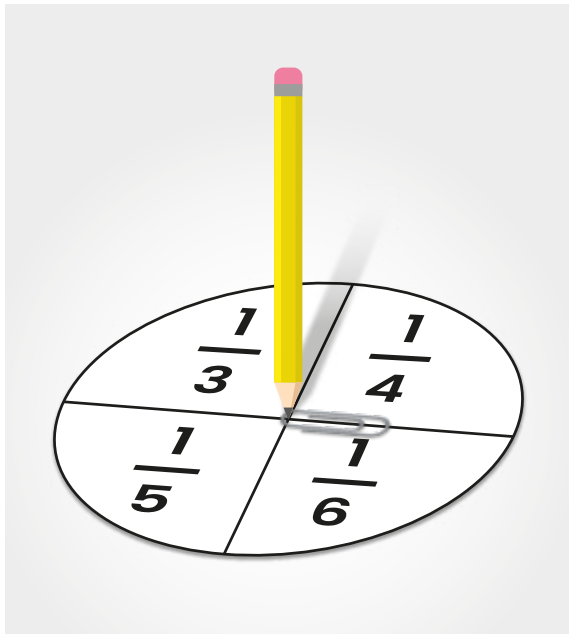
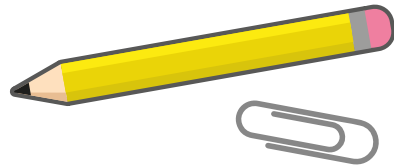


# Handout 1

(to be used with Activity 1 and Activity 4)

Spinner for Activity 1 and Activity 3.  
This can be cut out and used with a  
paper clip and a pencil.

You will need:



## Handout 2

(to be used with Activity 2)



|   |   |   |   |   |
|---|---|---|---|---|
| 3 | 4 | 5 | 6 | 7 |
| 2 | 8 | 2 | 3 | 4 |
| 3 | 6 | 4 | 8 | 2 |
| 3 | 4 | 5 | 6 | 8 |



## Handout 3

(to be used with Activity 2)

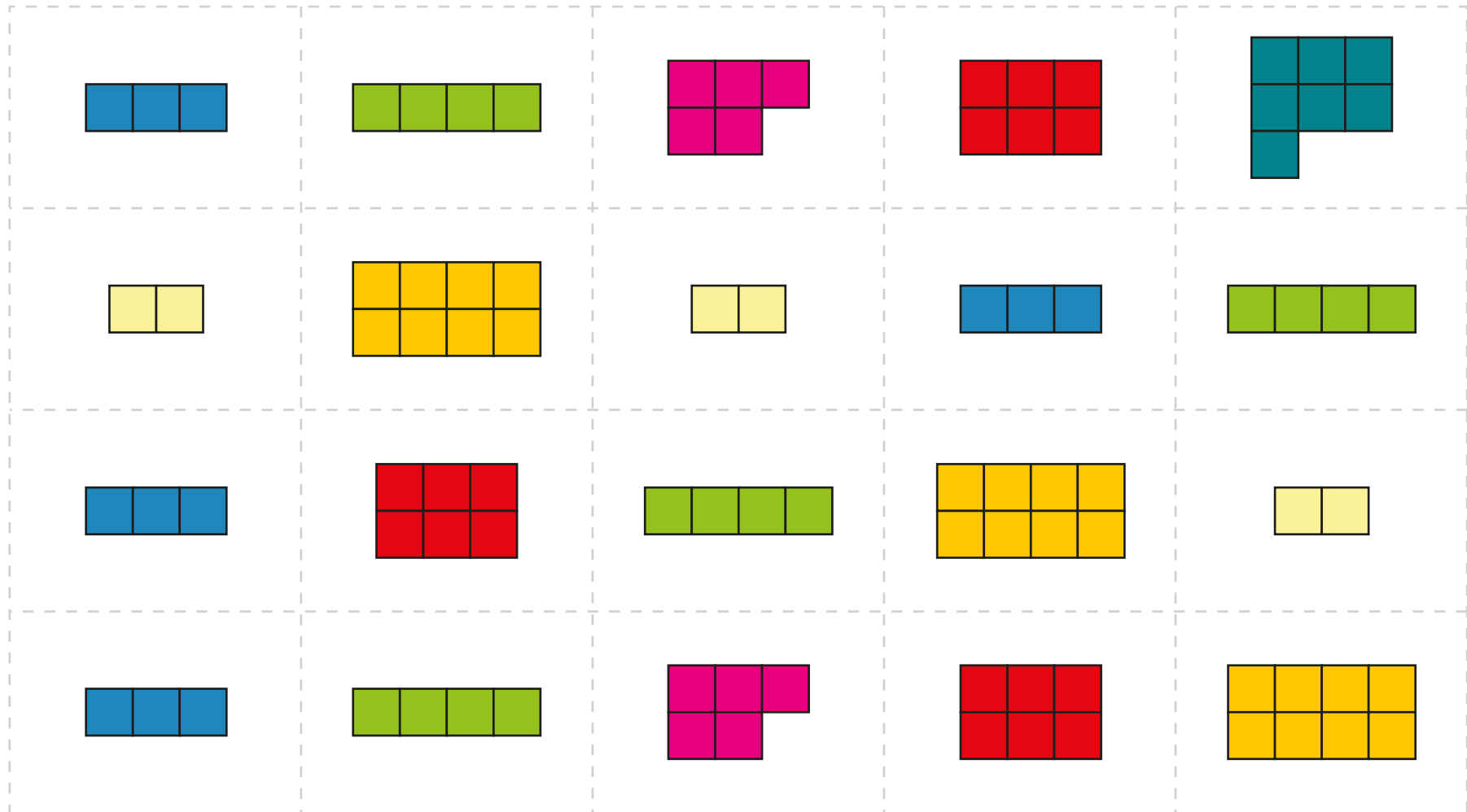


|               |               |               |               |               |
|---------------|---------------|---------------|---------------|---------------|
| $\frac{1}{3}$ | $\frac{1}{4}$ | $\frac{1}{5}$ | $\frac{1}{6}$ | $\frac{1}{7}$ |
| $\frac{1}{2}$ | $\frac{1}{8}$ | $\frac{1}{2}$ | $\frac{1}{3}$ | $\frac{1}{4}$ |
| $\frac{1}{3}$ | $\frac{1}{6}$ | $\frac{1}{4}$ | $\frac{1}{8}$ | $\frac{1}{2}$ |
| $\frac{1}{3}$ | $\frac{1}{4}$ | $\frac{1}{5}$ | $\frac{1}{6}$ | $\frac{1}{8}$ |



# Handout 4

(to be used with Activity 2)



# Handout 5

(to be used with Activity 3)

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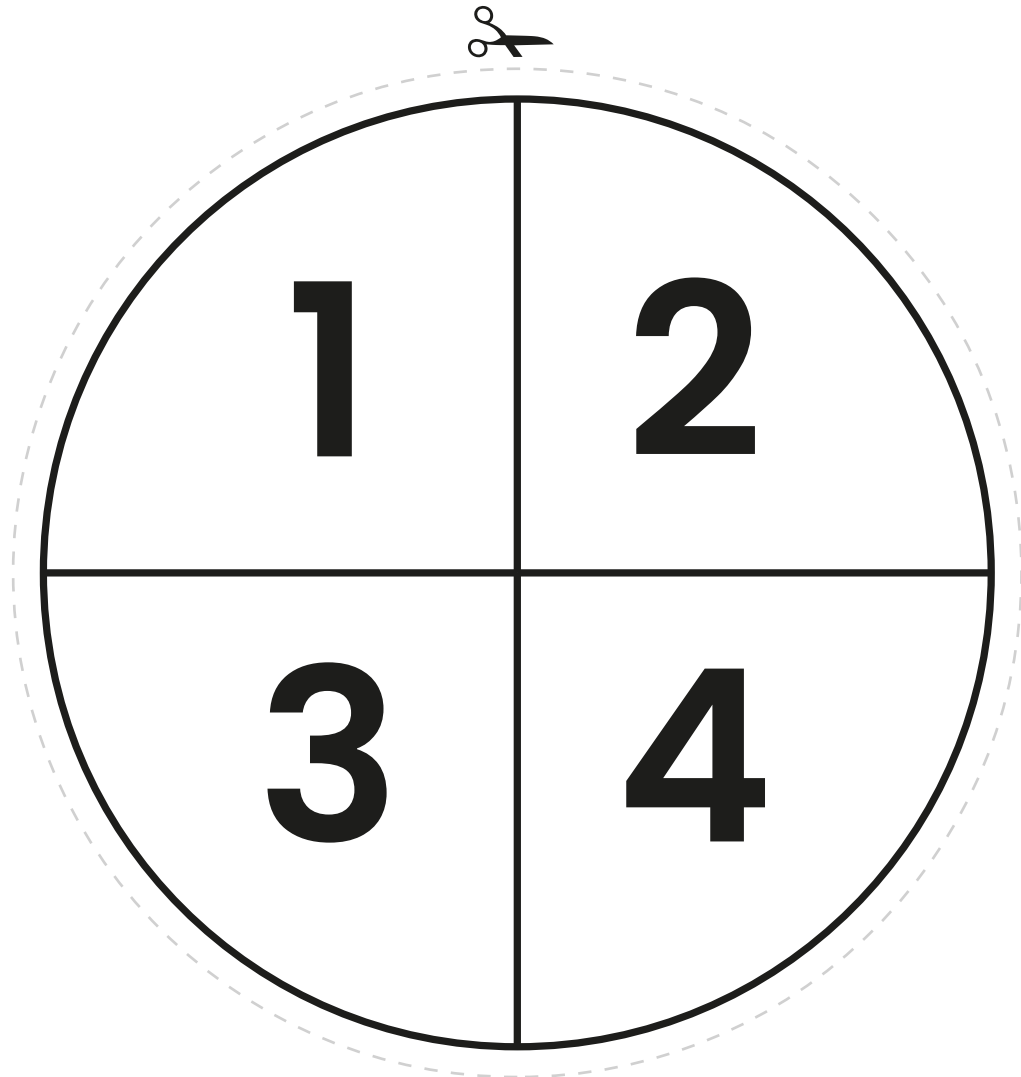
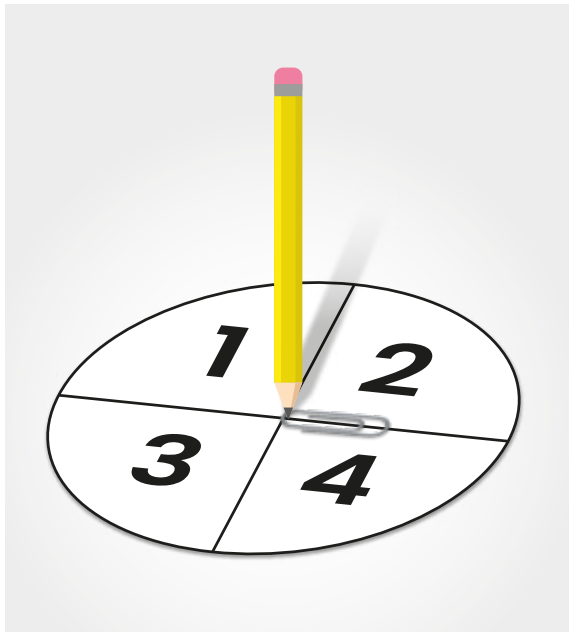
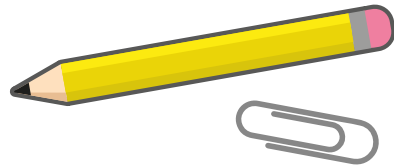


## Handout 6

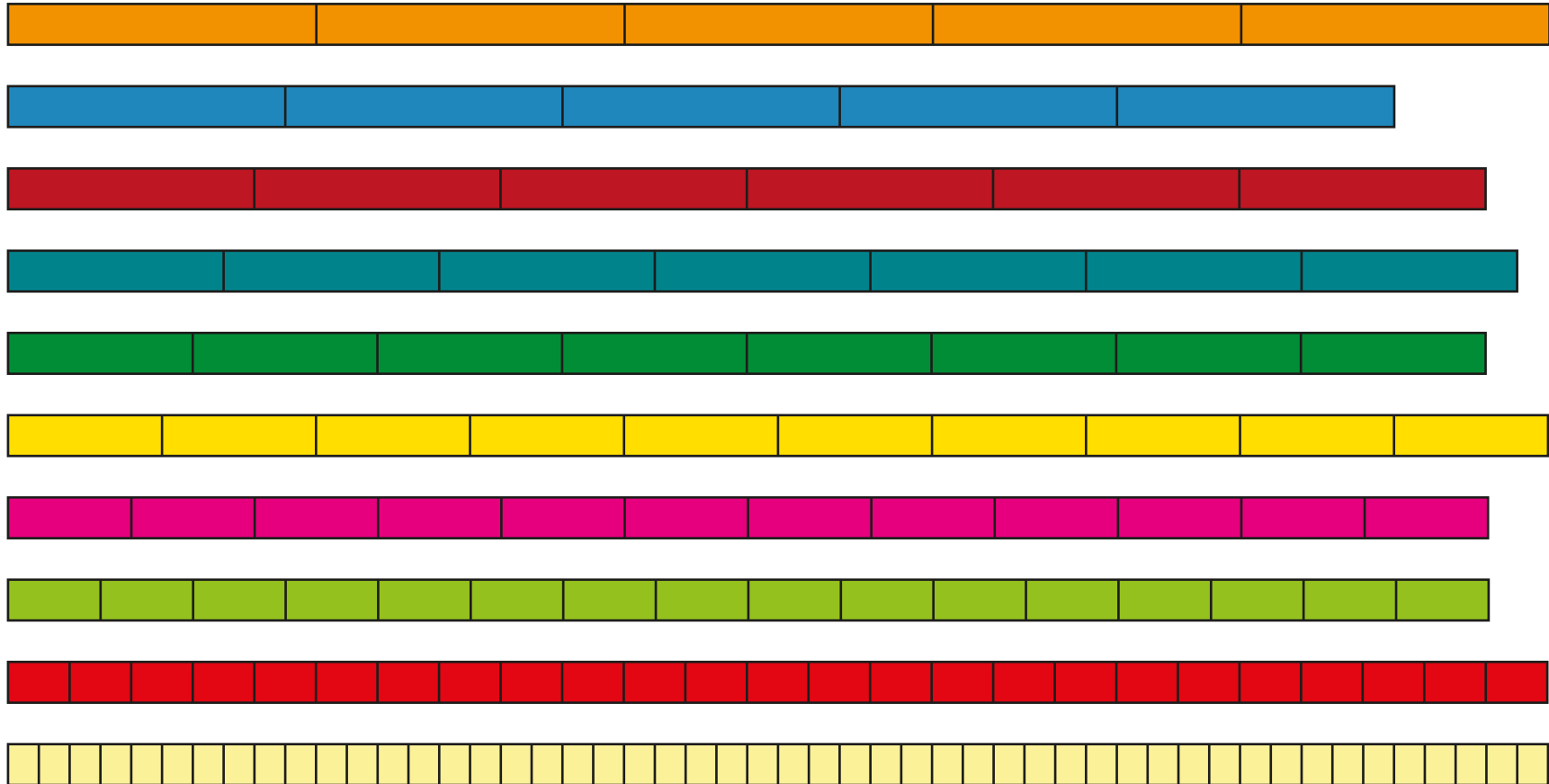
(to be used with Activity 4)

Spinner for Activity 4.  
This can be cut out and used  
with a paper clip and a pencil.

You will need:



# Handout 7



Useful link: <https://mathsbot.com/manipulatives/rods>



# Handout 8 (Gameboard)

(to be used with Activity 4)

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# Handout 9



|               |               |               |
|---------------|---------------|---------------|
| $\frac{1}{3}$ | $\frac{1}{3}$ | $\frac{1}{3}$ |
| $\frac{1}{3}$ | $\frac{1}{3}$ | $\frac{1}{3}$ |
| $\frac{1}{3}$ | $\frac{1}{3}$ | $\frac{1}{3}$ |
| $\frac{1}{3}$ | $\frac{1}{3}$ | $\frac{1}{3}$ |



# Handout 10



|               |               |               |               |
|---------------|---------------|---------------|---------------|
| $\frac{1}{4}$ | $\frac{1}{4}$ | $\frac{1}{4}$ | $\frac{1}{4}$ |
| $\frac{1}{4}$ | $\frac{1}{4}$ | $\frac{1}{4}$ | $\frac{1}{4}$ |
| $\frac{1}{4}$ | $\frac{1}{4}$ | $\frac{1}{4}$ | $\frac{1}{4}$ |
| $\frac{1}{4}$ | $\frac{1}{4}$ | $\frac{1}{4}$ | $\frac{1}{4}$ |



# Handout 11



|               |               |               |               |               |
|---------------|---------------|---------------|---------------|---------------|
| $\frac{1}{5}$ | $\frac{1}{5}$ | $\frac{1}{5}$ | $\frac{1}{5}$ | $\frac{1}{5}$ |
| $\frac{1}{5}$ | $\frac{1}{5}$ | $\frac{1}{5}$ | $\frac{1}{5}$ | $\frac{1}{5}$ |
| $\frac{1}{5}$ | $\frac{1}{5}$ | $\frac{1}{5}$ | $\frac{1}{5}$ | $\frac{1}{5}$ |
| $\frac{1}{5}$ | $\frac{1}{5}$ | $\frac{1}{5}$ | $\frac{1}{5}$ | $\frac{1}{5}$ |



# Handout 12



|               |               |               |               |               |               |
|---------------|---------------|---------------|---------------|---------------|---------------|
| $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ |
| $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ |
| $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ |
| $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ |



# Fractions: Keywords Flashcards



**Part**

**Whole**

**Fraction**

**Equal  
parts**

**Unequal  
parts**

**Divding  
bar**

**Denominator**

**Numerator**

**One  
half**



## Fractions: Keywords Flashcards



**One  
third**

**One  
quarter**

**One  
sixth**

**One  
eighth**

**Unit  
fraction**

**Non-unit  
fraction**



# Unit fraction



# Non-unit fraction

