

12 FRACTIONS, DECIMALS AND PERCENTAGES: PROPER FRACTIONS

LEARNING OBJECTIVES

- To count up and down in hundredths, and recognise that hundredths arise when dividing an amount by 100 or when dividing tenths by 10
- To recognise, find and write fractions of a discrete set of objects
- To use common factors to simplify fractions and use common multiples to express fractions in the same denomination

CONTENT DOMAINS

- F1 recognise, find, write, name and count fractions
- F2 equivalent fractions

STARTER ACTIVITY

- **Tenths and hundredths; 5 minutes; page 84**

Remind the student that tenths are fractions made when a number, shape or set of objects is divided by 10, and hundredths are made when a number, shape or set of objects is divided by 100. Show them the activity sheet and check they can write the fractions shown as tenths and hundredths.

MAIN ACTIVITIES

- **Proper fractions; 10 minutes**

Use the diagrams from the starter activity to show the student that a fraction is 'part' of a whole. Check the student remembers that the bottom number is the denominator and the top number is the numerator. Name various fractions and ask the student to write them down. Each time, ask the student to explain what the fraction means. Ask them to write the fraction that would be needed to make the whole.

- **Equivalent fractions; 15 minutes; page 85**

Check the student understands the term 'equivalent fractions' (see glossary) by using the prompt on the activity sheet. Ask the student to work through the sheet.

- **Simplifying fractions; 15 minutes; page 86**

Check the student understands the term 'common factors' (see glossary) and how to find these, using the prompt at the top of the activity sheet. Ask the student to simplify the fractions and check that they have found the simplest form.

PLENARY ACTIVITY

- **Finding equivalents; 5 minutes**

Show the student the following fractions and ask them to write an equivalent fraction for each:

$$\frac{1}{2}, \frac{3}{5}, \frac{7}{8}, \frac{9}{10}, \frac{1}{7}$$

HOMEWORK ACTIVITY

- **Floating fractions; 20 minutes; page 87**

Full instructions are given on the activity sheet.

DIFFERENTIATION AND EXTENSION IDEAS

- **Tenths and hundredths** Extend by making a link to decimals (and place value) and asking the student to write the decimal equivalents as well.
- **Equivalent fractions** Extend by asking the student to find three or four different equivalent fractions for each fraction shown.
- **Simplifying fractions** Support by asking the student to write the factors for both the numerator and the denominator in each of the fractions to help them identify common factors.

PROGRESS AND OBSERVATIONS

STARTER ACTIVITY: TENTHS AND HUNDREDTHS

TIMING: 5 MINS

LEARNING OBJECTIVES

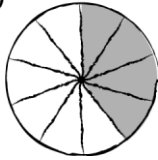
- To count up and down in hundredths, and recognise that hundredths arise when dividing an amount by 100 or when dividing tenths by 10

EQUIPMENT

none

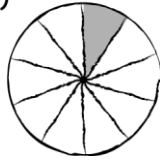
1. For each circle, write the fraction that is shaded.

a)



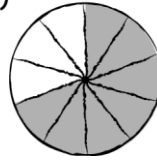
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b)



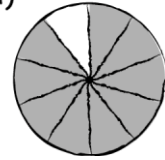
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c)



.....

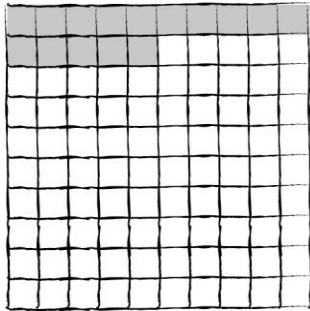
d)



.....

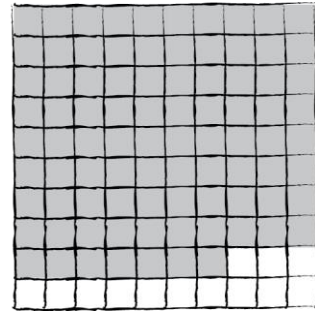
2. For each square, write the fraction that is shaded.

a)



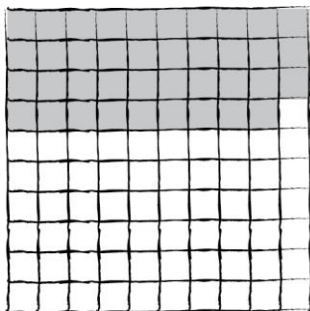
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b)



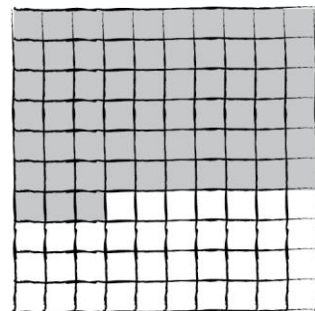
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c)



.....

d)



.....

MAIN ACTIVITY: EQUIVALENT FRACTIONS

TIMING: 15 MINS

LEARNING OBJECTIVES

- To use common factors to simplify fractions and use common multiples to express fractions in the same denomination

EQUIPMENT

none

It is important to be able to change fractions to equivalent fractions.

To do this you multiply or divide both the numerator and the denominator by the same number.

Example:

$$\frac{6 \times 3}{8 \times 3} = \frac{18}{24} \text{ so } \frac{6}{8} \text{ is equivalent to } \frac{18}{24}.$$

$$\frac{6 \div 2}{8 \div 2} = \frac{3}{4} \text{ so } \frac{6}{8} \text{ is equivalent to } \frac{3}{4}.$$

Find two equivalent fractions for each of these fractions.

1. $\frac{7}{8} =$

.....

2. $\frac{3}{7} =$

.....

3. $\frac{5}{9} =$

.....

4. $\frac{9}{11} =$

.....

5. $\frac{12}{19} =$

.....

6. $\frac{3}{4} =$

.....

7. $\frac{1}{3} =$

.....

8. $\frac{6}{7} =$

.....

9. $\frac{13}{21} =$

.....

10. $\frac{17}{18} =$

.....

MAIN ACTIVITY: SIMPLIFYING FRACTIONS

TIMING: 15 MINS

LEARNING OBJECTIVES

- To use common factors to simplify fractions and use common multiples to express fractions in the same denomination

EQUIPMENT

none

To simplify fractions, you need to divide the denominator and the numerator by the same number (a common factor). If the numerator and denominator do not have a common factor, the fraction is already in its simplest form.

Write each fraction in its simplest form. Show the steps you took to get to the simplest form.

1. $\frac{8}{12}$ =

2. $\frac{9}{12}$ =

3. $\frac{3}{15}$ =

4. $\frac{12}{20}$ =

5. $\frac{30}{60}$ =

6. $\frac{5}{20}$ =

7. $\frac{720}{900}$ =

8. $\frac{80}{100}$ =

HOMEWORK ACTIVITY: FLOATING FRACTIONS

TIMING: 20 MINS

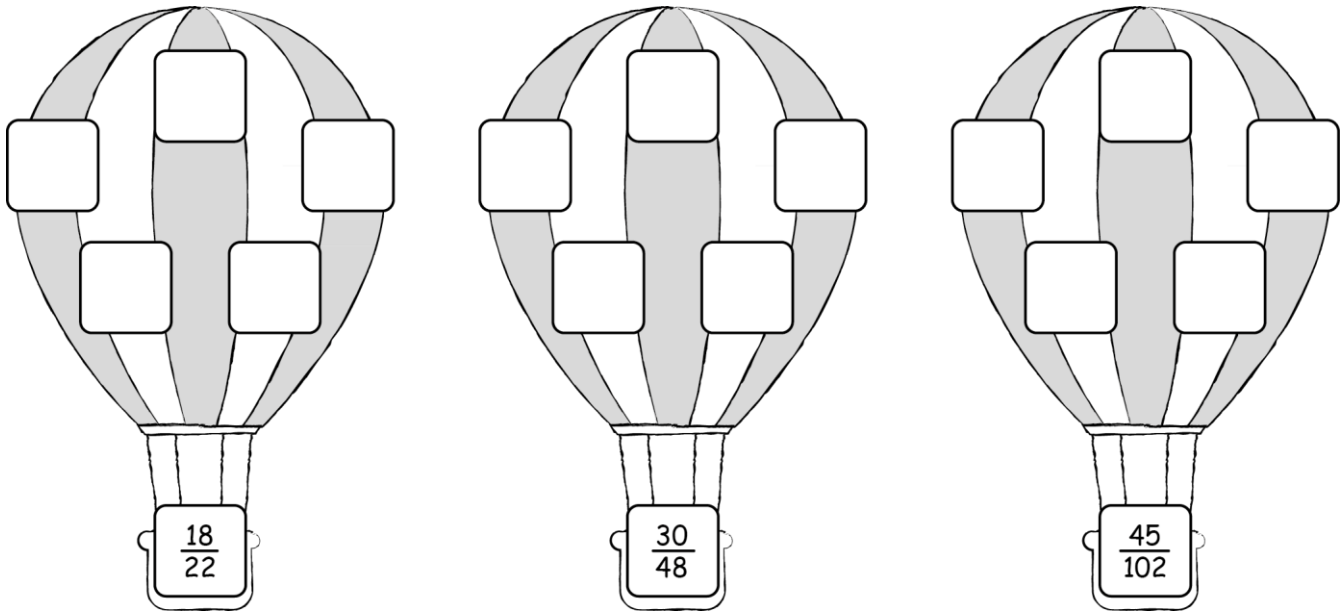
LEARNING OBJECTIVES

- To use common factors to simplify fractions and use common multiples to express fractions in the same denominator
- To recognise, find and write fractions of a discrete set of objects

EQUIPMENT

none

1. For each fraction shown in the hot air balloon, write five equivalent fractions by either dividing or multiplying the numerator and denominator by the same number.



2. Write each of the following fractions in its simplest form. Show the steps you have taken to get to your answer.

a) $\frac{77}{105} =$

b) $\frac{56}{144} =$

c) $\frac{144}{360} =$

12 ANSWERS

STARTER ACTIVITY: TENTHS AND HUNDREDTHS

1. a) $\frac{4}{10}$ b) $\frac{1}{10}$ c) $\frac{7}{10}$ d) $\frac{9}{10}$
2. a) $\frac{15}{100}$ b) $\frac{87}{100}$ c) $\frac{39}{100}$ d) $\frac{63}{100}$

MAIN ACTIVITY: EQUIVALENT FRACTIONS

Check the student has given two equivalent fractions for each.

MAIN ACTIVITY: SIMPLIFYING FRACTIONS

1. $\frac{2}{3}$ 2. $\frac{3}{4}$ 3. $\frac{1}{5}$ 4. $\frac{3}{5}$ 5. $\frac{1}{2}$ 6. $\frac{1}{4}$ 7. $\frac{8}{9}$ 8. $\frac{4}{5}$

HOMEWORK ACTIVITY: FLOATING FRACTIONS

1. Check the student has given equivalent fractions for each.

2. a) $\frac{11}{15}$ b) $\frac{7}{18}$ c) $\frac{2}{5}$

GLOSSARY

Equivalent fractions

Fractions that have the same value even though they look different, such as $\frac{2}{4} = \frac{1}{2}$.

Simplest form

A fraction in which the numerator and denominator do not have common factors so it cannot be divided further.

Common factor

Factors are the numbers that multiply together to make another number. Common factors are numbers that are factors of two or more numbers.