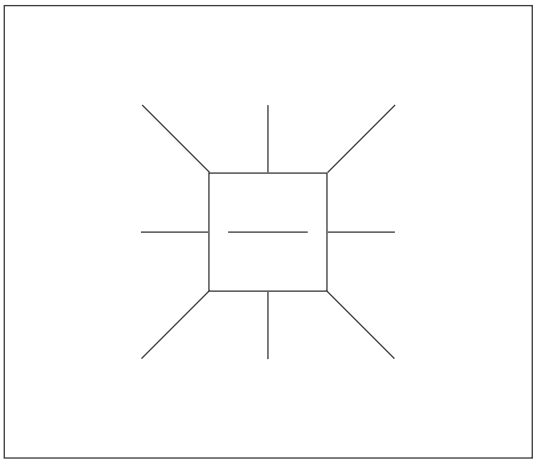
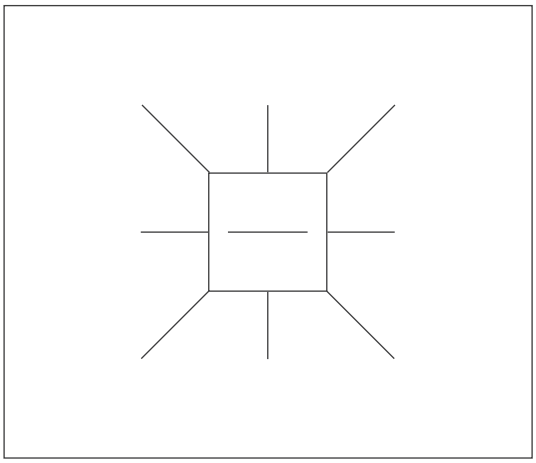
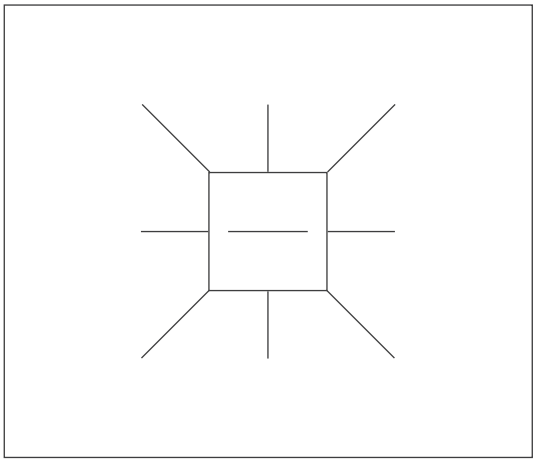
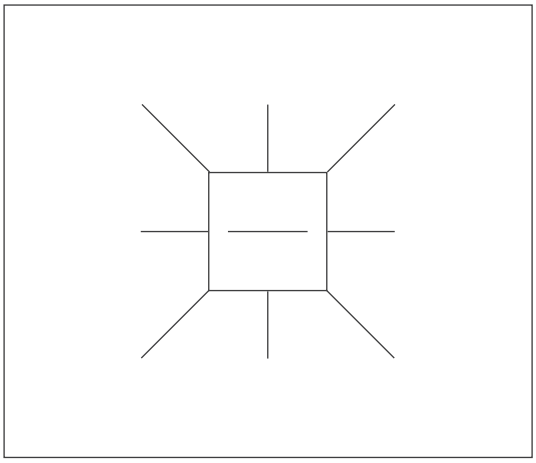
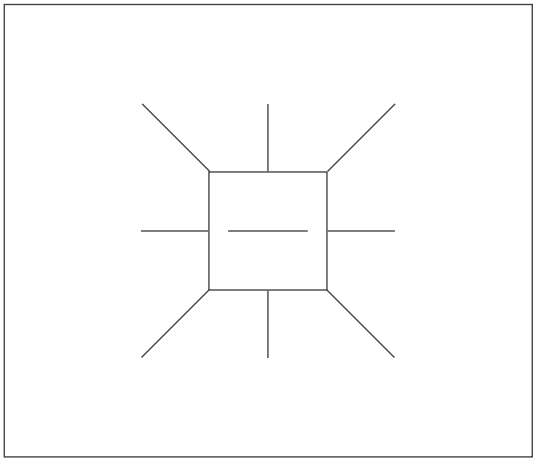
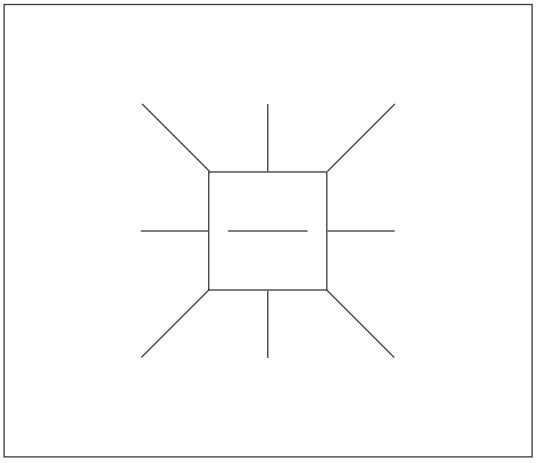
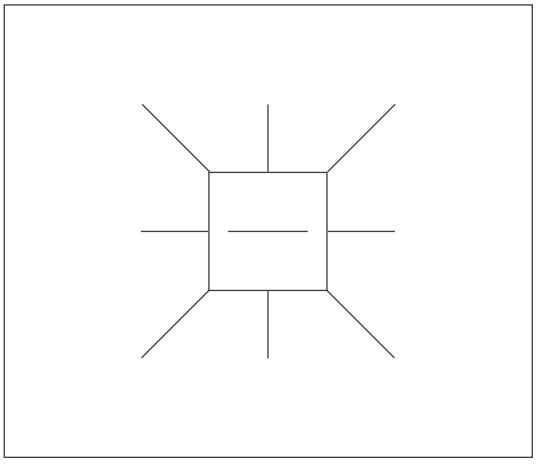
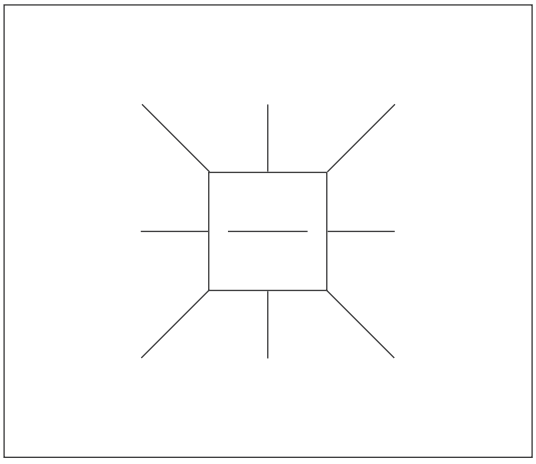
Equivalent Fractions **Mind Map**

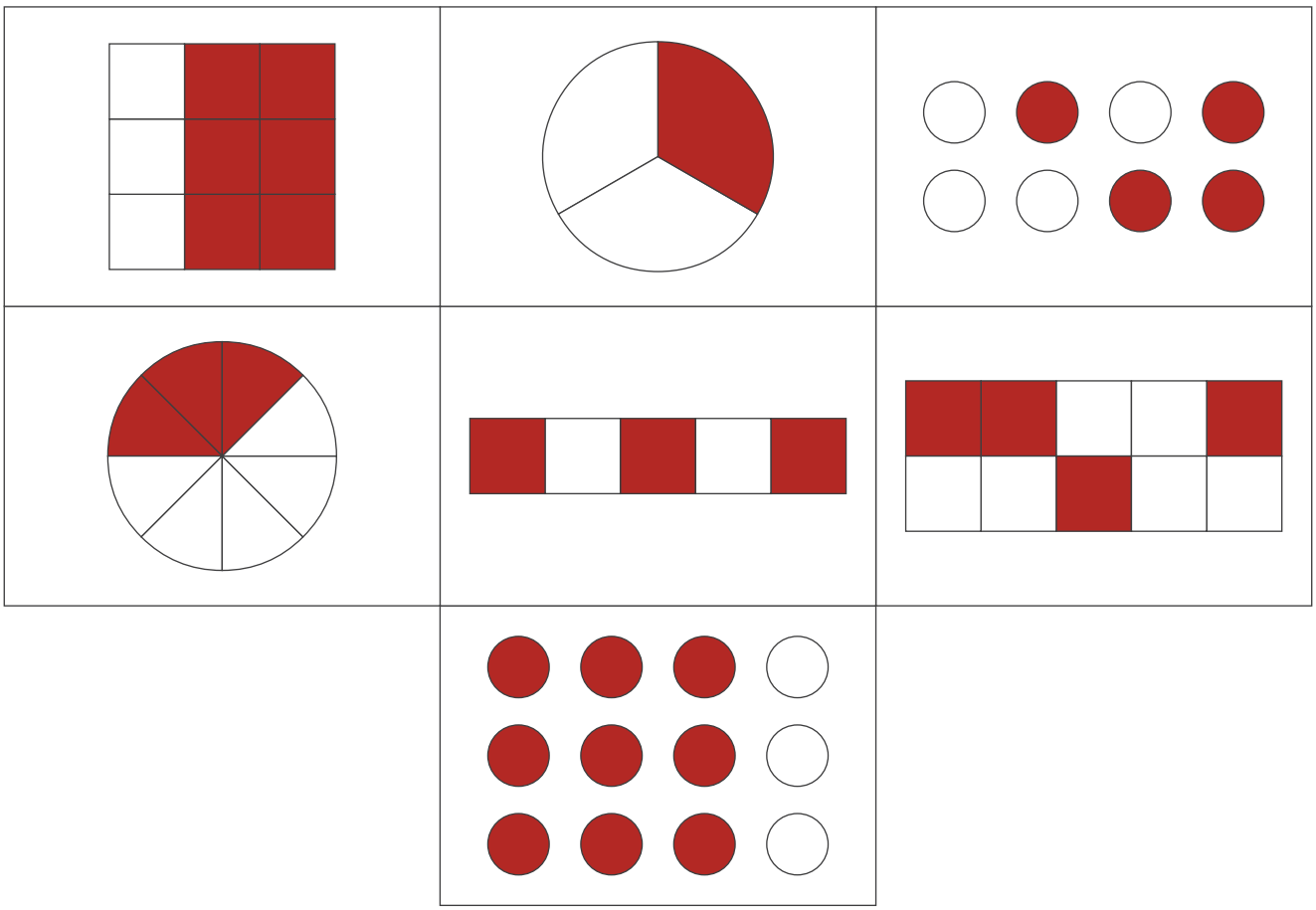









Fraction Matching **Starter Cards**

Instructions:

Cut out the fractions and the pictures and match them up. Some diagrams will match up with more than one fraction – be ready to explain why this is.

Once you have matched everything, you will be left with three spare fractions. Draw a diagram for each of these.



$\frac{4}{8}$	$\frac{6}{9}$	$\frac{3}{8}$
$\frac{1}{2}$	$\frac{1}{3}$	$\frac{3}{5}$
$\frac{9}{10}$	$\frac{1}{4}$	$\frac{2}{5}$
$\frac{9}{12}$	$\frac{3}{4}$	$\frac{1}{6}$
$\frac{6}{16}$	$\frac{2}{3}$	$\frac{4}{10}$

Fractions of an Amount **Collect a Joke**

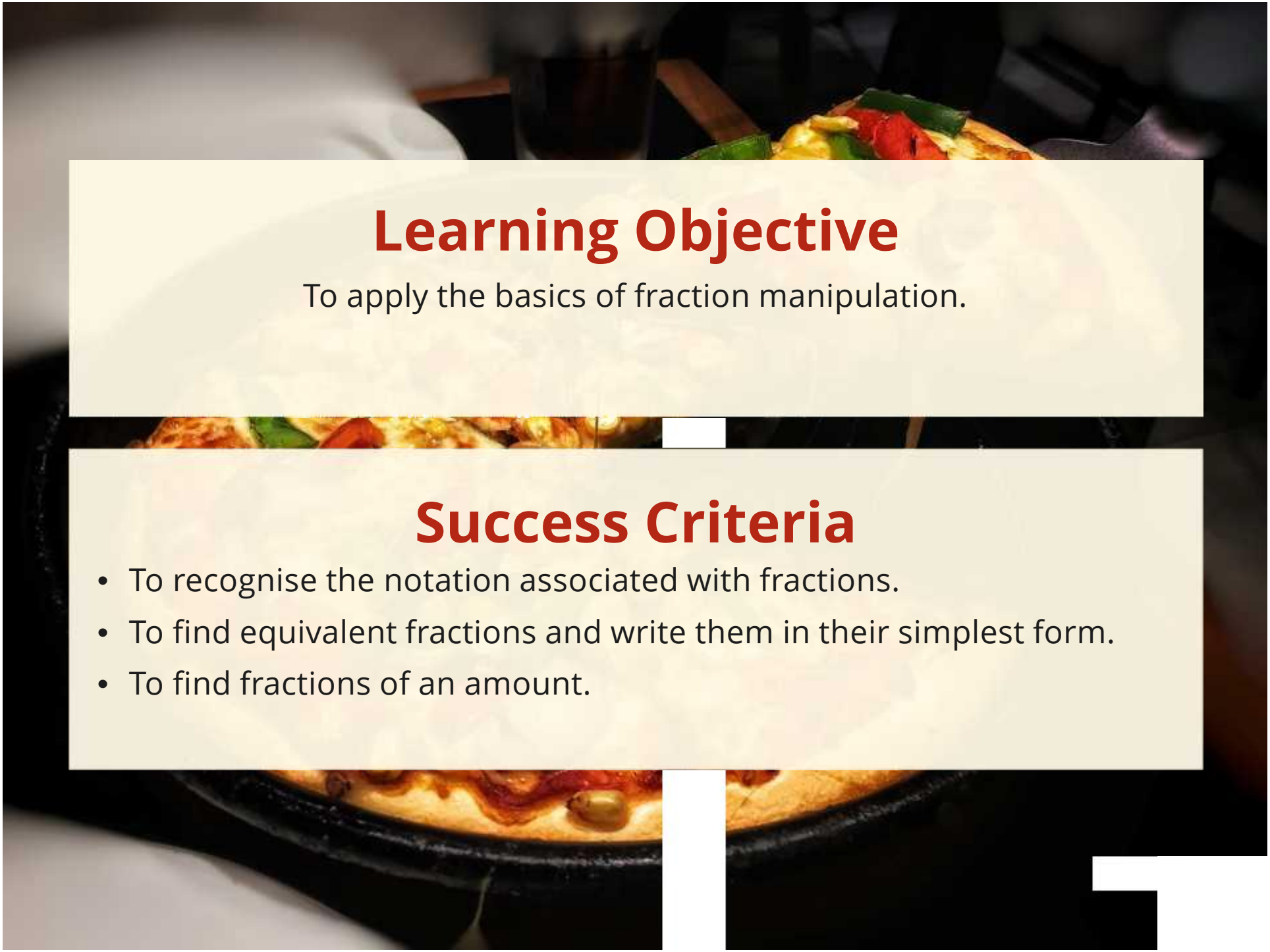
Instructions:

The question at the bottom of each card will lead you to an answer at the top of another. Collect the letters as you answer each question to spell out a joke. Can you guess the punchline?

Start W $\frac{1}{3}$ of 15	7 D $\frac{2}{3}$ of 21	24 Y $\frac{7}{12}$ of 132	60 L $\frac{11}{12}$ of 96	30 I $\frac{7}{10}$ of 80	13.5 T $\frac{5}{7}$ of 35	2 T $\frac{1}{2}$ of 13	8 H $\frac{3}{4}$ of 16	35 E $\frac{3}{4}$ of 100	88 E $\frac{3}{5}$ of 22	75 C $\frac{8}{9}$ of 81
21 S $\frac{8}{9}$ of 36	5 H $\frac{1}{5}$ of 30	6.4 C $\frac{5}{9}$ of 108	14 T $\frac{2}{5}$ of 20	56 A $\frac{2}{7}$ of 35	72 I $\frac{9}{13}$ of 39	12 E $\frac{3}{8}$ of 24	10 N $\frac{1}{2}$ of 37	13.2 ? Finish	77 T $\frac{3}{10}$ of 21	9 T $\frac{3}{10}$ of 110
28 L $\frac{4}{5}$ of 60	32 A $\frac{3}{8}$ of 64	15 I $\frac{1}{3}$ of 21	6.3 O $\frac{3}{4}$ of 18	6 A $\frac{1}{4}$ of 8	33 R $\frac{5}{6}$ of 36	48 E $\frac{3}{11}$ of 77	25 H $\frac{5}{8}$ of 56	27 R $\frac{2}{5}$ of 16	6.5 D $\frac{1}{2}$ of 30	18.5 G $\frac{7}{8}$ of 32

Lesson 1

Introduction to Fractions



Learning Objective

To apply the basics of fraction manipulation.

Success Criteria

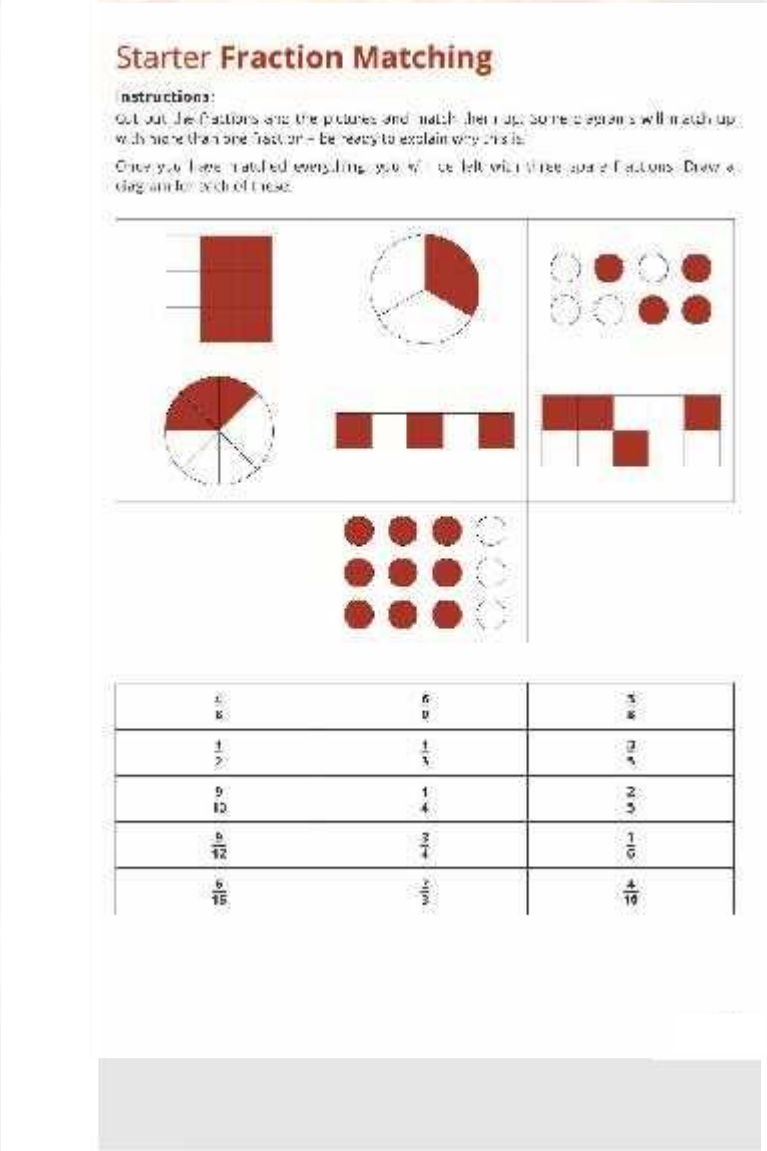
- To recognise the notation associated with fractions.
- To find equivalent fractions and write them in their simplest form.
- To find fractions of an amount.

Starter: Fraction Matching

Match the shaded part of each diagram to the correct fraction.

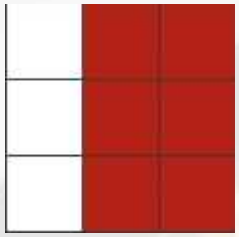
Some diagrams may be linked to two fractions – be ready to explain to the class why you think this is.

There are also some fractions which don't have a matching pair. Draw a diagram to represent each one.

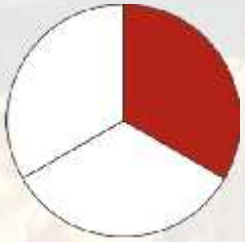

Starter **Fraction Matching**

Instructions:

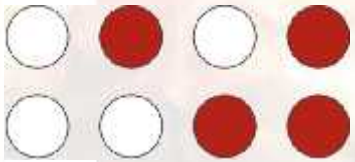
Starter: Fraction Matching Answers



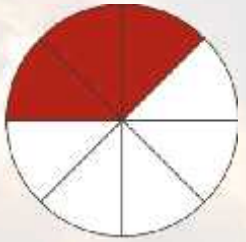
$\frac{6}{9}$ or $\frac{2}{3}$



$\frac{1}{3}$

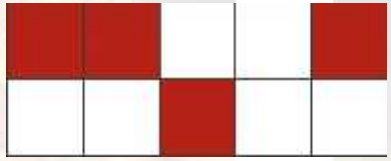


$\frac{4}{8}$ or $\frac{1}{2}$

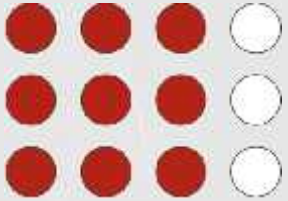


$\frac{3}{8}$ or $\frac{6}{16}$

$\frac{3}{5}$

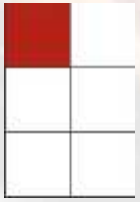


$\frac{4}{10}$ or $\frac{2}{5}$



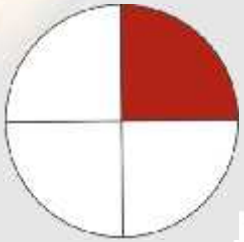
$\frac{9}{12}$ or $\frac{3}{4}$

These are some of the diagrams you could have drawn for the leftover fractions:



$\frac{1}{6}$

$\frac{9}{10}$



$\frac{1}{4}$

Simplest Form

In our starter, we noticed that $\frac{4}{8}$ is the same as (**equivalent to**) $\frac{1}{2}$. Why?

The **highest common factor** of 4 and 8 is 4. That means we can divide both numbers by 4, giving us $\frac{1}{2}$.

$$\frac{4}{8} \begin{matrix} \div 4 \\ = \\ \div 4 \end{matrix} \frac{1}{2}$$

Think, Pair, Share

$$\frac{5}{15} \overset{\div 5}{=} \frac{1}{3}$$

$$\frac{8}{10} \overset{\div 2}{=} \frac{4}{5}$$

$$\frac{10}{25} \overset{\div 5}{=} \frac{2}{5}$$

$$\frac{4}{16} \overset{\div 4}{=} \frac{1}{4}$$

$$\frac{12}{18} \overset{\div 6}{=} \frac{2}{3}$$

Remember: to write a fraction in its simplest form, divide both the **numerator** and **denominator** by their **highest common factor**.

Your Turn

Simplify each of the fractions fully:

a. $\frac{2}{10} = \mathbf{\frac{1}{5}}$

b. $\frac{3}{21} = \mathbf{\frac{1}{7}}$

c. $\frac{8}{12} = \mathbf{\frac{2}{3}}$

d. $\frac{10}{15} = \mathbf{\frac{2}{3}}$

e. $\frac{21}{35} = \mathbf{\frac{3}{5}}$

f. $\frac{20}{50} = \mathbf{\frac{2}{5}}$

g. $\frac{36}{45} = \mathbf{\frac{4}{5}}$

Extension: Find the missing number $\frac{1}{3} = \frac{?}{9} = \mathbf{\frac{3}{9}}$

Equivalent Fractions

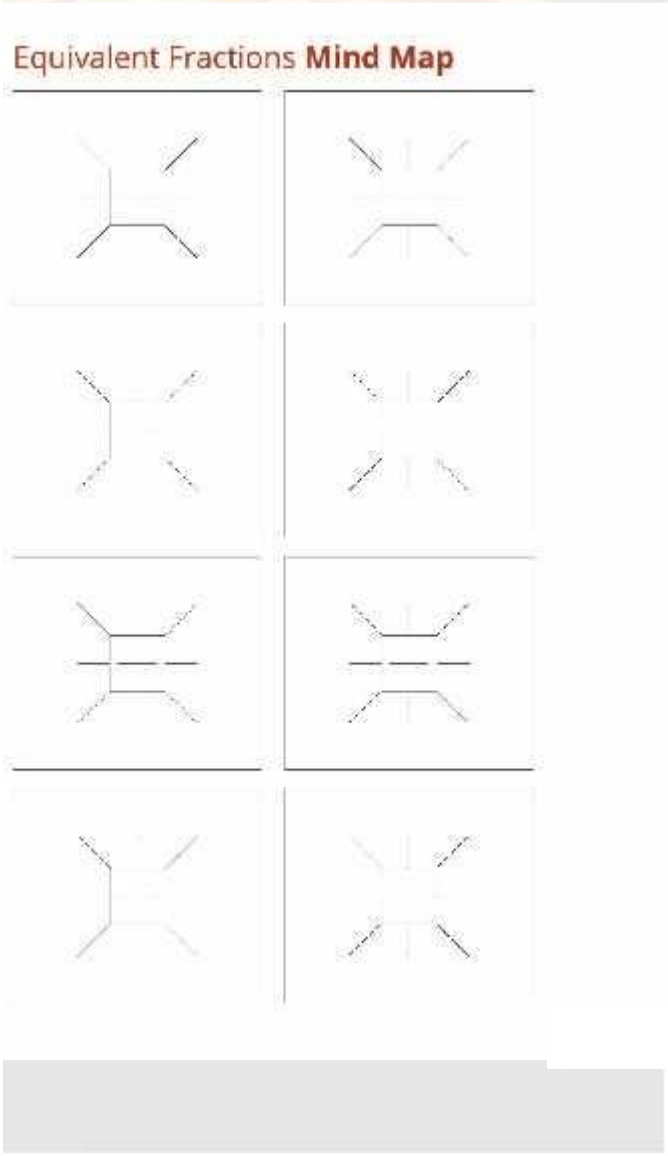
Explain to your partner why $\frac{3}{4}$ is equivalent to $\frac{15}{20}$.

$$\frac{3}{4} \begin{matrix} \times 5 \\ = \\ \times 5 \end{matrix} \frac{15}{20}$$

Note: as long as you multiply **both** the numerator and the denominator by the **same number**, you will get an equivalent fraction.

Your Turn

Choose a starting fraction to go in the middle of your mind map. Find as many equivalent fractions as you can in 4 minutes, making a note of what you have chosen to multiply by each time.



Fractions of Amounts

How do you find $\frac{1}{2}$ of 12?

12 ÷ 2 = 6

How do you find $\frac{1}{4}$ of 12?

12 ÷ 4 = 3

How do you find $\frac{3}{4}$ of 12?

12 ÷ 4 = 3

3 × 3 = 9

Fractions of Amounts

$\frac{2}{7}$ of 21

Step one:

Divide by the denominator.

21 ÷ 7 = 3

Step two:

Multiply by the numerator.

3 × 2 = 6

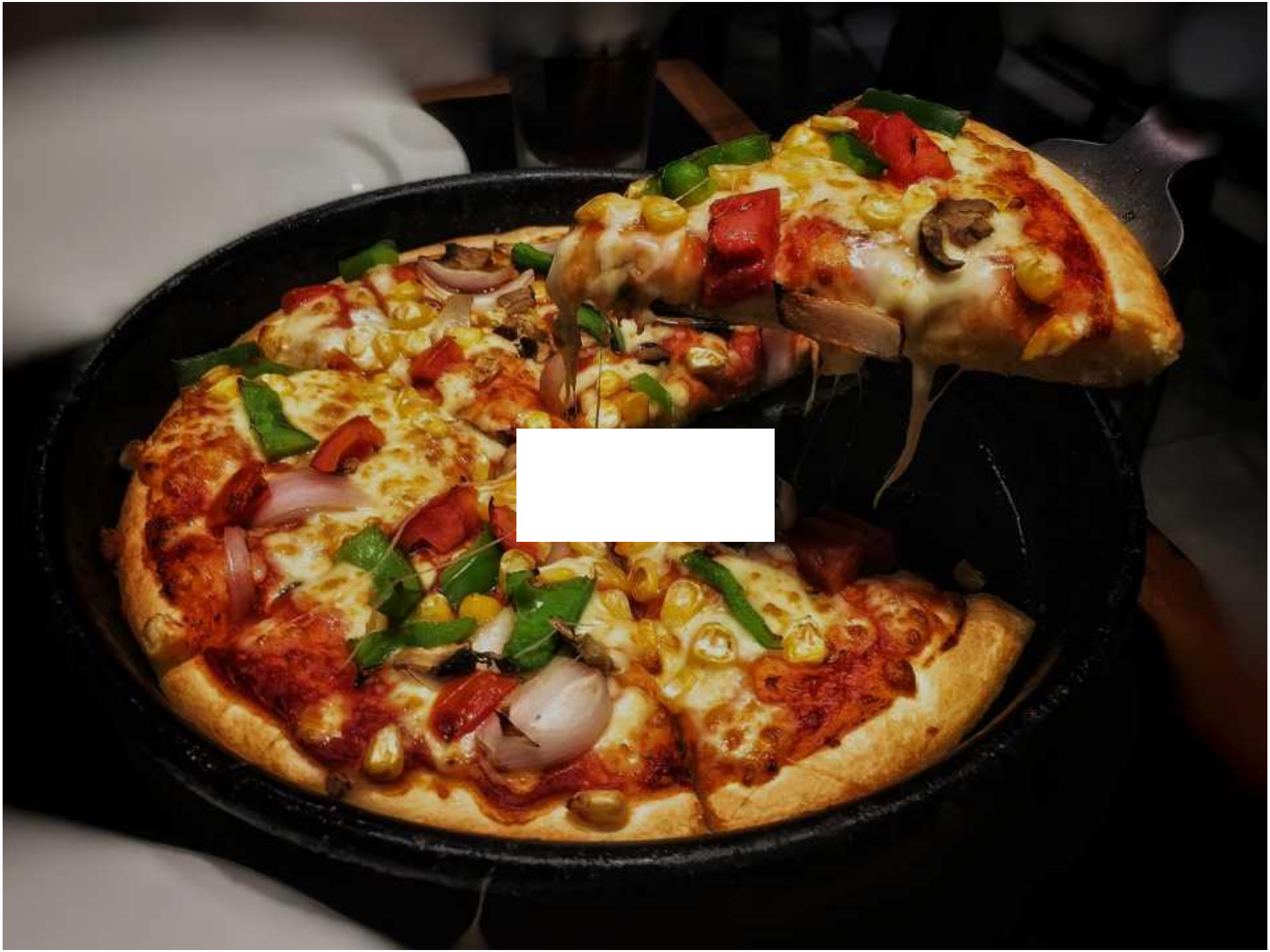
Plenary

Collect a joke. Find each fraction of an amount to spell out a joke.

Work out the punchline!

“What did the triangle say to the circle?

You’re pointless!”



Introduction to Fractions Teaching Ideas

Learning Objective:
To apply the basics of fraction manipulation.

Success Criteria:

- To recognise the notation associated with fractions.
- To find equivalent fractions and write them in their simplest form.
- To find fractions of an amount.

Context
This is intended to be the first lesson in a unit on fractions. Students should have a good understanding of factors and division. Students should be familiar with fractions in the context of shapes from primary school.

Resources
Equivalent Fractions Mind Map Worksheet, Fractions of an Amount - Collect a Joke Worksheet and Fraction Matching Starter Cards.

Starter

Students match the fractions with their diagrams. You may wish to cut out the **Fraction Matching Starter Cards** prior to the lesson. Some diagrams will match up with more than one fraction as these have been simplified. This should lead to a nice discussion: "How do you know these fractions are the same?"

Main Activities

Simplest Form

Discuss with the class how we could write fractions in their simplest forms. Remind students that whatever you divide the denominator by, you must divide the numerator by the same thing. The students can further discuss the fractions problems on the next slide and then attempt another set of questions individually. Depending on the ability of your class, however, you may wish to move straight on to equivalent fractions.

Equivalent Fractions

Display the slide showing how to find an equivalent fraction and link it to simplest form. Emphasise that we can also multiply both the numerator and denominator to find an equivalent fraction. Students should use the **Equivalent Fractions Mind Map Worksheet** to generate their own equivalent fractions.

Fractions of Amounts

Show students how to find a fraction of an amount by first discussing how to find $\frac{1}{2}$ or $\frac{1}{4}$ of something. Try to steer them away from using techniques such as "halve it and halve it again." Instead, focus their attention on the relationship between the divisor and the denominator. Ask them how they would find a third, a fifth, or a tenth. You should encourage students to suggest a method of finding a fraction of an amount before revealing the standard method on the next slide.

Plenary

Fractions of Amounts - Collect a Joke Worksheet. The joke will spell out "What did the triangle say to the circle?" The punchline is "You're pointless!". You can ask students to create a joke activity for the punchline if they finish early.