## Diving into Mastery



## Diving into Mastery Guidance for Educators

Each activity sheet is split into three sections, diving, deeper and deepest, which are represented by the following icons:

These carefully designed activities take your children through a learning journey, initially ensuring they are fluent with the key concept being taught; then applying this to a range of reasoning and problem-solving activities.

These sheets might not necessarily be used in a linear way. Some children might begin at the 'Deeper' section and in fact, others may 'dive straight in' to the 'Deepest' section if they have already mastered the skill and are applying this to show their depth of understanding.

Aim

- Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number.


## Calculate Fractions of a Quantity

## Diving

Chen has 20 biscuits.

## 0005200100200000000000000

Use the counters above to represent Chen's biscuits and find:

$$
\frac{1}{2} \text { of } 20=10
$$

$$
\begin{aligned}
\frac{1}{4} \text { of } 20= & 5 \\
& \frac{1}{5} \text { of } 20=4
\end{aligned}
$$

$$
\frac{1}{10} \text { of } 20=2
$$

## Calculate Fractions of a Quantity

## Diving

Use the answers from the previous question to help find:

$$
\frac{2}{2} \text { of } 20=20 \quad \frac{3}{4} \text { of } 20=15 \quad \frac{4}{5} \text { of } 20=16 \quad \frac{6}{10} \text { of } 20=12
$$

$$
\frac{1}{2} \text { of } 20=10 \quad \frac{1}{4} \text { of } 20=5 \quad \frac{1}{5} \text { of } 20=4 \quad \frac{1}{10} \text { of } 20=2
$$

## Calculate Fractions of a Quantity

Diving
Draw this bar model to find and represent:

| 36 |  |  |  |
| :--- | :--- | :--- | :--- |
| 9 | 9 | 9 | 9 |

$$
\begin{aligned}
& \frac{1}{4} \text { of } 36=36 \div 4=9 \\
& \frac{2}{4} \text { of } 36=18 \\
& \frac{3}{4} \text { of } 36=27 \\
& \frac{4}{4} \text { of } 36=36
\end{aligned}
$$



## Calculate Fractions of a Quantity

## Diving

Draw a bar model to help solve this problem.
Mary uses $\frac{3}{8}$ of a 400 g bag of flour to make some cakes.
a) How many grams of flour did Mary use?
150 g
b) How many grams of flour were left in the bag? 250 g

| 400 |  |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |



## Calculate Fractions of a Quantity

Which is the odd one out and why?
a) $\frac{3}{5}$ of $30=18$

The odd one out is c)
b) $\frac{2}{9}$ of $81=18$
c) $\frac{2}{6}$ of $24=8$
because it equals 8 .
Both a) and b) equal 18.

## Calculate Fractions of a Quantity

## $\frac{5}{10}$ of $80=8$

Explain the mistake.
Draw a bar model to help.

This is incorrect. They have divided the quantity (80) by the denominator (10). They have worked out the value of one tenth, which is 8 , but then have forgotten to carry out the second calculation to find the
 value of five-tenths. They should have then multiplied 8 by the numerator (5) to make 40.

$$
\frac{6}{6} \text { of } 30 \text { is less than } \frac{3}{4} \text { of } 44
$$

True or false? Convince me.


True, $\frac{6}{6}$ is the same as a whole.

| 30 |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 5 | 5 | 5 | 5 | 5 | 5 | $\frac{6}{6}$ of $30=30$ and $\frac{3}{4}$ of $44=33$ making $\frac{6}{6}$ of 30 is less than $\frac{3}{4}$ of 44 .


| 44 |  |  |  |
| :---: | :---: | :---: | :---: |
| 11 | 11 | 11 | 11 |

Complete the calculations.

$$
\begin{aligned}
& \frac{2}{3} \text { of } 33=22 \\
& \frac{5}{9} \text { of } 36=20
\end{aligned}
$$

Taylor has a bag of 15 coins. He throws some (but not all of them) into the air. A quarter of them land on tails while the rest land on heads.

Taylor turns over two of the coins and now half of them are tails.

How many coins did Taylor throw up into the air at the beginning?

8


## Calculate Fractions of a Quantity

Solve this problem.
Flavia saw 64 animals whilst on safari in Africa.

Some of the animals she saw were elephants, $\frac{1}{4}$ of the animals she saw were lions and $\frac{5}{8}$ of the animals she saw were giraffes.

What fraction and quantity of the 64 animals she saw were elephants?
$\frac{1}{8}=8$ of the animals are elephants.

| 64 |  |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |

lions $=\frac{1}{4}=\frac{2}{8}=16$
giraffes $=\frac{5}{8}=40$
elephants $=\frac{1}{8}=8$

## Calculate Fractions of a Quantity

Use all the digit cards once to complete this calculation.

345

$$
5
$$



## Calculate Fractions of a Quantity

Dive in by completing your own activity!


## Need Planning to Complement this Resource?

## National Curriculum Aim

Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number.

For more planning resources to support this aim, click here.


Twinkl Planlt is our award-winning scheme of work with over 4000 resources.

