Summer 1 Year 4

L.E.A.D. Academy Trust
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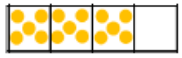
Links to prior learning/ objectives	**Resources**	**Vocabulary:**
~ Place value of ones, tens, hundreds and thousands. ~ Understanding of time and experience of telling the time to the nearest minute. ~ Children will have been introduced to fractions before. Finding fractions of amounts, adding and subtracting fractions. ~ Children will understand measure but will not have used decimal notation in Year 3 but have earlier in the year.	Number lines, counting sticks, fraction walls, bar models, measuring equipment- money, length, mass, capacity. Number lines, clock faces, **Mastery:** (where to find some resources) • Teaching for Mastery • White Rose **New and old documents** • Mastery maths stickers • Nrich (curriculum mapping)	Fractions, unit, non-unit, numerator, denominator, divide, whole, add, subtract Measure, money, decimals, fractions, decimal notation, decimal places Convert, time, seconds, minutes, 12-hour, 24-hour, analogue, digital, read, interpret. Years, weeks, months, days, seconds, minutes, hours, convert.

Objectives and Teaching

Barriers to ARE (misconceptions) **Week 1**	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 • To know the relationship between fractions and division. • To know how to find a fraction of an amount. • To develop the skill of finding a fraction of an amount. • To understand how to find a fraction of an amount.
Children may struggle to understand what a fraction is. Children may struggle to apply their understanding of multiplication and division. Children may struggle with fractions that are non-unit fractions. Children may find the unit fraction of an amount but forget the second step to find the non-unit.	

Fluency	**Reasoning**	**Problem Solving**

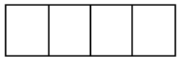
Use the counters and bar models to calculate the whole:



There are ____ counters in one part.

$\frac{1}{4}$ = ____ counters $\frac{2}{4}$ = ____ counters

$\frac{3}{4}$ = ____ counters $\frac{4}{4}$ or 1 whole = ____ counters



There are 7 counters in one part.

$\frac{1}{4}$ = ____ counters $\frac{2}{4}$ = ____ counters

$\frac{3}{4}$ = ____ counters $\frac{4}{4}$ or 1 whole = ____ counters

Whole	Unit Fraction	Non-unit Fraction
The whole is 24	$\frac{1}{6}$ of 24 = ____	$\frac{5}{6}$ of 24 = ____
The whole is ____	$\frac{1}{3}$ of ____ = 30	$\frac{2}{3}$ of ____ = ____
The whole is ____	$\frac{1}{5}$ of ____ = 30	$\frac{3}{5}$ of ____ = ____
The whole is 4.5 l	$\frac{1}{10}$ of ____ = ____	$\frac{7}{10}$ of ____ = ____

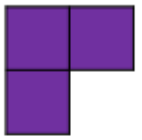
Gino and Holly have ordered lemonade. Gino has a small lemonade which is 250 *ml.* Holly has a large lemonade which is $\frac{4}{10}$ more than a small. How many millilitres does Holly have?

The school kitchen needs to buy carrots for lunch. A large bag has 200 carrots and a medium bag has $\frac{3}{5}$ of a large bag. The school cook says,

> I need 150 carrots so I will have to buy a large bag.

Is he correct? Explain your reasoning.

These three squares are $\frac{1}{4}$ of a whole shape.



How many different shapes can you draw or build that could be the complete shape?

If $\frac{1}{8}$ of A = 12, find the value of A, B and C

$\frac{5}{8}$ of A = $\frac{3}{4}$ of B = $\frac{1}{6}$ of C

Week 2

Children may struggle to add and subtract fractions (especially if they are taught procedurally first).

Add and subtract fractions with the same denominator.

- To know how to add fractions with the same denominator.
- To know how to add 2 or more fractions.
- To develop the skill of adding fractions.

- To know how to subtract fractions with the same denominator.
- To develop the skill of subtracting fractions.

Fluency

Reasoning

Problem Solving

How many different ways can you find to solve the calculation?

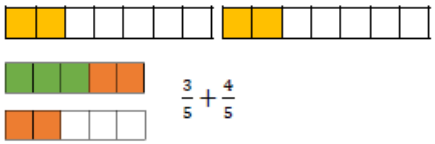
$$\frac{\square}{\square} + \frac{\square}{\square} = \frac{11}{9}$$

Take two identical strips of paper. Fold your paper into quarters. Can you use the strips to solve:

$\frac{1}{4}+\frac{1}{4}$ $\frac{1}{4}+\frac{1}{4}+\frac{1}{4}$ $\frac{3}{4}+\frac{3}{4}$ $\square+\square=\frac{7}{4}$

what other fractions can you make and add?

Use the models to add the fractions:



$\frac{3}{5}+\frac{4}{5}$

Choose your preferred model to add:

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

Use the number line to add the fractions.

$\frac{4}{9}+\frac{4}{9}+\frac{8}{9}$

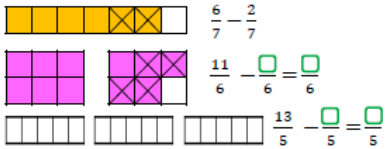
$\frac{3}{7}+\frac{5}{7}+\frac{2}{7}$ $\frac{5}{8}+\frac{7}{8}+\frac{1}{8}$ $\square+\frac{5}{9}+\frac{7}{9}=\frac{17}{9}$

Use identical strips of paper and fold in to eighths. Use this to solve the calculations.

$\frac{8}{8}-\frac{3}{8}$ $\frac{7}{8}-\frac{3}{8}$ $\frac{16}{8}-\frac{9}{8}$ $\frac{13}{8}-\square=\frac{7}{8}$

Can you use the strips to show take away and then to show the difference? What's the same? What's different?

Use the bar models to subtract the fractions.

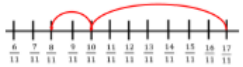


$\frac{6}{7}-\frac{2}{7}$

$\frac{11}{6}-\square=\square$

$\frac{13}{5}-\square=\square$

Rachel uses the number line to solve $\frac{17}{11}-\frac{9}{11}$



Use a number line to solve:

$\frac{16}{13}-\frac{9}{13}$ $\frac{16}{9}-\frac{9}{9}$ $\frac{16}{7}-\frac{9}{7}$ $\frac{16}{16}-\frac{9}{16}$

Lennox and Brandon are solving:

$$\frac{6}{13}+\frac{5}{13}+\frac{7}{13}$$

Lennox

The answer is 1 and $\frac{5}{13}$

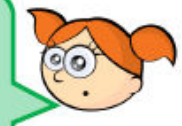
Brandon

The answer is $\frac{18}{13}$

Who do you agree with? Explain why.

Zoe thinks she has got the correct answer for this calculation.

$$\frac{3}{9}+\frac{2}{9}=\frac{5}{18}$$



Is she correct? Explain why.

Callie is subtracting a fraction from a whole:

$$3-\frac{3}{7}=7$$

Can you spot her mistake?

What should the answer be?

Match the number stories to the correct calculations.

Rachel eats $\frac{7}{8}$ of a pizza. Jenny eats $\frac{4}{8}$ How much do they eat altogether?	$\frac{7}{8}+\frac{3}{8}=-$
Rachel eats $\frac{7}{8}$ of a pizza. Jenny eats $\frac{4}{8}$ less. How much do they eat altogether?	$\frac{7}{8}+\frac{4}{8}=-$
Rachel eats $\frac{7}{8}$ of a pizza. Jenny eats $\frac{3}{8}$ less. How much does Jenny eat?	$\frac{7}{8}-\frac{3}{8}=-$

How many different ways can you complete the calculations?

$\frac{\square}{7}-\frac{3}{7}=\frac{\square}{7}+\frac{\square}{7}$

$\frac{\square}{7}-\frac{3}{7}=\frac{\square}{7}-\frac{\square}{7}$

How many ways can you make the statement correct?

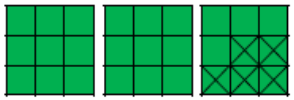
$4-\frac{\square}{9}>2\frac{1}{9}+\frac{\square}{9}$

Use cubes, strips of paper or a bar model to solve:

$\frac{9}{9} - \frac{4}{9} = \square$ $\frac{9}{9} - \square = \frac{2}{9}$ $\frac{13}{9} - \frac{9}{9} = \square$

What's the same? What's different?

Use cubes to build a model to show $3 - \frac{5}{9} = 2\frac{4}{9}$



Could you build the cubes in a tower to subtract?

Use cubes to calculate:

$2 - \frac{3}{4}$ $3 - \frac{3}{7}$ $3 - \frac{\square}{8} = 1\frac{3}{8}$ $\frac{\square}{\square} - \frac{4}{5} = 1\frac{3}{5}$

Charlie uses a number line to find the difference between 2 and $\frac{6}{9}$

Use a number line to find the difference between:

2 and $\frac{2}{3}$ 2 and $\frac{2}{11}$ 2 and $\frac{2}{7}$

Tim has 24 apples. Use counters to represent his apples and find:

$\frac{1}{2}$ of 24 $\frac{1}{4}$ of 24 $\frac{1}{3}$ of 24 $\frac{1}{6}$ of 24

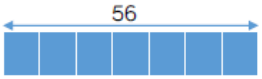
Now calculate:

$\frac{2}{2}$ of 24 $\frac{3}{4}$ of 24 $\frac{2}{3}$ of 24 $\frac{5}{6}$ of 24

What do you notice?

Use a bar model to help you represent and find:

$\frac{1}{7}$ of $56 = 56 \div \square$



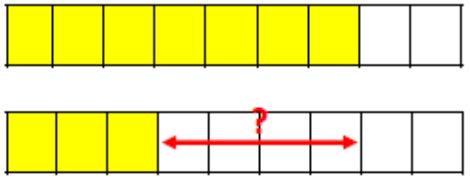
a. $\frac{2}{7}$ of 56 b. $\frac{3}{7}$ of 56 c. $\frac{4}{7}$ of 56 d. $\frac{4}{7}$ of 28

Jenny eats $\frac{3}{8}$ of 240 *g* bar of chocolate.
How many grams does she have left?

Sally and Jade are working out the answer to this problem.

$\frac{7}{9} - \frac{3}{9}$

Sally uses this model.

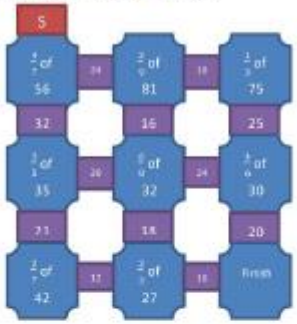


Jade uses this model.

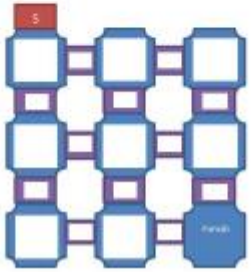
Which model is correct? Explain why.

Can you write a number story for each model?

Work out the answer to each question to make it through the maze.



Can you create your own version?



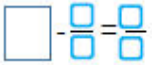
How many ways can you make the statement correct?

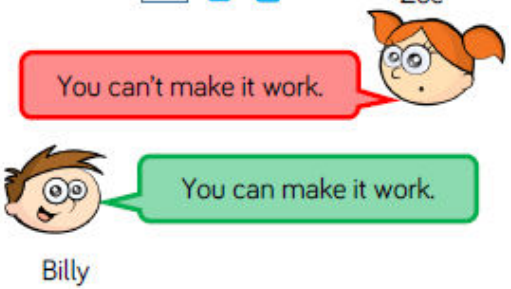
$\frac{2}{9}$ of $81 > \frac{3}{4}$ of $\square$

<table>
<tr>
<td></td>
<td>Zoe and Billy have these digits:

1 2 3 4 5

They are trying to use them to solve:

Who do you agree with? Explain why</td>
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<tr>
<td>Week 3
Children may struggle with their place value understanding.
Children may struggle to use decimal notation with measure.
Children may struggle to apply their understanding of the four calculations when decimal notation is involved.</td>
<td colspan="2">Add and subtract fractions with the same denominator.

• To know how a whole can be expressed as a fraction.
• To know how to subtract fractions from whole amounts.
• To understand how to add and subtract fractions.

Solve simple measure and money problems involving fractions and decimals to two decimal places.

• To develop the skill of solving problems involving…</td>
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<tr>
<td>Fluency
A box of chocolates costs £1.25
Hannah and Thomas want to buy 4 boxes of chocolates.
If Hannah pays £2.45, how much must Thomas pay?</td>
<td>Reasoning</td>
<td>Problem Solving</td>
</tr>
</table>

Emma has five pounds.
She spends a quarter of her money.
How much does she have left?

In the sale I bought some clothes for half price.

Jumper £14
Scarf £7
Hat £2.50
T-shirt £6.50

- How much would the clothes have been full price?
- How much did I spend altogether?
- How much did I save?

A class is planning a trip to a theme park.

Theme park prices

Adult = £8

Child = £4

How many tickets could they buy for £100. How many different ways can you find to do this?

Hazel buys a teddy bear for £6.00, a board game for £4.00, a cd for £5.50 and a box of chocolates for £2.50
She has some discount vouchers.
She can either get £10.00 off or half price on her items.
Which voucher would save her more?
Explain your thinking.

Yasmin is choosing a new mobile phone. One phone costs £5.50 per month. The other costs £65.50 for a year. Which is the better deal over a year?

- Kim bought a chocolate bar and a drink. The cost of them both together is in one of the boxes below.

£1.85	75p	£1.56
£1.74	£2.25	£1.00
£1.80	80p	£2.10
£1.44	£3.06	£1.50
£1.20	£1.25	£1.60
£1.45	90p	£1.27

Using these five clues can you work out which price in the boxes is correct?

1. You need more than three coins to make this amount.
2. There would be change when using the most valuable coin to buy them.
3. The chocolate bar cost more than 50p
4. You could pay without using any copper coins
5. The chocolate bar cost exactly half the amount of the drink.

Week 4

Children may not recall or make mistakes with facts of time.
Children may struggle to see the relationship between 12-hour and 24-hour time.
Children may reverse the minute sand hour when recording time.

Read, write and convert time between analogue and digital 12- and 24-hour clocks

- To know how convert between hours, minutes and seconds.
- To know how to convert between years, months, days and weeks.
- To know how to convert between analogue and digital time on a 12-hour clock.
- To know how to convert between analogue and digital time on a 24-hour clock.

Children may read the time inaccurately (mixing up the hours and the minutes).

Fluency

- Read and write the following times in
  a) 24 hour clock
  b) 12 hour clock
  c) analogue

  e.g. Quarter past 2 in the afternoon:
  a) 14:15
  b) 2:15pm

  c) 

  - Five to 12 at night
  - Half past 6 in the morning

Paul sets off to London at 11:05am, the journey took 3 hours and 50 minutes.
Draw the time he arrived on the clock.

Clare finishes school at 15:25, she had her tea 1 hour and 40 minutes later.
Draw the time she ate tea on the clock.

Reasoning

- Sam says

> To change any time after midday from 12 hours to 24 hours clock just add 12 to the minutes

Is he correct? Can you explain his thinking?

Laura is writing the time 21:35 on the analogue clock below.

Can you make her time more accurate? Explain your reasoning.

- Three children are meeting in the park

> Laura says 'We are meeting at ten to two'

> Sam says 'We are meeting at 14:10'

> Tom says 'We are meeting at 2:10pm'

Will all the children meet at the same time? Convince me.

Problem Solving

- Can you match the analogue clocks to the digital time even though one of the hands is missing?

14:45	8:15	20:55

On a 24 hour digital clock, over 24 hours, how many times does the number 4 appear?

Can you match the time dominoes together so that the adjoining times are the same?

20:55	13:50	9:55
Ten to two	Five to ten	Ten to three

15:05	2:50	16:10
Ten past 4	Five past 3	Five to Nine

Week 5

Children may not recall the facts related to time.
Children may attempt to convert using our traditional base ten system.
Children may be inaccurate with their counting.
Children may struggle to apply this skill in a problem context.

Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.

- To develop the skill of solving problems involving…

Fluency

- Match the times; fill in the missing times in the empty boxes.

11:30pm	18:30
6:30pm	
2:30pm	14:30
11:30am	23:30
	08:30
8:30am	05:30

A full day at school is 8 hours and 35 minutes.
How long is this in minutes?

Sarah is 7 years and 2 months old.
Harry is 85 months old.
Who is the oldest?
Show your working.

Reasoning

Hannah is travelling from Halifax to London by car; it takes 4 hours 11 minutes.
Sam is travelling from Halifax to London by train; it takes 214 minutes.
Who will have the quicker journey?
Explain your answer.

Phil says

> 6420 seconds is longer than 107 minutes

Do you agree? Explain your reasoning.

James says

> In a year with 365 days, there is one month that has an exact number of weeks

Which month has an exact number of weeks?
Does it have an exact number every year?

Problem Solving

- Tara is going to Blackpool for a day. She has 4 hours 30 minutes there and can choose 3 activities to do while she is there.

  Which activities could she choose to do? How much time would they fill? How many combinations of activities can you find?

Donkey rides	30 minutes
Theme Park	110 minutes
Blackpool Tower	1 hour 20 minutes
Swimming pool	1 hour 45 minutes
Amusements	1 hour 10 minutes
Sea life Centre	125 minutes

- It is the 6th of November. Can you work out when Jan, Tim and Saira's birthdays are using the clues below?

> Jan: "It is my birthday in 3 weeks and 2 days."

> Tim: "It is my birthday in 96 hours."

> Saira: "It was my birthday 2 weeks and 72 hours ago."

Summer 1 Year 4

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Week 6	Consolidate	
Fluency	**Reasoning**	**Problem Solving**