

Reasoning and Problem Solving

Fractions – Year 4

About This Resource

This resource is aimed at Year 4 Secure and has been designed to give children the opportunity to consolidate the skills they have learned in Spring Block 3 Fractions.

The questions are based on a selection of the same 'small steps' that are addressed in the block, but are presented in a different way so children can work through the pack independently and demonstrate their understanding and skills.

Small Steps

Equivalent fractions
Fractions greater than 1
Add 2 or more fractions
Subtract 2 fractions
Subtract from whole amounts
Calculate fractions of a quantity
Problem solving – calculate quantities

National Curriculum Objectives

Mathematics Year 4: (4F2) [Recognise and show, using diagrams, families of common equivalent fractions](#)

Mathematics Year 4: (4F1) [Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten](#)

Mathematics Year 4: (4F10a) [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](#)

Mathematics Year 4: (4F4)s [Add and subtract fractions with the same denominator](#)

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It's Tom and Albert's birthday and you are going to help them have a joint party. How exciting! There are lots of things to organise, so there's no time to waste!

1. Both children have made a list of the children who are coming.

What fraction of the children are girls (▲)?

$$\frac{\boxed{}}{16} = \frac{\boxed{}}{8}$$

What fraction of children are boys (■)?



$$\frac{\boxed{}}{16} = \frac{\boxed{}}{8}$$

What fraction of the whole party are boys? (Don't forget to include Tom and Albert)

$$\frac{\boxed{}}{18} = \frac{\boxed{}}{3}$$

How many more equivalent fractions can you find with 18 being the largest denominator?

$$\frac{\boxed{}}{18} = \frac{\boxed{}}{} = \frac{\boxed{}}{} = \frac{\boxed{}}{} = \frac{\boxed{}}{} = \frac{\boxed{}}{3}$$

Tom 	Albert 
Alex ■	Bertha ▲
Monica ▲	Henry ■
Mikel ■	Vern ■
Kitty ▲	Wade ■
Odis ■	Dara ▲
Eldon ■	Horace ■
Ivana ▲	Lacey ▲
Caleb ■	Holt ■

The boys would like to make sure everyone has a party hat.

2. $\frac{2}{9}$ of all the party hats are purple and $\frac{1}{9}$ of all the party hats have stripes.

$\frac{3}{9}$ of the party hats have a pom-pom top and the rest are covered in red circles.

How many of each of the hats do they boys have?



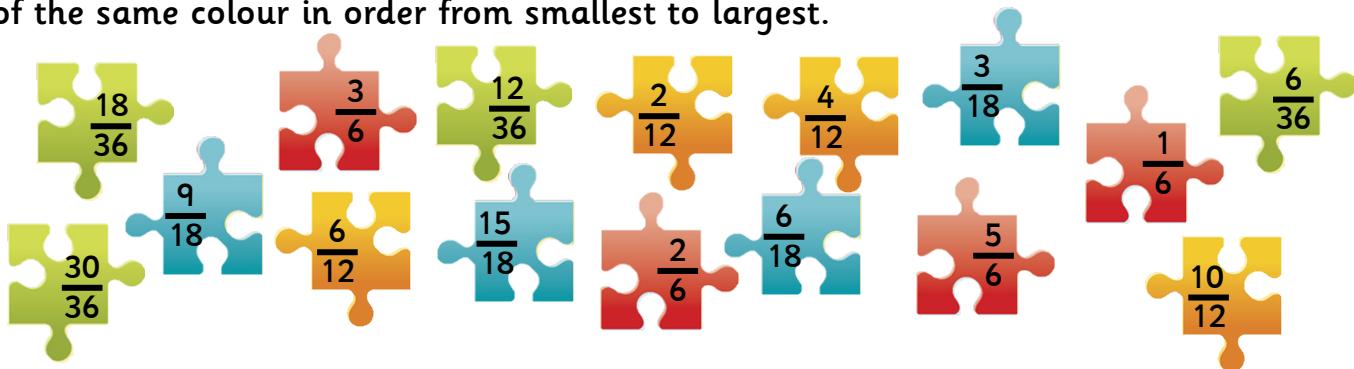






Now for the party games – Pass the Parcel.
The children find a jigsaw piece in each layer of the parcel.

3. Help the children put the pieces into (a) families of equivalent pieces then (b) pieces of the same colour in order from smallest to largest.



Family 1 $\frac{\quad}{\quad} = \frac{\quad}{\quad} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$

Family 2 $\frac{\quad}{\quad} = \frac{\quad}{\quad} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$

Family 3 $\frac{\quad}{\quad} = \frac{\quad}{\quad} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$

Family 4 $\frac{\quad}{\quad} = \frac{\quad}{\quad} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$

Blue $\frac{\quad}{\quad} = \frac{\quad}{\quad} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$

Green $\frac{\quad}{\quad} = \frac{\quad}{\quad} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$

Red $\frac{\quad}{\quad} = \frac{\quad}{\quad} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$

Yellow $\frac{\quad}{\quad} = \frac{\quad}{\quad} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$

After playing games, all the children are thirsty and ready for a drink.
They have bottles of orange, apple and cherry juice. Bottles of orange and apple juice contain 8 cups of juice and cherry juice contains 6 cups.

4. How many bottles of juice will they need if they drink the amount of cups in the table below?

	Cups	Full Bottles
Cherry Juice	9	
Orange Juice	21	
Apple juice	15	



Reasoning and Problem Solving – Fractions Consolidation – Year 4

Time to eat, but remember, savoury before sweet – even when it is your birthday!
The children dive into the selection of pizzas on the table.
Each pizza is cut into eight slices.



5. Below is how much of each pizza is eaten by each child at the party:

Alex – 2 pepperoni, 2 margarita

Monica – 2 margarita, 3 chicken

Mikel – 3 hawaiian, 1 margarita

Wade – 4 hawaiian

Kitty – 5 margarita

Odis – 3 chicken, 2 hawaiian

Eldon – 1 pepperoni, 2 chicken

Ivana – 4 margarita

Albert – 2 margarita, 1 hawaiian

Caleb – 2 pepperoni, 2 margarita

Vern – 4 pepperoni

Henry – 5 pepperoni

Bertha – 2 chicken, 2 margarita

Dara – 2 margarita, 2 chicken

Horace – 2 pepperoni, 3 margarita

Holt – 6 margarita

Tom – 4 hawaiian, 1 margarita

Lacey – 2 pepperoni, 3 hawaiian

Work out how much pizza has been eaten.

Pepperoni:


Margarita:


Chicken:

Hawaiian:

How much pizza is eaten in total?

Once the pizza is finished, the children are given a selection of buns. There are:

15 strawberry buns 

20 chocolate buns 

12 vanilla buns 

10 blueberry buns 

The children all dive in to the buns and they soon begin to disappear!!

$\frac{2}{3}$ of the strawberry buns, $\frac{1}{2}$ of the chocolate buns, $\frac{3}{5}$ of the blueberry buns and $\frac{3}{4}$ of the vanilla buns are eaten.

6. How many of each type of bun are eaten and how many are there left?

Bun Type	Number eaten	Number left
Strawberry		
Chocolate		
Vanilla		
Blueberry		
Total amount of buns left		

You have had so much fun and the party is nearly over. There's just time for a few more party games before the children will be on their way home with a party bag containing a toy and a balloon.

All the children will get a party bag including Tom and Albert.

There are the same number of each toy, which are shared between the bags.

$\frac{4}{6}$ of bags contain blue balloons $\frac{4}{12}$ of bags contain red balloons and the remaining

bags have green ones.



7. How many of each of the toys and balloons would be needed to fill the bags?

Toy	Amount
Jigsaw	
Yo-yo	
Paint	

Balloon	Amount
Blue	
Red	
Green	

Well done! Tom and Albert have had a fantastic birthday.

The party is over but the excitement is not over yet...

There are presents to open!



Reasoning and Problem Solving – Fractions Consolidation – Year 4

1.

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

$$\frac{10}{16} = \frac{5}{8}$$

$$\frac{12}{18} = \frac{2}{3}$$

$$\frac{12}{18} = \frac{10}{15} = \frac{8}{12} = \frac{6}{9} = \frac{4}{6} = \frac{2}{3}$$

2.



4



2



6



6

3. Family 1

$$\frac{3}{6} = \frac{6}{12} = \frac{9}{18} = \frac{18}{36}$$

Family 2

$$\frac{2}{6} = \frac{4}{12} = \frac{6}{18} = \frac{12}{36}$$

Family 3

$$\frac{1}{6} = \frac{2}{12} = \frac{3}{18} = \frac{6}{36}$$

Family 4

$$\frac{5}{6} = \frac{10}{12} = \frac{15}{18} = \frac{30}{36}$$

Blue

$$\frac{3}{18} = \frac{6}{18} = \frac{9}{18} = \frac{15}{18}$$

Green

$$\frac{6}{36} = \frac{12}{36} = \frac{18}{36} = \frac{30}{36}$$

Red

$$\frac{1}{6} = \frac{2}{6} = \frac{3}{6} = \frac{5}{6}$$

Yellow

$$\frac{2}{12} = \frac{4}{12} = \frac{6}{12} = \frac{10}{12}$$

4.

	Cups	Full Bottles
Cherry Juice	13	2
Orange Juice	21	3
Apple juice	15	2

5.

Margarita $\frac{2}{8} + \frac{1}{8} + \frac{5}{8} + \frac{2}{8} + \frac{2}{8} + \frac{3}{8} + \frac{1}{8} + \frac{2}{8} + \frac{4}{8} + \frac{2}{8} + \frac{2}{8} + \frac{6}{8} = \frac{32}{8}$ 4 pizzas

Pepperoni $\frac{2}{8} + \frac{1}{8} + \frac{4}{8} + \frac{2}{8} + \frac{2}{8} + \frac{5}{8} + \frac{2}{8} = \frac{18}{8}$ 2 $\frac{2}{8}$ pizzas

Hawaiian $\frac{3}{8} + \frac{1}{8} + \frac{4}{8} + \frac{4}{8} + \frac{2}{8} + \frac{3}{8} = \frac{17}{8}$ 2 $\frac{1}{8}$ pizzas

Chicken $\frac{2}{8} + \frac{2}{8} + \frac{3}{8} + \frac{3}{8} + \frac{2}{8} = \frac{12}{8}$ 1 $\frac{4}{8}$ pizzas

Total $4 + 2 \frac{2}{8} + 2 \frac{1}{8} + 1 \frac{4}{8} = 9 \frac{7}{8}$ pizzas

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6.

Bun Type	Number eaten	Number left
Strawberry	10	5
Chocolate	10	10
Vanilla	9	3
Blueberry	6	4
Total amount of buns left		22

7.

Toy	Amount
Jigsaw	6
Yo-yo	6
Paint	6

Balloon	Amount
Blue	12
Red	6
Green	0