

**DEVELOPING
MATHEMATICAL
INQUIRY
COMMUNITIES**

Number: Fractions

Level 4 (Year 7-8)

Copy Masters

Task 1 – Group Task

What are all the different ways you can use the fraction tiles to make more than one half but less than ten twelfths?

As you make these, record them and be ready to explain and justify why they are less than one whole.

What are all the different ways you can use the fraction tiles to make a fraction number that is less than two quarters but more than one tenth?

As you make these, record them and be ready to explain and justify why they are less than one half.

What are all the different ways you can use the fraction tiles to make a fraction number that is more than one whole but less than one and five eighths?

As you make these, record them and be ready to explain and justify why they are more than one whole.

What are all the different ways you can use the fraction tiles to make a fraction number that is the same as three quarters?

As you make these, record them and be ready to explain and justify why they are equivalent.

What are all the different ways you can use the fraction tiles to make a fraction number that is the same as two thirds?

As you make these, record them and be ready to explain and justify why they are equivalent.

Task 1 – Independent Tasks

Sepi has 32 marbles. She gives $\frac{1}{8}$ of the marbles to her friend. How many marbles did she give her friend?

Marli's little brother has 56 Pokémon card. On the way home from school, he loses $\frac{1}{7}$ of his cards. How many cards did he lose and how many cards does he have left?

What is $\frac{1}{6}$ of 36?

What is $\frac{1}{2}$ of 200?

What is $\frac{2}{5}$ of 100?

What is $\frac{1}{4}$ of 280?

What is $\frac{2}{9}$ of 540?

What is $\frac{2}{4}$ of 1 000?

Sina ate $\frac{1}{3}$ of a bag of M&M's. Altogether she ate 24 M&M's. How many M&M's are in the bag?

Uncle gave Tane $\frac{3}{9}$ of the pinecones he had collected during week. Altogether, he gave Tane 27 pinecones. How many pinecones did Uncle take home?

Task 2 – Group Task

Anau says that she can write more than 20 numbers that come before 1. Lola isn't sure what numbers could come before one.

Anau decides to convince Lola by writing the numbers and using a representation and number-line to prove that they exist.

Can you write some numbers you think Anau wrote and show where you think she marked them on her number-line and the representation that she drew?

Task 2 - Independent Tasks

Draw a number-line starting from 2 and finishing at 8.
Put at least 15 different fractions on the number-line.

Draw a number-line starting from 4 and finishing at 6.
Put at least 15 fractions on the number-line. Don't use
the same fractions as you used previously.

Draw a number-line starting from 11 and finishing at
12. Put at least 10 fractions on the number-line. Don't
use the same fractions as you used previously.

Task 3 – Group Task

Who gets to eat more?

- A. Twelve people sharing ten chocolate bars.
- B. Eight people sharing five chocolate bars.
- C. Four people sharing three chocolate bars.
- D. Nine people sharing seven chocolate bars.
- E. Three people sharing two chocolate bars.

Be ready to justify who you think gets to eat more and explain in multiple ways.

Task 3 - Independent Tasks

At the speed chocolate eating contest each contestant has to eat as much of a chocolate bar as they can in 15 seconds. These are the results of how much of 1 chocolate bar each contestant managed to eat:

$$\text{Daniel} - \frac{4}{5}$$

$$\text{Leti} - \frac{2}{6}$$

$$\text{Georgie} - \frac{7}{10}$$

$$\text{Sose} - \frac{2}{3}$$

$$\text{Talasi} - \frac{3}{4}$$

$$\text{Jeni} - \frac{8}{16}$$

Can you put the results in order from who ate the most chocolate to who ate the least? Try and prove your answer in a number of different ways.

Task 4 – Group Task

Lana is working on her homework for fractions. She was asked to put fractions in order from the greatest to the least. This is what she has done:

$$\frac{2}{3}, \frac{6}{8}, \frac{10}{12}, \frac{12}{15}, \frac{16}{20}$$

Do you agree with Lana?

Can you use three representations including a number-line to show why you agree or disagree with Lana?

What do you think Lana was thinking?

Task 4 - Independent Tasks

Which is bigger?

$$\frac{6}{8} \quad \text{or} \quad \frac{10}{16}$$

$$\frac{3}{12} \quad \text{or} \quad \frac{4}{16}$$

$$\frac{3}{5} \quad \text{or} \quad \frac{6}{15}$$

$$\frac{2}{3} \quad \text{or} \quad \frac{9}{12}$$

What rule or pattern did you use to help you?

Write your own fraction comparison tasks for someone else to solve.

Task 5 – Group Task

Mama Mereana and her sisters have been working together sewing a tivaevae for a family wedding. By last month they had completed two fifths of it. Last week was busy so they only completed another sixth of it. This week they have completed another third.

How much have they completed and how much more do they have to sew to complete it?

Task 5 - Independent Tasks

Put these fractions in order from smallest to largest:

$$\frac{1}{10} \quad \frac{1}{2} \quad \frac{1}{6} \quad \frac{1}{15} \quad \frac{1}{3} \quad \frac{1}{5}$$

$$\frac{2}{3} \quad \frac{5}{6} \quad \frac{6}{8} \quad \frac{2}{12} \quad \frac{1}{2} \quad \frac{3}{4}$$

What patterns do you notice?

Record the rule you could use to order fractions like these.

Task 6 – Group Task

Sima and his family went to Samoa for a family reunion. They wanted to make ula lole for their relatives. They used fruit bursts and minties to make the ula lole.

Sima had made $\frac{1}{5}$ of one ula lole with minties.

He then added 33 fruit bursts and now the string was $\frac{3}{4}$ full. How many lollies would make a complete ula lole? Make sure you are able to justify your explanation using both representations and notation.

Task 6 - Independent Tasks

Litea and her two friends are at the movies. They each buy a big tub of popcorn.

Litea eats $\frac{2}{5}$ of her tub.

Kaia eats $\frac{7}{8}$ of his tub.

Gaylene eats $\frac{8}{10}$ of her tub.

They tip all the left-over popcorn into two tubs. How much is left to take home?

Litea and her two friends are at the movies. They each buy a big tub of popcorn.

Litea eats $\frac{3}{4}$ of her tub.

Kaia eats $\frac{5}{7}$ of his tub.

Gaylene eats $\frac{3}{8}$ of her tub.

They tip all the left-over popcorn into two tubs. How much is left to take home?

What are the rules or patterns that you use to add fractions with different denominators?

Task 7 – Group Task

Elisapeta's Aunties are making small and big Samoan Ili (fans) to sell at the night market. To decorate the Ili they add coloured feathers.

For every ten small Ili they use $\frac{2}{7}$ of a bag of coloured feathers.

For every ten large Ili they use $\frac{5}{9}$ of a bag of coloured feathers.

For the twenty-two Ili they make in total how many bags of coloured feather do they use?

Task 7 - Independent Tasks

Malia is making otai. For each bottle of otai she needs:

1 and $\frac{3}{4}$ cups of pineapple.

2 and $\frac{1}{2}$ cups of watermelon.

1 and $\frac{1}{4}$ of a cup of coconut milk.

Three quarters of a cup of coconut water.

$\frac{1}{2}$ of a cup of lemon juice.

Malia wants to make 8 bottles of otai. How much of each ingredient will she need?

Task 8 – Group Task

Michael's father ate $\frac{1}{10}$ of a loaf of bread before

Michael made lunch for his brothers and sisters.

Michael used $\frac{2}{3}$ of the loaf of bread that was left.

How much of the loaf did Michael use and how much was left?

Task 8 - Independent Tasks

Draw models of the following equations:

$$\frac{4}{6} \times \frac{1}{2}$$

$$\frac{4}{5} \times \frac{2}{7} =$$

$$\frac{1}{3} \times \frac{3}{4} =$$

$$\frac{5}{8} \times \frac{3}{5} =$$

Solve the equations using your model.

Task 9 – Group Task

Can you solve this problem using counters or dots to explain and justify your solution?

$$\frac{3}{5} \times \frac{2}{3}$$

Now write a problem that would correspond with the equation.

Task 9 - Independent Tasks

Use counters to make a model of the equation and solve it, then write a story problem to match it.

$$\frac{3}{4} \times \frac{1}{2} =$$

$$\frac{1}{4} \times \frac{1}{8} =$$

$$\frac{7}{9} \times \frac{1}{4} =$$

$$\frac{3}{10} \times \frac{2}{3} =$$

Record an explanation and justification for why you always have to consider the whole.

Task 10 – Group Task

You and your brother are painting the shed. You decide to divide the garage into sections you will each paint.

Your Dad gives you 2 and $\frac{1}{4}$ cans of paint.

You find that on average you use $\frac{3}{8}$ of a can of paint to paint each section.

How many sections did you and your brother paint altogether?

Task 10 - Independent Tasks

You and your brother are painting the shed. You decide to divide the garage into sections you will each paint.

Your Dad gives you $5\frac{1}{3}$ cans of paint.

You find that on average you use $\frac{3}{4}$ of a can of paint to paint each section.

How many sections did you and your brother paint altogether?

Record an explanation to tell someone else what is important about multiplying fractions.

You and your brother are painting the shed. You decide to divide the garage into sections you will each paint.

Your Dad gives you $9\frac{7}{8}$ cans of paint.

You find that on average you use $\frac{3}{7}$ of a can of paint to paint each section.

How many sections did you and your brother paint altogether?

Record an explanation to tell someone else what is important about multiplying fractions.

Task 11 – Group Task

Tasa has $1\frac{1}{4}$ hours to do 3 of his jobs around the house.

How much time does he have to do each job?

Solve this problem using both a number line and counters.

Now test your answer against the solution in minutes.

Task 11 - Independent Tasks

Solve these equations:

$$\frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} = \underline{\quad} \times \underline{\quad} = \underline{\quad}$$

$$5 \times \underline{\quad} = \frac{5}{7} + \frac{5}{7} + \frac{5}{7} + \frac{5}{7} + \frac{5}{7} =$$

$$\frac{5}{8} + ? = 2 \times \frac{5}{8}$$

$$\frac{1}{4} \times \underline{\quad} = - + - + -$$

Write a story problem that would match these equations and solve them:

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

$$\frac{9}{10} + \frac{3}{5} =$$

$$8 \div \frac{4}{5} =$$

Task 12 – Group Task

Sammy has $\frac{2}{5}$ of a kilo of fudge.

She wants to cut the fudge into $\frac{1}{6}$ of kilo pieces for her friends. How many friends will get a piece of fudge?

Sammy has $\frac{4}{5}$ of a kilo of fudge.

She wants to cut the fudge into $\frac{1}{7}$ of kilo pieces for her friends. How many friends will get a piece of fudge?

Sammy has $\frac{1}{3}$ of a kilo of fudge.

She wants to cut the fudge into $\frac{1}{10}$ of kilo pieces for her friends. How many friends will get a piece of fudge?

Task 12 - Independent Tasks

Jia has $1\frac{1}{3}$ hours to do 4 jobs around the house. How much time does she have to do each job?

Solve this problem using both a number line and counters then test your answer against the solution in minutes.

What fraction would you need to work with if Jia had 6 jobs to do in $2\frac{1}{3}$ hours?

What fraction would you need to work with if Jia had 5 jobs to do in $1\frac{1}{2}$ hours?

What pattern can you notice?

Task 13 – Group Task

Siautu is carrying her Pokémon cards when someone bumps her, and she drops them, and they all spread everywhere.

One third of the cards fall down a drain out of reach and one sixth of the cards fall in a deep puddle and are too ruined to be saved.

Siautu and her friend Sima pick up as many cards as they can but half of the cards that remained have already been picked up by other children who have walked off with them.

Siautu counted all the cards she now had and gave one third of these to Sima for helping to pick them up. She put the remaining cards into her pocket. There were 14 of them.

How many cards did Siautu have before they were dropped? What fraction of the total number that she was carrying had she lost or given to Sima?

Task 13 - Independent Tasks

Kiriwai has been given a cake to decorate. She is given 60 lollies to decorate it. She decides to split the cake into three sections and decorate each section but with a different proportion of lollies on each section.

She puts $\frac{3}{10}$ of her lollies on the first section.

She puts $\frac{2}{5}$ of the lollies on the second section.

She puts $\frac{1}{10}$ of the lollies on the third section.

How many lollies does she put on each section?

Kiriwai has been given a cake to decorate. She is given 81 lollies to decorate it. She decides to split the cake into three sections and decorate each section but with a different proportion of lollies on each section.

She puts $\frac{2}{9}$ of her lollies on the first section.

She puts $\frac{1}{3}$ of the lollies on the second section.

She puts $\frac{4}{9}$ of the lollies on the third section.

How many lollies does she put on each section?

Task 14 – Group Task

Solve these equations:

$$v = \frac{2}{3} + \frac{3}{7}$$

$$\frac{5}{16} + b = \frac{3}{4}$$

$$\frac{1}{3} = \frac{7}{15} - n$$

$$7\frac{1}{5} = 6\frac{1}{2} + b$$

$$8\frac{1}{2} = 9\frac{1}{3} - q$$

$$\frac{2}{3} \times w = 3$$

$$r = \frac{5}{8} \div 5$$

$$3\frac{3}{5} \div \frac{2}{5} = t$$

$$\frac{1}{3} = y \times 4$$

$$u \div \frac{1}{8} = 7$$

$$12 \times 2\frac{3}{4} = 24 + p$$

$$13\frac{1}{2} \times \frac{4}{5} = 27 \times s$$

$$48\frac{4}{5} \div 4 = 12 + g$$

Be ready to explain and justify your explanations using representations and/or notation.

Task 14 - Independent Tasks

Solve these equations:

$$h = 1\frac{1}{4} + \frac{1}{2}$$

$$3\frac{1}{3} + n = 4$$

$$b = 8 - 5\frac{3}{10}$$

$$\frac{1}{3} - \frac{1}{10} = s$$

$$\frac{5}{6} - a = \frac{1}{3}$$

$$k = \frac{1}{7} \times \frac{1}{3}$$

$$10 \div \frac{1}{5} = c$$

Record your thinking using representations and/or notation.

Task 15 – Group Task

Can you write a fraction multiplication problem together and then solve it?

Can you write a fraction division problem together and then solve it?