



Master Lesson Plan

For

Parts and Wholes

Board	Standard	Subject	Chapter	Language	Reference Link	Creation
CBSE	STD V	Mathematics	Parts and Wholes	English	Parts and Wholes	2020-12

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Parts and Wholes

1. MS_Objectives-Parts and Wholes

Objectives

Students will be able to

- identify the parts of a whole.
- identify parts of a whole and define fraction.
- Solve questions related to parts and wholes (fractions).
- Appreciate the parts in whole that occur as patterns in nature.
- identify equivalent fractions by comparing two fractions.
- Determine the numbers given as fractions by grouping and colouring the parts of a whole.
- Solve questions related to parts and wholes (equivalent fractions).
- Reproduce the whole from parts.
- identify whole and parts in mixed numbers and enumerate whole in terms of parts.
- Practice love by sharing parts of a whole.
- Correlate knowledge of parts and wholes with activities in daily life.

Time to teach	Asset Type	Theme	SubTheme
3 Minutes	Main Script	Fractions	Part of a whole - fraction, Pa fraction

2. IQ_Introduction to Parts and Wholes

Introduction to Parts and wholes

Q1. Consider a square piece of paper. (Teacher can bring square papers and demonstrate)



In how many ways can you fold the paper into half?

Answer : In three different ways we can fold the paper into half, along vertical, horizontal or the

diagonal.



Q2) Let us unfold the paper. What do you observe?



Answer: When we unfold the half, we obtain the full square again.

Q.3) What do you understand about the size of the portions on either side of the folding lines?

Answer: The portions are of equal size.

Q.4) How many portions make up the whole square paper?

Answer: 2 equal portions make up the whole.

Q.5) Can we say each portion is one part of the whole?

Answer: Yes, each portion is one part of the whole.



Q6) Consider the folded paper as shown below



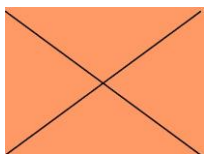
Can we fold it into half again? How?

Answer: Yes, we can fold the above paper so that the corners touch each other. Then the paper gets folded into half again.



Q.7) Can you guess what part of the whole is the paper now?

Answer: Unfold the paper completely.



4 parts make up the whole. So, the folded paper is one part of the total 4 parts that make up the whole square

paper. So,  is one part of the whole 4 parts.

Q8) Which is bigger?

Answer:

1 part out of 2 is bigger than 1 part out of 4.

Q.9. Consider the chocolate bar as shown below. How many parts make the whole chocolate bar?



Answer: 16 parts make up the whole.

Q.10. Suppose you share a little of the chocolate bar with your friend. From the picture, identify how many parts you have shared.



Answer: 5 parts of the whole 16 parts is shared with the friend.

Q.11. How many chocolate parts will be with you?

Answer: 11 parts out of the whole 16 parts remain.

A part of the whole is called a fraction



1 Part



1 Whole is made of 16 parts

Reference: chocolate: <https://pixabay.com/vectors/chocolate-bar-sweet-candy-brown-309609/>

Time to teach	Asset Type	Theme	SubTheme
10 Minutes	Inquisitive Questions	Fractions	Part of a whole - fraction, Pa fraction

3. MS_Fractions in Nature

MS_Fractions in Nature

Teacher can start the class by asking students to give examples of parts of a whole around them.

Expected answer: window grill has equal parts, clock is divided into 12 equal parts, ceiling fan has three equal blades, stairs in the staircase, equal classrooms in the floor, children in the class etc.

There are also these parts in nature:

Day and night

When we have day, the part of the Earth we are living in faces the Sun. The other part is away from the Sun. It does not receive Sun's light. People living there have night.



At any particular time, half of the Earth has day while the other half has night because of the rotation of the Earth about its own axis.

Half can be written as $\frac{1}{2}$. This is called a **fraction**.

A fraction is a way of representing division of a 'whole' into 'parts'.

Fraction has a numerator(number written above the bar) and a denominator(number written below the bar).

In $\frac{1}{2}$, 1 is the numerator. 2 is the denominator.

To write this fraction, we divided Earth into 2 equal parts.

1 part of 2 equal parts is written as $\frac{1}{2}$. Numerator is the part and denominator is the number of equal parts the whole is divided into.

$\frac{3}{4}$ of our Earth is covered by water. If we draw Earth as a circle and divide into four equal parts, three parts out of four is water in the form of oceans, rivers, lakes etc.



$\frac{1}{4}$ of our Earth is covered by land. One part out of four parts is covered by land. The fraction $\frac{1}{4}$ is called quarter.

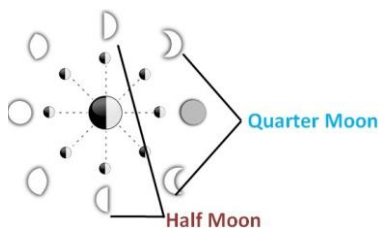
We can write a fraction following these steps

- Divide the whole into equal parts
- Count the number of relevant parts you want to represent
- Write the number of parts above the bar $\frac{\quad}{\quad}$ and total number of parts below the bar $\frac{\quad}{\quad}$ to represent the fraction.

Phases of the Moon

As the moon revolves around the Earth, part of it facing the Sun is seen from Earth.

Look for quarter moon and half moon in the picture given below.



Quarter moon is $\frac{1}{4}$ of full moon.

Half moon is $\frac{1}{2}$ of full moon.

Ice fruit (Nungu in Tamil, Jelly in Hindi)

You would have seen this.



This is Palm fruit(ice fruit).

There are three jellies in this. If you eat two, you ate $\frac{2}{3}$ of the ice fruit. $\frac{1}{3}$ of it is remaining.

Rainbow



How many colours are there in the rainbow?

Write the fraction for yellow colour in the rainbow.

There are 7 colours in the rainbow.

The fraction for yellow in the rainbow is $\frac{1}{7}$.

Reference:

Day and night: moon-<https://pixabay.com/de/vectors/landschaft-berg-mond-sonne-nacht-5201075/>

Earth: <https://pixabay.com/de/vectors/planet-das-universum-continental-2877452/>

Sun: <https://publicdomainvectors.org/en/free-clipart/Glowing-sun-vector-clip-art/31584.html>

Land and water on Earth: <https://pixabay.com/de/vectors/globus-erde-welt-planeten-4351744>

Phases of moon: <https://pixabay.com/de/vectors/phasen-des-mondes-mond-diagramm-150852/>

Ice fruit: https://commons.wikimedia.org/wiki/File:My_village_food_nunqu.jpg

Rainbow: <https://pixabay.com/illustrations/rainbow-colorful-prism-chromatic-2278774/>

Time to teach	Asset Type	Theme	SubTheme
20 Minutes	Main Script	Fractions	Part of a whole - fraction, Fractions, Part of a whole - 1 Fractional Numbers

4. QA_Practice time-Fractions

AS_Practice time - Fractions

A.) Fill in the blanks with the correct answer.

1. In the word “EDUCATION” the fraction of vowels to total letters is _____.

Answer: 5/9

2. Mahima’s mother purchased 10 toffees for her two children. She divided them equally. The fraction of toffees each one got is _____.

Answer: $10/2 = 5$

3. 5 hours is _____ part of a day.

Answer: 5/24

4. If there are 21 students present out of 25 on a day, the fraction of students present is _____.

Answer: 21/25

5. $\frac{1}{2}$ dozen bananas is _____ bananas.

Answer: 6, since 1 dozen =12. Half dozen = $12/2 = 6$

B.) State whether each of the following statements is true or false. State whether each of the following statements is true or false.

a) The sum of two fractions is always a fraction.

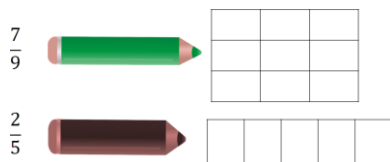
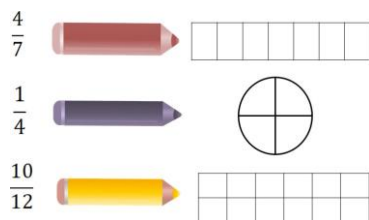
Ans. True

b) The saffron colour in our national flag is $\frac{1}{3}^{\text{rd}}$ of the whole flag.

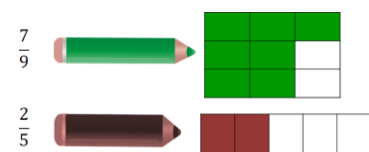
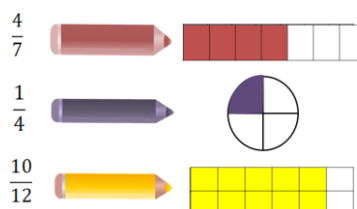
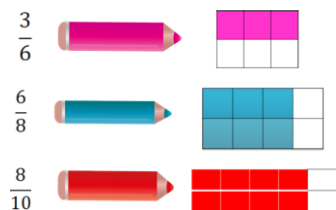
Ans. True

C) Colour the shape to show the given fraction.





Answer:



D) Answer the following

1. What is the fraction of prime numbers from 11 to 25.

Answer: There are 5 prime numbers from 11 to 25. Total numbers are 15.

Number of prime numbers out of 15 is 5.

Fraction is $5/15 = 1/3$

2. Prem bought 10 notebooks and 3 textbooks. What is the fraction of notebooks to the total number of books.

Answer: Total number of books = $10 + 3 = 13$

Fraction of notebooks to textbooks = $10/13$

3. A ribbon of length 12 metres is cut into 24 pieces of equal length. What is the length of each piece?

Answer: $\frac{1}{2}$ m. $12/24=1/2$

Reference :

Colour the shape: pencils : <https://pixabay.com/de/illustrations/farbstifte-stifte-malen-buntstifte-4214617/>

Shapes: original contribution

Time to teach	Asset Type	Theme	SubTheme
15 Minutes	Assessments	Fractions	Part of a whole - fraction, Pa fraction

5. IA_Patterns in Nature

Patterns in Nature

Part of a Whole:

Do you know what fraction of the world's population are you?

Can you guess it?

You are one part of the 7 billion world population!!!

There are so many things that exist in nature as small parts that belong to a whole.

Let's see some fascinating examples.

1. A Garlic exists as a whole, which when opened, has many small units in it. Each garlic clove forms a part of the whole garlic.



2. Soybean is a very good example of a whole containing many seeds. Each seed is a part of the whole.

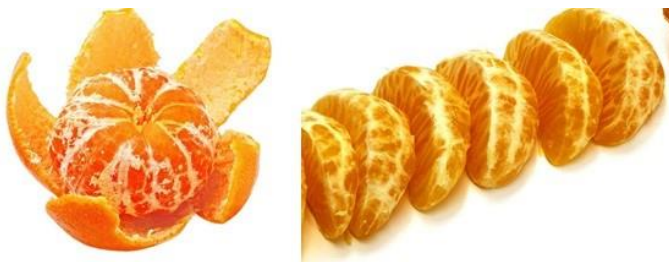


We can see the same in tamarind and groundnut also.

3. A Flower is a whole containing many petals. Each petal is a part of the whole.



4. Usually an Orange contains 10 peels inside it. Each slice or segment of the orange forms a part of the entire fruit.



Pumpkin is also a very good example which clearly shows the segmentation of many parts in its outer skin.



5. A Tissue is an ensemble of similar cells. Each cell is therefore a part of the whole tissue.



6. Atoms inside an iron object are packed in a regular pattern, hence each atom forms a part of the whole iron piece.



7. Do you observe any pattern in the honey-comb?

Honeycomb is a very good example to observe the fractional pattern of honey filled cells and empty cells. Filled in cells collectively form a part of the whole honey-comb and similarly the empty cells form a part of the whole honey-comb.



Try to explore, research and appreciate these patterns that exist in nature!!!

Reference:

garlic- <https://www.publicdomainpictures.net/en/view-image.php?image=29054&picture=garlic>

soyabean- <https://publicdomainvectors.org/en/free-clipart/Soy-beans/71380.html>

flower- <https://www.flickr.com/photos/araswami/441674503> (attribute to Swaminathan)

orange - <https://pixabay.com/es/photos/tangerine-peel-cleaned-clavos-5324176>

pumpkin - <https://pixnio.com/still-life/pumpkin-hokaido-still-life>

plant - <https://www.publicdomainpictures.net/en/view-image.php?image=269073&picture=plant-in-parts>

plant cells -https://www.flickr.com/photos/eye_smile/8017682909 (Attribute to Brittany)

iron rod- <https://pixnio.com/miscellaneous/iron-high-fence>

atoms of iron -<https://www.flickr.com/photos/160866001@N07/47071848664>(Attribute to Marco Verch)

Honey comb -<https://pixabay.com/es/photos/las-abejas-miel-abejas-de-miel-345628/>

Time to teach	Asset Type	Theme	SubTheme
5 Minutes	Interesting Asides	Fractions	Part of a whole - fraction, Pa fraction

6. MS_Similar Parts

MS_Similar Parts



Example 1: Ram's mother bought 2 small cakes . She cut one of the cakes into 2 equal parts and gave him 1 part. She cut the other cake into 4 equal parts and gave his little sister Rani 2 parts. Did Rani get more cake than Ram?

Answer: Ram got $\frac{1}{2}$ of 1 cake = 1 part of 2 equal parts



Rani got 2 pieces of $\frac{1}{4}$ each of 1 cake = 2 parts of 4 equal parts



Did they both get equally?

Yes, 1 part of 2 pieces is the same as 2 parts of four. If two $\frac{1}{4}$ pieces are added, it will make a $\frac{1}{2}$ piece.

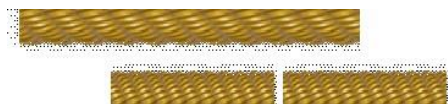
$$\frac{2}{2} \times \frac{1}{2} = \frac{2}{4}$$

Fractions which have the same value, though they might look different are known as equivalent fractions.

Example 2: **Note to teacher:** Teacher can bring ropes, cut them as shown below and encourage children to compare.

Nisha brought four ropes each 1m long.

She took the first rope. She cut it into 2 equal pieces



She took the second rope and cut it into 4 equal pieces.



She put 1 part out of 2 pieces of the first rope and 2 parts out of 4 pieces of the second rope one below the other as shown below, to check if they are of the same length.

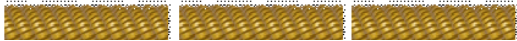


Are they of same length?

Yes

$$\frac{1}{2} = \frac{2}{4}.$$

She cut the third rope into 3 equal parts.



She cut the fourth rope into 6 equal parts



She put 1 part of the three parts of the third rope and 2 parts of the six parts of the fourth rope one below the other



Are they of same length?

Yes

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

Steps to follow to find equivalent fractions

- 1. Write down the fraction**
- 2. Multiply (or divide) the numerator with any number**
- 3. Multiply(or divide) the denominator with the same number**

Example 3: Write three equivalent fractions for $\frac{1}{3}$

Answer: Multiply both numerator and denominator by 2

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

Multiply both numerator and denominator by 3

$$\frac{1}{3} = \frac{1 \times 3}{3 \times 3} = \frac{3}{9}$$

Multiply both numerator and denominator by 4

$$\frac{1}{3} = \frac{1 \times 4}{3 \times 4} = \frac{4}{12}$$

$$\text{Thus, } \frac{1}{3} = \frac{2}{6} = \frac{3}{9} = \frac{4}{12}$$

Fraction Chart : Equivalent fractions can be seen in this chart. Compare the lengths of the box in one row with the length of boxes in another row. if they are of same length, they are equal.

For example, $\frac{1}{2}$ and 2 units of $\frac{1}{4}$ have the same length.

Hence, $\frac{1}{2} = \frac{2}{4}$

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

Example 4:

Write any two equivalent fractions for $\frac{2}{4}$.

Answer: Multiply both numerator and denominator by 2

$$\frac{2}{4} = \frac{2 \times 2}{4 \times 2} = \frac{4}{8}$$

Divide both numerator and denominator by 2

$$\frac{2}{4} = \frac{2 \div 2}{4 \div 2} = \frac{1}{2}$$

Hence, $\frac{2}{4} = \frac{4}{8} = \frac{1}{2}$

Reference:

cake: <https://www.needpix.com/photo/1730797/cake-chocolate-cake-sweets-sweet-food-bakery-halloween-cake>

rope: <https://pixabay.com/de/vectors/seil-schnur-sisal-string-material-160161/>

Fraction chart: original

Time to teach	Asset Type	Theme	SubTheme
15 Minutes	Main Script	Fractions	Equivalent fractions, Equiva

7. SA_Apples on a tree**SA_Apples on a tree**

Aim: To identify parts of a whole by shading and colouring.

Materials required: Blank papers, colour pencils or crayons.

Procedure:

Instruction to teacher:

Draw a rough sketch of tree and apples on the black board as shown in the picture and tell the children to copy it.



Instructions to children:

Draw a tree and apples on it.

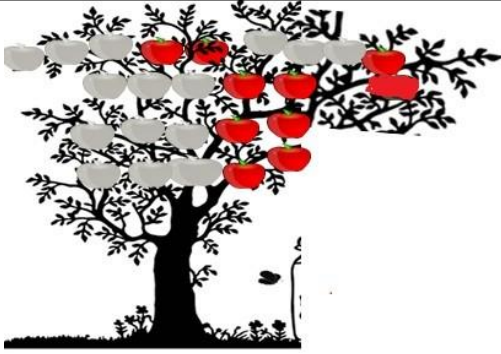
- Rearrange the apples in groups of five.



- Some apples are ripe, some apples are raw
 - $\frac{2}{5}$ th of apples are ripe
 - $\frac{3}{5}$ th of apples are raw

We need to find the number of ripe apples and raw apples on the tree.

Step 2: To find the number of ripe apples, colour two apples red in each group of five apples since $\frac{2}{5}$ of apples are ripe.

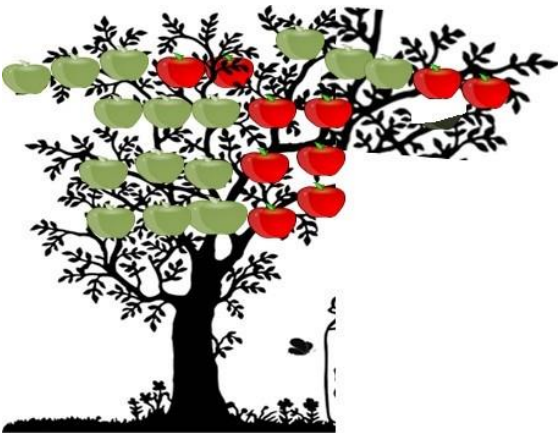


Step 3: Count the number of ripe (red) apples.

Step 4: Write the number of ripe apples.

There are 10 red apples.

Step 5: To find the number of raw apples, colour 3 apples green in each group of 5 apples since $\frac{3}{5}$ of apples are raw.



Step 6: Count the number of green apples (raw ones)

There are 15 green apples.

Step 7: Number of ripe apples = 10**Number of raw apples = 15****Total number of apples = 25****Teacher can ask children**

1. Is the sum of the number of ripe apples and raw apples equal to the total number of apples?

Expected answer: Yes

2. Why did we divide the apples in groups of 5?

Expected answer: Because $\frac{2}{5}$ and $\frac{3}{5}$ apples had to be found. Denominator is 5. If the fractions to be found were $\frac{3}{4}$ and $\frac{1}{4}$, we would have divided them into groups of 4 instead.

3. How will you give 1 apple to two children equally?

Expected answer: Cut it into two equal halves and give each child $\frac{1}{2}$ apple.

4. How will you give 2 apples to 4 children equally?

Expected answer: Cut both apples into halves and give each child half apple.

5. Is 1 apple to 2 children same as 2 apples to 4 children?

Expected answer: Yes.**Let children draw and show.**

In both cases each child gets $\frac{1}{2}$ apple.

6. Is $\frac{1}{3}$ rd of 9 apples equal to $\frac{1}{2}$ of 6 apples?

Expected answer: Yes.**Let children draw apples in three groups of 3 (denominator is 3 in $\frac{1}{3}$) and colour 1 in each group to show $\frac{1}{3}$ of 9.**

 $\frac{1}{3}$ of 9 = 3

To show $\frac{1}{2}$ of 6 apples, they draw 3 groups of 2 apples (denominator is 2) and colour 1 in each group.

$\frac{1}{2}$ of 6 apples is equal to 3 apples.

Observation:

1. There are 10 ripe apples.
2. There are 15 raw apples.
3. Sum of ripe apples and raw apples is equal to the total number of apples.

Conclusion:

Equal parts of a whole can be identified by shading and colouring activity.

Reference:

Apple tree: <https://pixabay.com/de/illustrations/silhouette-elfe-weiblich-fantasy-1898439/>

Apple: <https://pixabay.com/de/vectors/apple-rot-obst-frisch-reif-saftig-25236/>

Time to teach	Asset Type	Theme	SubTheme
20 Minutes	Suggested Activity	Fractions	Part of a whole - fraction, Pa fraction

8. QA_Exercise in Equivalent Fractions

QA_Exercise in Equivalent Fractions

A. Choose the correct answer:

1. The fraction having equivalent fraction with denominator 9 from the following is

- a) $\frac{2}{3}$
- b) $\frac{4}{5}$
- c) $\frac{5}{18}$
- d) $\frac{5}{6}$

Answer: a) $\frac{2}{3}$

$$\text{since } \frac{2}{3} = \frac{2 \times 3}{3 \times 3} = \frac{6}{9}$$

2. The fraction for the number of months starting with J and the total number of months in a year is equivalent to

- a) $\frac{2}{3}$
- b) $\frac{3}{4}$
- c) $\frac{1}{6}$
- d) $\frac{1}{4}$

Answer: d) $\frac{1}{4}$ since there are three months starting with J (January, June, July) and there are 12 months in a year.

$$\frac{3}{12} = \frac{3 \div 3}{12 \div 3} = \frac{1}{4}$$

3. Two and half kg is the same as

- a) 5 half kg
- b) 5 kg
- c) $\frac{2}{4}$ kg
- d) None of the above

Answer: a) 5 half kg.

Since 1 kg = 2 half kg.

$$2\text{kg} = 4 \text{ half kg}$$

$$2\frac{1}{2} \text{ kg} = 5 \text{ half kg}$$

4. A farmer has 2 cows, 3 buffaloes, 4 goats. He has $\frac{12}{36}$ buffaloes. This is the same as

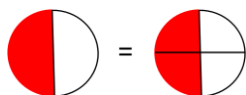
- a) $\frac{3}{9}$
- b) $\frac{2}{3}$
- c) $\frac{1}{5}$
- d) $\frac{8}{5}$

Answer: a) $\frac{3}{9}$

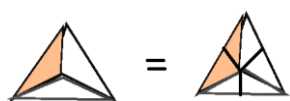
$$\text{Since } \frac{12}{36} = \frac{12 \div 4}{36 \div 4} = \frac{3}{9}$$

B) Write the corresponding equivalent fractions for the figures shown below

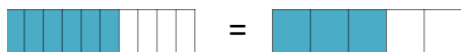
a)



b)



c)



d)

**Answer:**

a) $\frac{1}{2} = \frac{2}{4}$

b) $\frac{1}{3} = \frac{2}{6}$

c) $\frac{6}{10} = \frac{3}{5}$

d) $\frac{3}{4} = \frac{6}{8}$

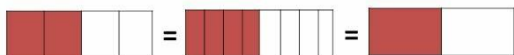
c) Write any two equivalent fractions for $\frac{2}{4}$. Show it by drawing any shape and colouring the required parts.

Answer:

 $\frac{4}{8}$ and $\frac{1}{2}$ are equivalent fractions of $\frac{2}{4}$

since $\frac{2}{4} = \frac{2 \times 2}{4 \times 2} = \frac{4}{8}$

and $\frac{2}{4} = \frac{2 \div 2}{4 \div 2} = \frac{1}{2}$

**Image Source: Original Contribution**

Time to teach	Asset Type	Theme	SubTheme
15 Minutes	Assessments	Fractions	Equivalent fractions, Equiva

9. MS_Make Me Whole

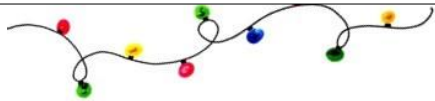
Whole from parts

Teacher can start the class by asking children to recall any whole made from parts.

Expected answers: Whole class from students, flower from petals, staircase from stairs.

A whole is made by joining parts.

Festive Lights



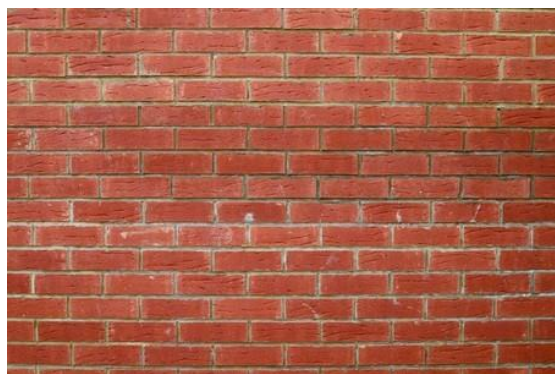
You would have seen these lights. They are used for decoration during festivals or functions. They are made up of bulbs. Bulb is the part that makes the whole series of lights.

Necklace



This necklace is made up of beads. Bead is the part. Necklace is the whole.

Wall:



A wall is made up of bricks. Brick is the part. Wall is the whole.

Instructions to teacher: Draw the part on blackboard and tell children to complete it to make a whole.

Rainbow:

This is a part of a rainbow, complete it.



Flag:

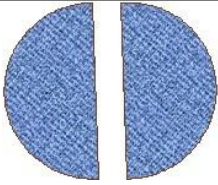
This is a part of our flag. Complete this.



Number of Parts in Whole

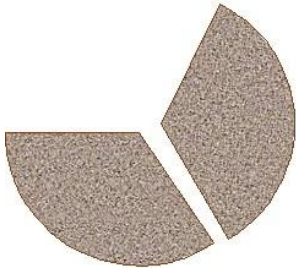
Draw two semi circles and join them. Do you get a whole circle?

Answer: Yes.



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

Draw $\frac{1}{3}$ of a circle. Join two $\frac{1}{3}$ circles. Do you get a whole circle?



Answer: No

Join one more $\frac{1}{3}$ circle. Do you get a whole circle?

Answer: Yes



$$3 \times \left(\frac{1}{3}\right) = 1$$

How many quarter circles make a whole circle?

Answer: 4

□

References:

festive lights: <https://pixabay.com/de/illustrations/weihnachten-beleuchtung-dekoration-3828734/>

necklace: <https://pixabay.com/de/vectors/perlenkette-herz-juwel-schmuck-148938/>

Wall: <https://pixabay.com/de/photos/wand-backstein-durch-die-wand-4830564/>

rainbow: <https://pixabay.com/de/vectors/regenbogen-farben-elektronische-26389/>

Indian Flag: <http://pixabay.com/en/india-flag-indian-national-country-26828/>

Time to teach	Asset Type	Theme	SubTheme
10 Minutes	Main Script	Fractions	Part of a whole - fraction, Pa fraction

10. MS_Mixed Numbers

Mixed Numbers

Example 1:

Prakash bought 6 apples. He wanted to share it equally with 3 more friends of his. How will he be able to distribute 6 apples among 4 children?

Answer: There are 4 children, Prakash and his 3 friends. There are 6 apples.

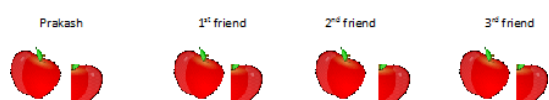
Prakash can give his 3 friends one apple each and keep 1 for himself. In this way he will be able to distribute 4 apples equally among themselves.



Prakash will be able to distribute 2 more apples among themselves (4 children) by cutting each apple into $\frac{1}{2}$. There are four halves when 2 apples are cut equally.



Each one gets 1 and $\frac{1}{2}$ of an apple



Each one gets 1 $\frac{1}{2}$ apple.

1 $\frac{1}{2}$ is a **mixed number**.

It has both whole and part.

It is made up of 1 whole and 1 part ($\frac{1}{2}$).

$1\frac{1}{2}$ can also be written as 3 halves or $3 \times \frac{1}{2}$



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

In $\frac{3}{2}$, numerator is greater than the denominator.

$\frac{3}{2}$ is an **improper fraction**.

Improper fractions are those fractions which have numerator either equal to or greater than the denominator.

For example:

$\frac{5}{5}$, $\frac{7}{3}$, $\frac{4}{1}$ etc

- If numerator is equal to denominator, the value of the fraction is equal to 1.

For example: $\frac{5}{5} = 1$

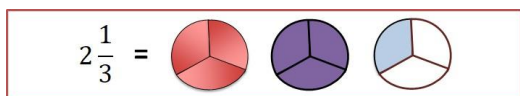
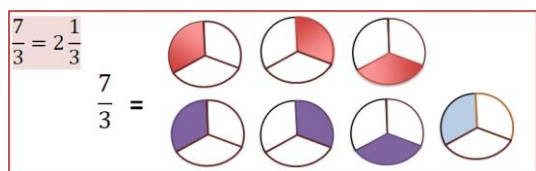
- If numerator is greater than the denominator, the value of the fraction can be expressed in terms of wholes and parts (mixed number).

For example: $\frac{7}{3} = (\frac{1}{3} + \frac{1}{3} + \frac{1}{3}) + (\frac{1}{3} + \frac{1}{3} + \frac{1}{3}) + \frac{1}{3}$

$$= 3 \times (\frac{1}{3}) + 3 \times (\frac{1}{3}) + \frac{1}{3}$$

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

$$= 1 + 1 + \frac{1}{3} = 2\frac{1}{3}$$



- If denominator is 1, the value of the fraction is the same as the numerator.

For example: $\frac{4}{1} = 4$

Proper fractions are those in which numerator is less than the denominator.

For example:

$\frac{1}{5}$, $\frac{5}{9}$, $\frac{11}{15}$ etc

Steps to express mixed numbers in terms of parts:

- **Identify the part in the mixed number**
- **Identify the whole in the mixed number**
- **Express 1 whole in terms of parts**
- **Repeat for the number of wholes**
- **Add all the parts**

Example 2:

Mani buys $2\frac{1}{2}$ kg tomatoes. How many equal parts will make $2\frac{1}{2}$ kg?

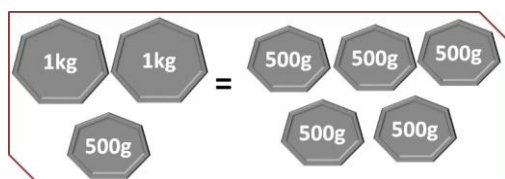
Answer:

$2\frac{1}{2}$ kg is made of two 1 kg (whole) and one half kg(part)

$$= 1 \text{ kg} + 1 \text{ kg} + \frac{1}{2} \text{ kg}$$

$$\frac{1}{2} \text{ kg} + \frac{1}{2} \text{ kg} + \frac{1}{2} \text{ kg} + \frac{1}{2} \text{ kg} + \frac{1}{2} \text{ kg}$$

$$= 5 \times (\frac{1}{2}) \text{ kg}$$



Five half kg make $2\frac{1}{2}$ kg.

Example 3:

Express the mixed number $2\frac{1}{4}$ in terms of its parts.

Answer: In $2\frac{1}{4}$, whole is 2 and part is $\frac{1}{4}$

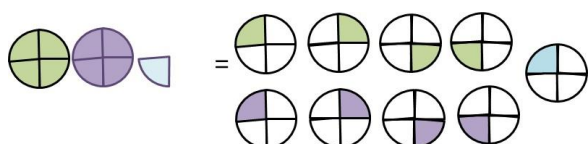
We have to split 2 as 1 and 1.

Divide 1 into 4 equal parts

$$4 \times (\frac{1}{4}) = 1$$

2 is made up of 8 quarters

Hence, $2\frac{1}{4} = 8 \text{ quarters} + 1 \text{ quarter}$



$$2 \frac{1}{4} = 9 \text{ quarters}$$

$$= 9 \times (1/4)$$

$$= 9/4$$

$2 \frac{1}{4}$ is equal to 9 parts of $\frac{1}{4}$

$$2 \frac{1}{4} = 9/4$$

Image Source:

<https://pixabay.com/de/vectors/apple-rot-obst-frisch-reif-saftig-25236/>

Time to teach	Asset Type	Theme	SubTheme
20 Minutes	Main Script	Fractions	Proper, improper and mixed Proper, improper and mixed

11. VC_Share a part of the whole

Share a part of the whole

Children! Most of you spend your day in different activities. Some of you may have house helps who help your family in your daily chores. Do you know that there are children who have to spend a large part of the day working or helping at home? They have to share a part of the whole in every possible way every day to keep the family running.

This story is about one such family where they show sharing a part of the whole, in every possible way, makes our world a happier place filled with love.

Gopal is a farmer living in a village of Narayanpur. His family consists of his wife and three children namely Geetha, Meena and Ram.

Gopal's family has a very simple meal of porridge every morning. His wife prepared the porridge and poured it into equal portions in 5

glasses. With one glass of porridge per person, each one in the family would have one fifth of whole of porridge prepared.

One day Gopal's son Ram was feeling hungry and asked his mother for some more. His mother gave him her share of porridge. After the children left Gopal saw that his wife did not have any porridge to drink. He shared half of his glass of porridge with his wife. Sharing a part of whole share of porridge helped them overcome hunger and also increased mutual love and affection.

Geetha, Meena and Ram study at government middle school in that village.

One day during the time of exams, Ram's classmate Ravi came to

Ram's house in the morning before exam to clear some doubts from

Ram. Ram had planned to spend the two hours to revise the portion. But he had to spend half an hour in clearing Ravi's doubts. He readily agreed and he completed his revision in the remaining one and half hour. Sharing a part of his whole revision time could help his friend in need and thus strengthen their friendship and love.

During the weekend Geetha, Meena and Ram would assist their father in the field. They divided their field into three equal portions. Each of them would help to sow the seeds, while their father did the tougher job of ploughing. Now, with each child working on one third of the field, the work could be finished faster. Sharing a part of the whole work could help complete it faster and made work joyful.

With good monsoon there was high yield of grains. Gopal made a rich harvest. He produced 60 bags of grains on his field. Gopal

sold 40 bags and made money. Out of 20 bags he kept half of it for his family and the other half he shared with his neighbour Somu

whose crops failed due to pests. Sharing a part of the whole harvest could help his neighbour in need and increase brotherhood and

love.

Lesson learnt? Sharing is caring.

Time to teach	Value Type	Value Sub Type	Value Attribute
10 Minutes	Love		Stories

12. DD_Fractions in Daily Life

Fractions in Daily Life

Mohan's Schedule on a Sunday

Mohan gets up from bed at **half past six**.

He has a light breakfast consisting of 1 cup milk and $\frac{1}{2}$ bowl of upma (a food dish made of sooji/rava) at **quarter to 8**.

His mother, then asks him to go and buy some fresh vegetables from the vendor nearby.

Mohan buys **$\frac{1}{2}$ kg** of tomatoes, **$\frac{3}{4}$ kg** of carrots and **$\frac{1}{4}$ kg** of beans.

He comes back home and sits down to do his homework. As he finishes, he remembers that his teacher had asked him to get his test paper signed by his father. His father is very happy to see that Mohan has scored (**$49\frac{1}{2}$ /50**) in Mathematics.

It is noon. After a heavy lunch, all people at home go to bed for a short nap. Mohan's mother asks him to attend on his grandmother and give her the usual medicines. Mohan gives his grandmother **$1\frac{1}{2}$ tsp** of Digene syrup and her usual tablets.

It is evening time. Mohan wants to attend his friend's birthday party at **half past six**. His father drops him at his friend's place and tells him to be back home before 8 pm. Mohan enjoys the party. He gets to have **$\frac{1}{6}$** of his favourite cake cut by his friend. He also has **$\frac{1}{3}$** of a big samosa and a cup of juice. Mohan reaches home by **quarter past 8**. Thus, Mohan enjoyed his Sunday.

Recall the instances in Mohan's Sunday schedule where he encountered fractions.

1. Time

Mohan got up at half past 6. (6:30 a.m.)

Had breakfast at quarter to 8 (7:45 a.m.)

Went to birthday party at half past 6 (6:30 pm)

Comes back home at quarter past 8 (8:15 pm)

2. Buying vegetables

Mohan bought $\frac{1}{2}$ kg of tomatoes, $\frac{3}{4}$ kg of carrots, $\frac{1}{4}$ kg of beans.

3. Food

He ate $\frac{1}{2}$ bowl of upma.

He ate $\frac{1}{3}$ rd of Samosa and $\frac{1}{6}$ th of cake at birthday party.

4. Marks

Mohan got $49\frac{1}{2}$ /50

5. Medicine

Mohan gave his grandmother $1\frac{1}{2}$ tsp of Digene (a tonic to relieve stomach discomfort) syrup.

Our routine is also similar to this.

Preparation of Dishes

We also come across fractions in daily life while cooking. Cooking recipes contain measures of ingredients represented as fractions.

For example:

Preparation of Sabudana kheer

Ingredients required

- Sabudana (Sago / javarisi)-1/2 cup
- Water-1/2 cup
- Milk- 4 cups
- Sugar-6 tbsp
- Saffron-a pinch
- Cardamom powder-1/2 tsp
- Pista/cashew-1 to 2 tbsp

Time to teach	Asset Type	Theme	SubTheme
5 Minutes	Day-to-day Relevance	Fractions	Part of a whole - fraction, Pa fraction

13. MS_Summary-Parts and Wholes

Summary-Parts and Wholes

- There are parts in a whole.
- Parts of a whole can be compared with each other.
- A fraction is a way of representing division of a 'whole' into 'parts'.
- Parts in a whole can be identified in patterns in nature.
- Questions related to parts and wholes (fractions and equivalent fractions) can be solved.
- Fractions which have the same value, though they might look different are known as equivalent fractions.
- The numbers given as fractions can be determined by grouping and colouring the parts of a whole.
- A whole can be reproduced from parts.
- Proper fractions are those fractions which have numerator less than the denominator.
- Improper fractions are those fractions which have numerator either equal to or greater than the denominator.
- Mixed numbers have both, whole and a part.
- Love can be practiced by sharing parts of a whole.
- Parts and whole can be correlated with day to day activities.

Time to teach	Asset Type	Theme	SubTheme
3 Minutes	Main Script	Fractions	Part of a whole - fraction, Pa fraction