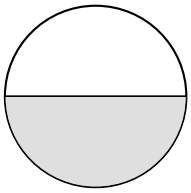
Introduction

What is a Fraction?

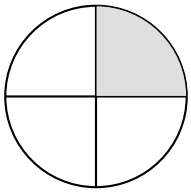
A fraction shows **part of a whole**. The bar tells us "out of".

numerator (how many parts) $\Big\}$ $\dfrac{\text{part}}{\text{whole}}$ $\Big\{$ **denominator** (parts in total)

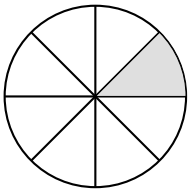
See Fractions with Pictures



$\frac{1}{2}$ (one half shaded)



$\frac{1}{4}$ (one quarter shaded)



$\frac{1}{8}$ (one eighth shaded)

Fractions of Bars and Sets

3 parts shaded out of 8 $\Rightarrow \frac{3}{8}$

8 apples; 4 shaded $\Rightarrow \frac{4}{8} = \frac{1}{2}$

Share into Equal Groups (2, 4, or 8)

We can **share** a collection equally. Each group gets the same amount.

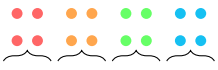
Share 16 into 2 groups

8 8

Each group = 8

$\Rightarrow \frac{8}{16} = \frac{1}{2}$ per group

Share 16 into 4 groups



4 4 4 4

Each group = 4

$\Rightarrow \frac{4}{16} = \frac{1}{4}$ per group

Try: Share 24 counters into 8 equal groups. How many in each group?

Tiny Data and a Simple Prediction

We can organise small data in a table or picture and make a guess (prediction).

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Shape	Total	Shaded
Bars in halves	8	4
Circles in quarters	8	2
Bars in eighths	8	6

Halves: □□□□ Quarters: □□ Eighths: □□□□□□

Prediction: If we add *two more* "eighths" pieces next time, which has the most shaded parts?

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Exercise

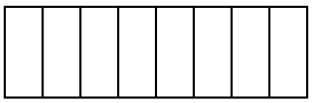
Take your time and show working.

1. Shade the fraction

Shade the shapes to show the fraction written.

(a) $\frac{1}{2}$ 

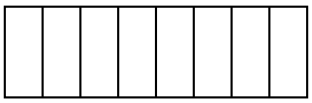
(b) $\frac{1}{4}$ 

(c) $\frac{3}{8}$ 

(d) $\frac{5}{8}$ 

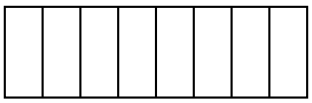
(e) $\frac{2}{4}$ 

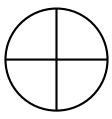
(f) $\frac{7}{8}$ 

(g) $\frac{1}{8}$ 

(h) $\frac{3}{4}$ 

(i) $\frac{4}{8}$ 

(j) $\frac{6}{8}$ 

(k) $\frac{1}{4}$ (circle) 

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2. Draw and label the fraction

Draw the shape(s), split equally, and label the fraction.

(a) Draw a rectangle and shade $\frac{1}{2}$.

(b) Draw a circle and shade $\frac{3}{4}$.

(c) Draw a rectangle and shade $\frac{1}{8}$.

(d) Draw two equal bars: shade $\frac{2}{4}$ on the first and $\frac{1}{2}$ on the second. Are they equal?

(e) Draw a circle split into eighths; shade $\frac{5}{8}$.

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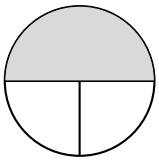
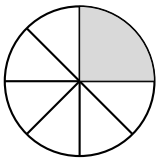
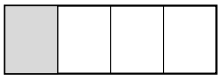
(f) Draw a long bar into 8 cells; shade $\frac{7}{8}$.

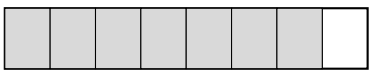
3. Write the fraction that is shaded

(a)  = _____

(b)  = _____

(c)  = _____

(d)  = _____

(e)  = _____

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4. Fractions of a set

Count carefully and write the answer. (We use halves and quarters.)

Examples

- $\frac{1}{2}$ of $20 = \quad 20 \div 2 = 10.$
- $\frac{1}{4}$ of $20 = \quad 20 \div 4 = 5.$

(a) $\frac{1}{2}$ of $10 =$ _____

(b) $\frac{1}{4}$ of $20 =$ _____

(c) $\frac{1}{2}$ of $30 =$ _____

(d) $\frac{1}{4}$ of $40 =$ _____

(e) $\frac{1}{2}$ of $50 =$ _____

(f) $\frac{1}{4}$ of $60 =$ _____

(g) $\frac{1}{2}$ of $12 =$ _____

(h) $\frac{1}{4}$ of $12 =$ _____

(i) $\frac{1}{2}$ of $18 =$ _____

(j) $\frac{1}{4}$ of $28 =$ _____

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5. Share into equal groups

Split the dots into equal groups. Count each group. (One is done for you)

(a) Share 16 into **4** equal groups. How many in each group? _____

(b) Share 20 into **2** equal groups. How many in each group? _____

(c) Share 24 into **4** equal groups. How many in each group? _____

(d) Share 40 into **4** equal groups. How many in each group? _____

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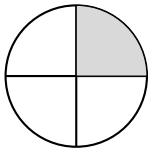
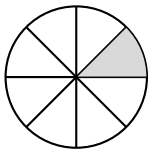
6. Match each picture to its fraction

Draw lines or write the matching letter.

#	Picture	Fraction
1.		A. $\frac{1}{4}$
2.		B. $\frac{7}{8}$
3.		C. $\frac{1}{2}$
4.		D. $\frac{1}{8}$

7. Read the table and answer

Fruit	Total	Halves Eaten	Quarters Eaten
Apples	8	4	2
Bananas	10	5	2
Oranges	12	6	3
Grapes (cups)	20	10	5
Pears	16	8	4

(a) For **apples**, what fraction were eaten as **halves**? _____

(b) For **bananas**, what fraction were eaten as **quarters**? _____

(c) For **oranges**, are the halves and quarters the same *amount*? Why?

(d) For **grapes**, how many would be eaten if we ate $\frac{1}{2}$ of the total cups? _____

(e) For **pears**, how many are $\frac{1}{4}$ of the total? _____

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8. More table practice

Snack	Total	Half Eaten	Quarter Eaten
Muffins	12	6	3
Cookies	20	10	5
Sandwiches	8	4	2
Cupcakes	16	8	4

(a) What fraction of **muffins** is half? _____

(b) How many cookies is one quarter? _____

(c) If we eat $\frac{1}{2}$ of 8 sandwiches, how many are left? _____

(d) $\frac{1}{4}$ of 16 cupcakes = _____

(e) Which snack has the **same** numbers for half and quarter as **apples** had earlier? _____

Word Problems

Write neatly; use the space for working.

(1) A chocolate bar is cut into 8 equal pieces. Mia eats 3 pieces. What fraction is eaten? What fraction is left?

(2) A pizza is cut into 4 equal slices. Sam eats 2 slices. What fraction of the pizza did Sam eat?

(3) There are 20 stickers. $\frac{1}{2}$ are stars. How many stars?

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(4) A rope is split into 8 equal parts. Ben colours 4 parts. What fraction is coloured?

(5) A basket has 20 apples. $\frac{1}{4}$ are red. How many red apples?

(6) A cake is cut into 8 equal slices. You eat $\frac{1}{8}$. How many slices are left from 8?

(7) A class has 20 pencils. $\frac{1}{4}$ are blue. How many blue pencils?

(8) A bar has 8 blocks. Shade $\frac{3}{8}$. How many blocks are not shaded?

(9) A circle is split into 4 equal parts. Shade three parts. What fraction is shaded?

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(10) A set has 20 beads. $\frac{1}{2}$ are green and $\frac{1}{4}$ are red. How many are green? red?

(11) Draw a bar to show $\frac{5}{8}$. Then write the fraction that is not shaded.

(12) There are 16 cupcakes. Half have sprinkles. How many with sprinkles?

(13) A packet has 12 crackers. $\frac{1}{4}$ are broken. How many are broken?

(14) There are 20 marbles. Colour a quarter of them. How many did you colour?

(15) A rope has 8 equal parts. 6 are red. What fraction is red?

(16) A fruit tray has 20 pieces. $\frac{1}{2}$ are grapes. How many grapes?

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(17) From 20 books, $\frac{1}{4}$ are animal stories. How many animal stories?

(18) Shade half of a bar that has 8 equal cells. How many cells do you shade?

(19) From 40 coins, $\frac{1}{4}$ are shiny. How many shiny coins?

(20) There are 8 balloons. Shade one eighth. How many balloons is that?

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