Chapter 8: Fair Share

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Exercise 8.1 — Let us Discuss — Sharing equally

Q1 How do you share objects equally?

SOLUTION

To share objects equally, divide them into groups of the same size.
Each person should receive the same number of objects.
Strategy: distribute one item at a time to each person, taking turns, until all items are given out.
Give one item at a time to each person, in turns, until all items are shared out equally so every person has the same amount.

Q2 Why is Shabnam folding the paratha over itself?

SOLUTION

Shabnam wants to check whether she has cut the paratha into two equal halves.
When you fold one piece exactly over the other, you can see if both pieces match perfectly.
If the edges line up, the two pieces are equal halves. If they do not line up, the pieces are unequal.
She is folding the paratha to check that both pieces are exactly the same size — a fair test for equal halves.

Exercise 8.2 — Let us Do — Halves

Q1 Circle the shapes where half of the whole is coloured.

SOLUTION

A shape shows half coloured when the coloured part and the uncoloured part are exactly equal in size.

Check each shape: if the coloured region covers exactly half the total area, it qualifies.

Shapes divided into two equal parts with exactly one part coloured are the correct answers.

Circle the kite/diamond (top-left triangular half is coloured = equal halves), the pizza (roughly half the slices are coloured), and the apple (top half is red = exactly half coloured). The bottle (small orange band) and the rectangle (narrow right strip) are NOT half — skip those.

Q2 Draw a line to show one-half of the whole.

SOLUTION

Draw a line that divides each shape into two equal parts.

For a circle: draw a line through the centre (diameter).

For a rectangle or square: draw a line through the middle — either horizontally or vertically.

Drawing activity. Draw a straight line through the exact middle of each object: for the square tile draw a vertical or horizontal line through the centre; for the bamboo/leaf draw a line across its midpoint; for the ludo board draw a line through the centre (horizontal or vertical); for the pizza draw a diameter through the centre. Any line that makes two equal halves is correct.

Q3 Shabnam has eaten some chikki from 3 sides. Tick how much chikki is left? (a) less than half (b) more than half (c) half

SOLUTION

Chikki eaten from 3 sides means more than half has been eaten.

If more than half is eaten, less than half remains.

(a) less than half. The figure shows an orange-coloured grid where chikki has been eaten from 3 sides — the coloured (eaten) area is clearly more than half the grid. So what is LEFT (uncoloured) is less than half.

Q4 Show by colouring half a chikki that has been eaten from 2 sides.

SOLUTION

Chikki eaten from 2 sides means two adjacent sides have been bitten off.

Colour the remaining unbitten half of the chikki shape to show what is left.

The coloured portion should be exactly half the original whole chikki.

Colouring activity. The blank chikki is a 4×5 grid of 20 squares. Eating from 2 sides means two adjacent sides are bitten off. Colour exactly 10 squares (half of 20) to show the remaining half

— for example, colour the left two columns (10 squares) to represent the unbitten half.

Q5 Draw lines to show different ways of making a half.

SOLUTION

A shape can be halved in more than one way, as long as both parts are equal.

For a square: draw a vertical line, or a horizontal line, or a diagonal line — each gives two equal halves.

For a rectangle: a vertical or horizontal line through the centre both work.

For a circle: any line passing through the centre (diameter) creates two equal halves.

Drawing activity. Four hexagons are shown on a dot grid. Draw a straight line through the middle of each hexagon to make two equal halves — the line can be vertical (top to bottom through centre), or at different angles as long as both halves are equal mirror images. Each hexagon can show a different way.

Q6 Complete the whole picture by drawing the other half.

SOLUTION

Look at the half-picture provided.

Imagine folding along the line of symmetry — the missing half is a mirror image of the given half.

Draw the mirror image on the blank side to complete the whole picture.

Drawing activity. Three half-shapes are given on dot grids: (a) a right-angled triangle half — draw the mirror image on the other side of the vertical axis to complete a larger triangle or rectangle; (b) a chevron/angle half — draw the mirror image to complete the full chevron shape; (c) an L-bracket half — draw the mirror image on the other side to complete the whole shape. Reflect each half about its fold line.

Exercise 8.3 — Let us Discuss — Fair sharing story

Q1 Amit divided the mango tree, solar lamp, and woollen blanket with his brother Bala as follows: Amit keeps the fruits, Bala keeps the tree; Amit keeps the lamp at night, Bala during the day; Amit keeps the blanket in winter, Bala in summer. Is this a fair way of sharing? Is there another way to share it fairly?

SOLUTION

Amit's sharing is NOT fair.

Mango tree: Amit gets all the fruits (the useful part), Bala gets only the bare tree (no value). Not equal.

Solar lamp: Amit uses it at night when it is actually needed for light; Bala gets it during the day when sunlight is already available. Not equal.

Blanket: Amit keeps it in winter when it is needed for warmth; Bala gets it in summer when it is not needed. Not equal.

In every case, Amit cleverly took the useful share and gave the useless share to Bala.

A fair way to share: each object is used on alternate days or alternate months by each brother, OR they sell each object and split the money equally.

No, it is not fair — Amit took the useful part of every item and gave Bala the worthless part. A fair share means both brothers get equal value, for example by taking turns on alternate days or dividing the proceeds equally.

Exercise 8.4 — Let us Do — Sharing mangoes equally

Q1 Here are some mangoes. Share them equally between the two children.

SOLUTION

Count the total number of mangoes shown in the picture.
Divide the total equally into 2 groups — one group for each child.
Each child gets total ÷ 2 mangoes.
If the total is even, the share is exact. Each child gets an equal number.
The picture shows two children with two bowls. Count the total mangoes and split equally. The image shows the mangoes being distributed into 2 equal bowls. Each child gets the same number — draw/show the mangoes divided into 2 equal groups, one group per child.

Exercise 8.5 — Half and Double

Q1 Fill in the blanks: 4 marbles are _____ of 8 marbles.

SOLUTION

Half of 8 = 8 ÷ 2 = 4.
So 4 is half of 8.
4 marbles are half of 8 marbles.

Q2 Fill in the blanks: 10 marbles are _____ of 5 marbles.

SOLUTION

Double of 5 = 5 × 2 = 10.
So 10 is double of 5.
10 marbles are double of 5 marbles.

Q3 Fill in the blanks: 5 marbles are _____ of 10 marbles.

SOLUTION

Half of 10 = 10 ÷ 2 = 5.
So 5 is half of 10.
5 marbles are half of 10 marbles.

Q4 Fill in the blanks: 8 marbles are _____ of 4 marbles.

SOLUTION

Double of 4 = 4 × 2 = 8.
So 8 is double of 4.
8 marbles are double of 4 marbles.

Q5 Fill in the blanks: 6 marbles are _____ of 12 marbles.

SOLUTION

Half of 12 = 12 ÷ 2 = 6.
So 6 is half of 12.
6 marbles are half of 12 marbles.

Q6 Fill in the blanks: 12 marbles are _____ of 6 marbles.

SOLUTION

Double of 6 = 6 × 2 = 12.
So 12 is double of 6.
12 marbles are double of 6 marbles.

Q7 On a number line, how far is 13 from the double of 7?

SOLUTION

Double of 7 = 7 × 2 = 14.
Distance of 13 from 14 = |14 − 13| = 1.
13 is 1 step away from the double of 7 (which is 14).

Q8 On a number line, how far is 5 from half of 14?

SOLUTION

Half of 14 = 14 ÷ 2 = 7.
Distance of 5 from 7 = |7 − 5| = 2.
5 is 2 steps away from half of 14 (which is 7).

Exercise 8.6 — Guess Who am I?

Q1 Guess Who am I? I have less than the double of 3 marbles. I have more than the half of 8 marbles. Options: (a) 4 marbles (b) 5 marbles (c) 6 marbles

SOLUTION

Clue 1: less than double of 3 → less than 3 × 2 = 6.
Clue 2: more than half of 8 → more than 8 ÷ 2 = 4.
So the number must be more than 4 AND less than 6.
From the options [4, 5, 6]: only 5 satisfies both conditions (5 > 4 and 5 < 6).
(b) 5 marbles

Q2 Guess Who am I? I have less than the double of 4 marbles. I have more than the half of 10 marbles. Options: (a) 8 marbles (b) 6 marbles (c) 3 marbles

SOLUTION

Clue 1: less than double of 4 → less than 4 × 2 = 8.
Clue 2: more than half of 10 → more than 10 ÷ 2 = 5.
So the number must be more than 5 AND less than 8.
From the options [8, 6, 3]: only 6 satisfies both conditions (6 > 5 and 6 < 8).
(b) 6 marbles

Exercise 8.7 — Let us Do — Quarters

Q1 Tick the objects that show quarters.

SOLUTION

A quarter means a whole divided into 4 equal parts.
Tick any object that is divided into exactly 4 equal parts.
If a shape is divided into unequal parts, or into a number of parts other than 4, it does not show quarters.
Tick the chikki/square (object 1) and the chocolate bar (object 4). The chikki is divided into 4 equal squares — each square is one quarter. The chocolate bar is divided into 4 equal rectangular pieces — each piece is one quarter. The roti/paratha (object 2) is cut into 6 unequal wedge slices — NOT quarters. The orange biscuit (object 3) appears as 2 halves, not 4 quarters — NOT quarters.

Q2 Draw lines to make a quarter of the whole.

SOLUTION

To make a quarter, divide the shape into 4 equal parts by drawing 2 lines.
For a square or rectangle: draw one vertical line and one horizontal line through the centre.
For a circle: draw two diameters at right angles (a + cross through the centre).
Drawing activity. Draw two lines through the centre of each shape to divide it into 4 equal parts: for the square draw one vertical + one horizontal line through the centre; for the roti/circle draw two diameters at right angles (a + cross); for the flower draw two lines through the centre in the same + pattern; for the diamond draw one vertical + one horizontal line through the centre. Each shape should have 4 equal quarter-parts.

Q3 Draw the remaining three quarters and complete the whole. (a) and (b)

SOLUTION

One quarter of the shape is already drawn.
A whole has 4 equal quarters.
Draw 3 more identical parts (mirror or repeat the given quarter) to complete the whole shape.
All 4 parts together must form the complete original whole.
Drawing activity. (a) One fan/leaf quarter is shown — draw 3 more identical fan shapes arranged around a common centre point so all 4 together form a complete flower/circular whole. (b) One lined rectangle strip (one quarter of a larger rectangle) is shown — draw 3 more identical strips beside it so all 4 strips together form the complete rectangle.

Q4 Draw the remaining quarters to complete the whole. (a) and (b)

SOLUTION

Some quarters of the shape are already shown.
Count how many quarters are missing (4 total minus those already drawn).
Draw the missing quarters to complete the whole.
All quarters must be equal in size.
Drawing activity. (a) A dark chocolate bar shows 2 of the 4 squares already — draw 2 more equal squares to complete the full 2×2 chocolate bar. (b) An orange L-shape shows 1 quarter — draw 3 more L-shaped quarter pieces arranged together so all 4 form a complete 2×2 square.

Exercise 8.8 — Half or Quarter?

Q1 Shabnam has coloured half/a quarter of the birds. Mukta has coloured half/a quarter of the birds. Shabnam has coloured half/double the number of birds that Mukta has coloured.

SOLUTION

Look at the picture to count how many birds each person coloured and the total.
If Shabnam coloured 2 out of 4 birds, she coloured half.
If Mukta coloured 1 out of 4 birds, she coloured a quarter.
Shabnam coloured 2 birds, Mukta coloured 1 bird. 2 is double of 1.
So Shabnam coloured double the number of birds that Mukta coloured.
Shabnam has coloured half of the birds. Mukta has coloured a quarter of the birds. Shabnam has coloured double the number of birds that Mukta has coloured. (The picture shows 8 birds in each frame — Shabnam coloured 4 = half; Mukta coloured 2 = a quarter; 4 is double of 2.)

Q2 Lakshanya and Peehu have 16 flowers each. Lakshanya tied half/a quarter of her flowers. Peehu tied half/a quarter of her flowers. Lakshanya tied half/double the number of flowers that Peehu tied.

SOLUTION

Look at the picture to see how many flowers each person tied.
Lakshanya has 16 flowers. If she tied 8, that is half. If she tied 4, that is a quarter.
Peehu has 16 flowers. If she tied 4, that is a quarter. If she tied 8, that is half.
If Lakshanya tied 8 and Peehu tied 4: 8 is double of 4, so Lakshanya tied double.
Half of 16 = 16 ÷ 2 = 8. Quarter of 16 = 16 ÷ 4 = 4.
Lakshanya tied half of her flowers (8 out of 16). Peehu tied a quarter of her flowers (4 out of 16). Lakshanya tied double the number of flowers that Peehu tied. (Half of 16 = 8; quarter of 16 = 4; 8 is double of 4.)

Exercise 8.9 — Let us Do — Quarters and Whole

Q1 Tick the shapes below that show three-quarters.

SOLUTION

Three-quarters means 3 out of 4 equal parts are coloured or shaded.
Check each shape: if it is divided into 4 equal parts and 3 of them are coloured, it shows three-quarters.
If fewer or more than 3 equal parts are shaded, it does not show three-quarters.
Tick these shapes (those with exactly 3 of 4 equal parts coloured): (1) green rectangle — 3 green parts + 1 white = three-quarters YES; (2) large triangle divided into 4 small triangles — 3 blue + 1 white = YES; (3) tall pink rectangle divided into 4 — 3 pink + 1 white = YES; (6) orange rectangle divided into 4 — 3 orange + 1 white = YES; (7) circle divided into 4 — 3 yellow + 1 white = YES. Do NOT tick: the solid blue triangle (not divided into 4 equal parts), the circle with only 1 yellow quarter, and the small rectangle with 2 red + 2 white (that is half, not three-quarters).

Q2 Colour the shapes below to show the fractions as instructed: 2 quarters, 1 quarter, 3 quarters, 4 quarters, 3 quarters, 1 quarter.

SOLUTION

Divide each shape into 4 equal parts first.
2 quarters: colour 2 out of 4 equal parts (same as half).
1 quarter: colour 1 out of 4 equal parts.
3 quarters: colour 3 out of 4 equal parts.
4 quarters: colour all 4 parts (the whole shape).
3 quarters: colour 3 out of 4 equal parts.
1 quarter: colour 1 out of 4 equal parts.
Colouring activity. Six shapes are already divided into 4 equal parts. Colour the required number of parts in each: shape 1 (square) = colour 2 parts for 2 quarters; shape 2 (circle) = colour 1 part for 1 quarter; shape 3 (diamond/kite) = colour 3 parts for 3 quarters; shape 4 (hexagon) = colour all 4 parts for 4 quarters (whole); shape 5 (rectangle strip) = colour 3 parts for 3 quarters; shape 6 (4-pointed star) = colour 1 part for 1 quarter.

Q3 Draw lines and colour the shapes below to show the fractions as instructed: 2 quarters, 1 quarter, 3 quarters, 4 quarters, 3 quarters, 1 quarter.

SOLUTION

First draw 2 lines to divide each shape into 4 equal parts.
Then colour the required number of parts:
2 quarters → colour 2 parts; 1 quarter → colour 1 part; 3 quarters → colour 3 parts; 4 quarters → colour all 4 parts.
Drawing and colouring activity. Six unlined shapes are shown — first draw 2 lines to divide

each into 4 equal parts, then colour the required number: hexagon = 2 quarters (colour 2 of 4 parts); parallelogram = 1 quarter (colour 1 of 4); 6-pointed star = 3 quarters (colour 3 of 4); square = 4 quarters (colour all 4 = whole); diamond = 3 quarters (colour 3 of 4); 4-pointed star = 1 quarter (colour 1 of 4).

Q4 Here is a rectangle which shows quarters. Discuss how.

SOLUTION

A rectangle can be divided into 4 equal parts by drawing one horizontal line and one vertical line through the centre.
Each of the 4 resulting smaller rectangles is exactly one quarter of the whole big rectangle.
All 4 parts are equal in size, so each part is one quarter.
The rectangle is divided into 4 equal smaller rectangles by two lines through the centre — each small rectangle is one quarter of the whole.

Q5 Show quarters and halves in different ways in the grids given below.

SOLUTION

On a grid, a half can be shown by shading exactly half the grid squares.
On a grid, a quarter can be shown by shading exactly one quarter of all grid squares.
Different ways: shade the left half, or the top half, or shade in a diagonal pattern — as long as the shaded area equals half (or quarter) of the total area.
Drawing/colouring activity. Four blank grids are given. Shade cells in different ways to show halves and quarters: e.g. grid 1 — shade the left half of all rows (half); grid 2 — shade the top half of rows (another way of showing half); grid 3 — shade one quarter of the cells in a block; grid 4 — shade a different quarter arrangement. Any shading where exactly half (or exactly one quarter) of the total squares are coloured is correct — there are many valid answers.

Q6 Use the fraction cards from your book to form a whole.

SOLUTION

Take the fraction pieces from the perforated sheet at the back of the book.
Two half-pieces placed together form one whole.
Four quarter-pieces placed together form one whole.
Two quarter-pieces and one half-piece also form one whole.
Arrange the pieces so they fit together exactly without gaps or overlaps to make one complete whole.
Combine the fraction pieces so they fit together perfectly: 2 halves = 1 whole, 4 quarters = 1 whole, or 2 quarters + 1 half = 1 whole.