CBSE Class 6 — Mathematics

Chapter 7: Fractions

Section A — Multiple Choice Questions

Tick (✓) or circle the correct option.

1. A fraction such as 1/5, where the numerator is 1, is called a:

(a) Whole fraction (b) Fractional unit (unit fraction) (c) Mixed fraction (d) Improper fraction

2. One roti is shared equally among 6 children. What fraction of the roti does each child get?

(a) 1/5 (b) 1/6 (c) 6/1 (d) 1/7

3. In the fraction 5/6, what is 6 called?

(a) Numerator (b) Denominator (c) Whole number (d) Mixed number

4. Which of these fractions is the greatest?

(a) 1/3 (b) 1/5 (c) 1/2 (d) 1/9

5. The fraction 7/2 expressed as a mixed number is:

(a) 2 1/2 (b) 3 1/2 (c) 3 1/3 (d) 4

6. Which pair represents equivalent fractions?

(a) 1/2 and 2/3 (b) 2/3 and 4/6 (c) 3/4 and 4/5 (d) 1/3 and 1/4

7. The simplest form of 16/20 is:

(a) 8/10 (b) 4/5 (c) 2/5 (d) 1/5

8. Who first formally described the general method for adding and subtracting fractions, in 628 CE?

(a) Aryabhata (b) Brahmagupta (c) Al-Hassar (d) Sridharacharya

9. Which fraction is greater: 4/5 or 7/9?

(a) 4/5 (b) 7/9 (c) Both are equal (d) Cannot say

10. 1/4 + 1/3 = ?

(a) 2/7 (b) 7/12 (c) 1/7 (d) 7/9

Section B — Fill in the Blanks

1. When a whole is divided into equal parts, each part is called a _____.

2. In the fraction 7/9, 7 is called the _____.

3. In the fraction 7/9, 9 is called the _____.

4. Two or more fractions that represent the same share or value are called _____ fractions.

5. A fraction whose numerator and denominator have no common factor other than 1 is said to be in its _____ form.

6. A number that has a whole number part and a fraction part is called a _____ number.

7. 3 rotis shared equally among 4 children means each child gets _____ roti.

8. The fraction 1/2 is _____ to the fraction 4/8.

9. The method of converting fractions to a common denominator before adding or subtracting them was described by _____.

10. The Sanskrit word 'bhinna' used for a fraction in ancient India means _____.

Section C — True or False

1. 1/9 is greater than 1/5. *(True / False)*

2. Keeping the numerator the same and increasing the denominator makes a fraction smaller. *(True / False)*

3. 3/4 and 6/8 are equivalent fractions. *(True / False)*

4. A mixed number cannot be converted into a fraction. *(True / False)*

5. In the fraction 5/6, 5 is the denominator. *(True / False)*

6. To compare fractions with different denominators, we first convert them to the same denominator. *(True / False)*

7. The simplest form of 12/16 is 3/4. *(True / False)*

8. The Bakshali manuscript is an ancient Indian text that shows fractions written in a way similar to today's notation. *(True / False)*

9. The line between the numerator and denominator was first introduced by Brahmagupta. *(True / False)*

10. Egyptian fractions generally used fractions with a numerator other than 1. *(True / False)*

Section D — Answer in 2 Lines

1. What is a fractional unit? Give one example.

2. If one cake is shared equally among 5 children, what fraction of the cake does each child get?

3. Write 9/4 as a mixed number.

4. Write 3 1/4 as an improper fraction.

5. Are 2/3 and 8/12 equivalent fractions?

6. Reduce 18/24 to its simplest form.

7. Which is greater: 5/6 or 7/9? Show your working.

8. Add: 1/3 + 1/6.

9. Subtract: 5/8 - 3/8.

10. Name two ancient Indian mathematicians who worked with fractions.

Section E — Case Study Based Questions (5 x 3 = 15 marks)

Case Study 1

A pizza was cut into 8 equal slices. Riya ate 3 slices and her brother ate 2 slices.

1.1. What fraction of the pizza did Riya eat?

1.2. What fraction of the pizza did both children eat together?

1.3. What fraction of the pizza is left?

Case Study 2

On Sports Day, the school canteen mixed 3/5 litre of orange syrup with 1/2 litre of lemon syrup to make a fruit punch.

2.1. What is the total quantity of fruit punch made?

2.2. Which syrup was used in a greater quantity?

2.3. Express the total quantity as a mixed number.

Case Study 3

Meera has a ribbon that is 7/10 m long. She cuts off 2/5 m of it to decorate a gift box.

3.1. What length of ribbon is left after cutting?

3.2. What common denominator did you use to subtract the two fractions?

3.3. If she cuts another 1/5 m from the remaining ribbon, how much ribbon will be left now?

Case Study 4

A gardener divided a rectangular flower bed into 6 equal parts. He grew roses in 2 parts, marigolds in 3 parts, and left the rest for jasmine.

4.1. What fraction of the bed has roses?

4.2. What fraction of the bed has marigolds?

4.3. What fraction of the bed is left for jasmine? Express it in simplest form.

Case Study 5

Aarav's mother bought 5 identical chocolate bars to share equally among 4 children at home.

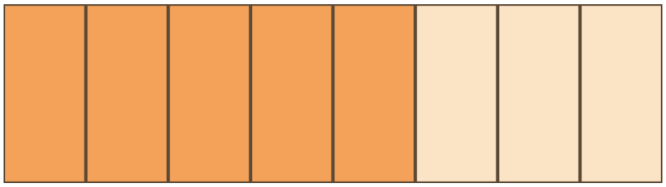
5.1. What fraction of a chocolate bar will each child get?

5.2. Express this fraction as a mixed number.

5.3. How many whole chocolate bars and what additional part will each child actually receive?

Section F — Picture Based Questions (5 x 3 = 15 marks)

Picture 1



1.1. What fraction of the bar is shaded?

1.2. What fraction of the bar is NOT shaded?

1.3. Write the shaded fraction in words.

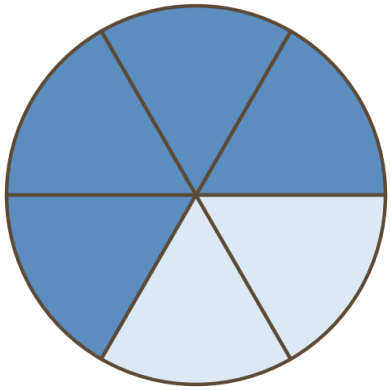
Picture 2

2.1. What fraction does point P represent?

2.2. What fraction does point R represent? Is it greater than or less than 1?

2.3. Which point represents the greatest fraction among P, Q, R and S?

Picture 3

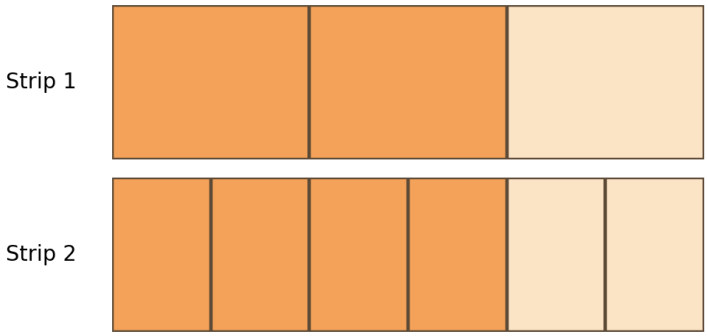


3.1. What fraction of the circle is shaded?

3.2. Write the shaded fraction in its simplest form.

3.3. What fraction of the circle is unshaded?

Picture 4

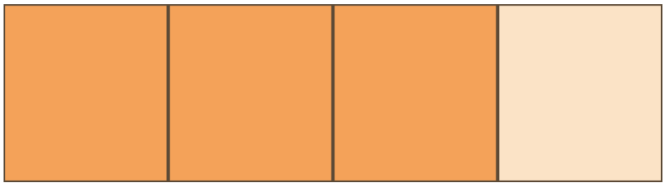


4.1. What fraction is shown shaded in Strip 1?

4.2. What fraction is shown shaded in Strip 2?

4.3. Are the two shaded fractions equivalent? Give a reason.

Picture 5



5.1. What fraction of the bar is shaded?

5.2. If this bar represents 1 chikki shared among 4 children, how much would 3 children's shares together make?

5.3. Write an equivalent fraction for the shaded part with denominator 8.

ANSWER KEY — Set A

Section A — Multiple Choice Questions

1. (b) Fractional unit (unit fraction)

2. (b) 1/6

3. (b) Denominator

4. (c) 1/2

5. (b) 3 1/2

6. (b) 2/3 and 4/6

7. (b) 4/5

8. (b) Brahmagupta

9. (a) 4/5

10. (b) 7/12

Section B — Fill in the Blanks

1. fractional unit (unit fraction)

2. numerator

3. denominator

4. equivalent

5. simplest (lowest terms)

6. mixed

7. 3/4

8. equivalent

9. Brahmagupta

10. broken

Section C — True or False

1. False

2. True

3. True

4. False

5. False

6. True

7. True

8. True

9. False

10. False

Section D — Answer in 2 Lines

1. A fractional unit is one equal part of a whole that has been divided into equal parts. For example, when a whole is divided into 5 equal parts, each part is the fractional unit 1/5.

2. Each child gets 1/5 of the cake.

3. 9/4 = 2 1/4.

4. 3 1/4 = 13/4.

5. Yes, they are equivalent because 8/12 simplifies to 2/3 when both numerator and denominator are divided by 4.

6. 18/24 = 3/4, dividing both numerator and denominator by 6.

7. 5/6 is greater. Using common denominator 18: 5/6 = 15/18 and 7/9 = 14/18, and 15/18 > 14/18.

8. 1/3 + 1/6 = 2/6 + 1/6 = 3/6 = 1/2.

9. 5/8 - 3/8 = 2/8 = 1/4.

10. Brahmagupta and Aryabhata (Sridharacharya and Mahaviracharya are also acceptable).

Section E — Case Study Based Questions

Case Study 1

1.1. Riya ate 3/8 of the pizza.

1.2. Together they ate 3/8 + 2/8 = 5/8 of the pizza.

1.3. Pizza left = 8/8 - 5/8 = 3/8.

Case Study 2

2.1. Total = 3/5 + 1/2 = 6/10 + 5/10 = 11/10 litres.

2.2. Orange syrup (6/10) was used in a greater quantity than lemon syrup (5/10).

2.3. 11/10 = 1 1/10 litres.

Case Study 3

3.1. Remaining = 7/10 - 2/5 = 7/10 - 4/10 = 3/10 m.

3.2. The common denominator used was 10.

3.3. 1/5 = 2/10, so remaining = 3/10 - 2/10 = 1/10 m.

Case Study 4

4.1. Roses = 2/6 = 1/3 of the bed.

4.2. Marigolds = 3/6 = 1/2 of the bed.

4.3. Jasmine = 6/6 - 2/6 - 3/6 = 1/6 of the bed.

Case Study 5

5.1. Each child gets 5/4 of a bar.

5.2. 5/4 = 1 1/4.

5.3. Each child receives 1 whole bar and an extra 1/4 of a bar.

Section F — Picture Based Questions

Picture 1

1.1. 5/8 of the bar is shaded.

1.2. 3/8 of the bar is not shaded.

1.3. Five-eighths.

Picture 2

2.1. P represents 1/4.

2.2. R represents 5/4, which is greater than 1, since its numerator is greater than its denominator.

2.3. S represents the greatest fraction, 7/4.

Picture 3

3.1. 4/6 of the circle is shaded.

3.2. 4/6 in simplest form is 2/3.

3.3. 2/6 = 1/3 of the circle is unshaded.

Picture 4

4.1. Strip 1 shows 2/3 shaded.

4.2. Strip 2 shows 4/6 shaded.

4.3. Yes, they are equivalent because 4/6 simplifies to 2/3 — both strips show the same length shaded.

Picture 5

5.1. 3/4 of the bar is shaded.

5.2. 3 children's shares together = 3 x 1/4 = 3/4 chikki, matching the shaded part.

5.3. An equivalent fraction is 6/8