

# UNIQUE STUDY POINT

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<b>Class:</b> VI	<b>Subject:</b> Mathematics	<b>Session:</b> 2025-26
<b>Chapter:</b> 07 - Fractions	<b>Time:</b> 1½ Hours	<b>Max. Marks:</b> 40

## General Instructions:

1. All questions are compulsory.
2. This question paper contains 20 questions divided into five sections A, B, C, D and E.
3. Section A contains 10 MCQs of 1 mark each.
4. Section B contains 4 questions of 2 marks each.
5. Section C contains 3 questions of 3 marks each.
6. Section D contains 1 question of 5 marks.
7. Section E contains 2 Case Study Based questions of 4 marks each.

## SECTION A - Multiple Choice Questions (1 mark each)

**Q1.** The fraction 'three quarters' is written as:

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

**Q2.** Which of the following represents a proper fraction?

- (a)  $\frac{5}{3}$
- (b)  $\frac{7}{4}$
- (c)  $\frac{3}{5}$
- (d)  $\frac{9}{7}$

**Q3.** The mixed number  $2\frac{1}{3}$  as an improper fraction is:

- (a)  $\frac{5}{3}$
- (b)  $\frac{6}{3}$
- (c)  $\frac{7}{3}$
- (d)  $\frac{8}{3}$

**Q4.** How many halves are there in 3 wholes?

- (a) 2
- (b) 3
- (c) 6
- (d) 9

**Q5.** Which statement is correct?

- (a)  $\frac{1}{5} > \frac{1}{3}$
- (b)  $\frac{1}{4} > \frac{1}{6}$
- (c)  $\frac{1}{9} > \frac{1}{7}$
- (d)  $\frac{1}{10} > \frac{1}{2}$

**Q6.** The fraction wall shows that  $\frac{2}{4}$  is equal to:

- (a)  $\frac{1}{2}$
- (b)  $\frac{1}{4}$
- (c)  $\frac{3}{4}$
- (d)  $\frac{2}{8}$

**Q7.**  $\frac{2}{9} + \frac{4}{9} + \frac{3}{9} = ?$

- (a)  $\frac{9}{9}$
- (b)  $\frac{9}{27}$
- (c)  $\frac{2}{3}$
- (d)  $\frac{8}{9}$

**Q8.**  $\frac{7}{8} - \frac{3}{8} = ?$

- (a)  $\frac{4}{8}$
- (b)  $\frac{4}{16}$
- (c)  $\frac{10}{8}$
- (d)  $\frac{10}{16}$

**Q9.** Express  $\frac{36}{48}$  in its simplest form:

- (a)  $\frac{3}{4}$
- (b)  $\frac{6}{8}$
- (c)  $\frac{9}{12}$
- (d)  $\frac{18}{24}$

**Q10.** On a number line, which fraction lies between  $\frac{1}{2}$  and  $\frac{3}{4}$ ?

- (a)  $\frac{1}{4}$
- (b)  $\frac{5}{8}$
- (c)  $\frac{1}{8}$
- (d)  $\frac{7}{8}$

### SECTION B - Short Answer Questions (2 marks each)

**Q11.** In ancient India, the fraction  $\frac{3}{4}$  was referred to as 'tri-pada'. What does this mean and how is it used in colloquial Hindi and Tamil today?

**Q12.** Find three equivalent fractions for  $\frac{4}{6}$ .

**Q13.** Arrange in descending order:  $\frac{2}{3}$ ,  $\frac{5}{6}$ ,  $\frac{7}{12}$ ,  $\frac{3}{4}$

**Q14.** Write  $1\frac{3}{4}$  as a mixed fraction.

### SECTION C - Short Answer Questions (3 marks each)

**Q15.** Add:  $\frac{3}{4} + \frac{1}{3} + \frac{1}{5}$

**Q16.** Jeevika takes  $10\frac{1}{3}$  minutes to take a complete round of the park and her friend Namit takes  $13\frac{1}{4}$  minutes to do the same. Who takes less time and by how much?

**Q17.** Using Brahmagupta's method, add  $\frac{2}{3}$  and  $\frac{4}{5}$ . Explain each step clearly.

### SECTION D - Long Answer Question (5 marks)

**Q18.** A farmer has 3 fields. He plants wheat in  $\frac{2}{5}$  of the total land, rice in  $\frac{1}{3}$  of the total land, and vegetables in the remaining land.

- What fraction of the land is used for wheat and rice together?
- What fraction of the land is used for vegetables?
- If the total land is 15 acres, how many acres are used for each crop?
- Which crop covers the maximum area?
- Express all fractional answers in simplest form.

### SECTION E - Case Study Based Questions (4 marks each)

#### **Q19. Case Study 1: Fraction Wall Activity**

A teacher divides a rectangular strip representing 1 unit into various fractional parts. Students observe that:

- Three pieces of  $\frac{1}{6}$  equal one piece of  $\frac{1}{2}$
- Two pieces of  $\frac{1}{6}$  equal one piece of  $\frac{1}{3}$

- Write these observations as fraction equations. (1 mark)
- How many pieces of  $\frac{1}{6}$  will make  $\frac{5}{6}$ ? (1 mark)
- Are  $\frac{3}{6}$  and  $\frac{1}{2}$  equivalent fractions? Why? (1 mark)
- Write two more equivalent fractions for  $\frac{1}{2}$ . (1 mark)

#### **Q20. Case Study 2: Paper Folding Activity**

A student takes a strip of paper and folds it into two equal parts, then opens it. She observes that each part is  $\frac{1}{2}$  of the whole. She folds the previously-folded strip again into two equal parts and gets four equal parts, each representing  $\frac{1}{4}$ .

- If she folds it one more time, what fractional unit will she get? (1 mark)
- Write  $\frac{3}{4}$  as the sum of fractional units. (1 mark)
- How many times would she need to fold to get eighths? (1 mark)
- If the strip is 1 meter long, what is the length of each part after 3 folds? (1 mark)

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SECTION A - Answers to MCQs

**Ans 1.** (b)  $\frac{3}{4}$

'Three quarters' means 3 parts out of 4 equal parts, which is written as  $\frac{3}{4}$ .

**Ans 2.** (c)  $\frac{3}{5}$

A proper fraction has a numerator smaller than the denominator. Among the options, only  $\frac{3}{5}$  satisfies this condition ( $3 < 5$ ).

**Ans 3.** (c)  $\frac{7}{3}$

$$2\frac{1}{3} = (2 \times 3 + 1)/3 = (6+1)/3 = \frac{7}{3}$$

**Ans 4.** (c) 6

Each whole contains 2 halves. So 3 wholes contain  $3 \times 2 = 6$  halves.

**Ans 5.** (b)  $\frac{1}{4} > \frac{1}{6}$

Among unit fractions, the one with the smaller denominator is greater. Since  $4 < 6$ , we have  $\frac{1}{4} > \frac{1}{6}$ .

**Ans 6.** (a)  $\frac{1}{2}$

$$\frac{2}{4} = \frac{2 \div 2}{4 \div 2} = \frac{1}{2}. \text{ This can be visualized in a fraction wall.}$$

**Ans 7.** (a)  $\frac{9}{9}$

$$\frac{2}{9} + \frac{4}{9} + \frac{3}{9} = \frac{2+4+3}{9} = \frac{9}{9} = 1$$

**Ans 8.** (a)  $\frac{4}{8}$

$$\frac{7}{8} - \frac{3}{8} = \frac{7-3}{8} = \frac{4}{8} \text{ (or } \frac{1}{2} \text{ in simplest form)}$$

**Ans 9.** (a)  $\frac{3}{4}$

$$\frac{36}{48} = \frac{36 \div 12}{48 \div 12} = \frac{3}{4} \text{ (HCF of 36 and 48 is 12)}$$

**Ans 10.** (b)  $\frac{5}{8}$

$\frac{1}{2} = \frac{4}{8}$  and  $\frac{3}{4} = \frac{6}{8}$ . The fraction  $\frac{5}{8}$  lies between  $\frac{4}{8}$  and  $\frac{6}{8}$ .

SECTION B - Answers to Short Answer Questions

**Ans 11.**

'Tri-pada' means 'three fourths' or 'three quarters'.

In colloquial Hindi, it is called 'teen paav' (तीन पाव)

In Tamil, it is called 'mukkaal' (முக்கால்)

These words for fractions have been used in India since ancient times and continue to be used today in daily conversations, especially in markets and trade.

**Ans 12.**

Given fraction:  $\frac{4}{6}$

First simplifying:  $\frac{4}{6} = \frac{2}{3}$

Three equivalent fractions:

1.  $\frac{2}{3}$  (simplified form)
2.  $\frac{8}{12}$  (multiply numerator and denominator by 2)
3.  $\frac{12}{18}$  (multiply numerator and denominator by 3)

**Ans 13.**

To arrange in descending order, convert all to same denominator.

LCM of 3, 6, 12, and 4 = 12

$$\frac{2}{3} = \frac{8}{12}$$

$$\frac{5}{6} = \frac{10}{12}$$

$$\frac{7}{12} = \frac{7}{12}$$

$$\frac{3}{4} = \frac{9}{12}$$

Comparing:  $\frac{10}{12} > \frac{9}{12} > \frac{8}{12} > \frac{7}{12}$

Answer in descending order:  $\frac{5}{6}, \frac{3}{4}, \frac{2}{3}, \frac{7}{12}$

**Ans 14.**

$$\frac{13}{4}$$

Step 1: Divide numerator by denominator

$$13 \div 4 = 3 \text{ with remainder } 1$$

Step 2: Write as mixed fraction

$$\frac{13}{4} = 3\frac{1}{4}$$

Answer:  $3\frac{1}{4}$

**SECTION C - Answers to Short Answer Questions****Ans 15.**

$$\frac{3}{4} + \frac{1}{3} + \frac{1}{5}$$

Step 1: Find LCM of 4, 3, and 5

$$\text{LCM} = 60$$

Step 2: Convert all fractions to denominator 60

$$\frac{3}{4} = \frac{45}{60}$$

$$\frac{1}{3} = \frac{20}{60}$$

$$1/5 = 12/60$$

Step 3: Add

$$45/60 + 20/60 + 12/60 = 77/60$$

Step 4: Convert to mixed fraction

$$77/60 = 1^{17}/60$$

Answer:  $1^{17}/60$

### Ans 16.

Jeevika's time =  $10/3$  minutes

Namit's time =  $13/4$  minutes

Step 1: Convert to same denominator

LCM of 3 and 4 = 12

Jeevika:  $10/3 = 40/12$  minutes

Namit:  $13/4 = 39/12$  minutes

Step 2: Compare

Since  $39/12 < 40/12$ , Namit takes less time

Step 3: Find difference

$$40/12 - 39/12 = 1/12 \text{ minutes}$$

Answer: Namit takes less time by  $1/12$  minutes

### Ans 17.

#### **Brahmagupta's Method for Adding Fractions:**

Given:  $2/3 + 4/5$

**Step 1:** Find equivalent fractions with same denominator

The denominators are 3 and 5.

Find LCM of 3 and 5 = 15

**Step 2:** Convert to equivalent fractions

$$2/3 = 2 \times 5 / 3 \times 5 = 10/15$$

$$4/5 = 4 \times 3 / 5 \times 3 = 12/15$$

**Step 3:** Add numerators, keep same denominator

$$10/15 + 12/15 = 10+12/15 = 22/15$$

**Step 4:** Express in mixed form if needed

$$22/15 = 1^{7}/15$$

Answer:  $22/15$  or  $1^{7}/15$

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## SECTION D - Answer to Long Answer Question

### Ans 18.

**(a) Fraction of land for wheat and rice together:**

$$\text{Wheat} = \frac{2}{5}$$

$$\text{Rice} = \frac{1}{3}$$

$$\text{Together} = \frac{2}{5} + \frac{1}{3}$$

$$\text{LCM of 5 and 3} = 15$$

$$= \frac{6}{15} + \frac{5}{15} = \frac{11}{15}$$

**(b) Fraction for vegetables:**

$$\text{Total land} = 1$$

$$\text{Vegetables} = 1 - \frac{11}{15} = \frac{15}{15} - \frac{11}{15} = \frac{4}{15}$$

**(c) Land in acres for each crop:**

$$\text{Total land} = 15 \text{ acres}$$

$$\text{Wheat} = \frac{2}{5} \times 15 = 6 \text{ acres}$$

$$\text{Rice} = \frac{1}{3} \times 15 = 5 \text{ acres}$$

$$\text{Vegetables} = \frac{4}{15} \times 15 = 4 \text{ acres}$$

**(d) Crop with maximum area:**

$$\text{Comparing: } 6 \text{ acres} > 5 \text{ acres} > 4 \text{ acres}$$

Wheat covers the maximum area with 6 acres

**(e) All fractional answers in simplest form:**

Wheat and rice together:  $\frac{11}{15}$  (already in simplest form)

Vegetables:  $\frac{4}{15}$  (already in simplest form)

## SECTION E - Answers to Case Study Based Questions

### Ans 19. Case Study 1: Fraction Wall Activity

**(a) Fraction equations:**

$$\bullet 3 \times \frac{1}{6} = \frac{1}{2} \text{ or } \frac{3}{6} = \frac{1}{2}$$

$$\bullet 2 \times \frac{1}{6} = \frac{1}{3} \text{ or } \frac{2}{6} = \frac{1}{3}$$

**(b) Pieces needed for  $\frac{5}{6}$ :**

$$\frac{5}{6} = 5 \times \frac{1}{6}$$

So, 5 pieces of  $\frac{1}{6}$  will make  $\frac{5}{6}$

**(c) Are  $\frac{3}{6}$  and  $\frac{1}{2}$  equivalent?**

Yes, they are equivalent fractions.

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

They represent the same length on the fraction wall.

**(d) Two more equivalent fractions for  $\frac{1}{2}$ :**

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

2.  $\frac{4}{8}$

(Other valid answers:  $\frac{5}{10}$ ,  $\frac{6}{12}$ , etc.)

### Ans 20. Case Study 2: Paper Folding Activity

**(a) Fractional unit after one more fold:**

After 1st fold:  $\frac{1}{2}$

After 2nd fold:  $\frac{1}{4}$

After 3rd fold:  $\frac{1}{8}$

She will get the fractional unit  $\frac{1}{8}$

**(b)  $\frac{3}{4}$  as sum of fractional units:**

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

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

**(c) Number of folds for eighths:**

Each fold doubles the number of parts:

1 fold → 2 parts (halves)

2 folds → 4 parts (quarters)

3 folds → 8 parts (eighths)

She would need to fold 3 times to get eighths

**(d) Length after 3 folds:**

Original strip = 1 meter

After 3 folds, there are 8 equal parts

Length of each part =  $\frac{1}{8}$  meter or 0.125 meters or 12.5 cm

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