NAPLAN Fractions & Decimals Demystified

Year 5

A Complete Guide to Mastering Fractions and Decimals

Designed for NAPLAN Success

What You'll Learn:

- Understanding fractions and decimals
- Converting between different forms
- Comparing and ordering
- Real-world applications
- NAPLAN-style practice questions

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Chapter 1: Introduction to Fractions

What is a Fraction?

A fraction represents a part of a whole. It shows how many equal parts we have out of the total number of equal parts.

A fraction has two parts:

- **Numerator** - the top number (tells us how many parts we have)
- **Denominator** - the bottom number (tells us how many equal parts the whole is divided into)

Example: Understanding 3/4

In the fraction 3/4:

- 3 is the numerator (we have 3 parts)
- 4 is the denominator (the whole is divided into 4 equal parts)

This means we have 3 out of 4 equal parts.

Practice Questions

1. In the fraction 2/5, what is the numerator?

Answer: 2

2. In the fraction 7/8, what is the denominator?

Answer: 8

3. Write a fraction that represents 5 out of 9 equal parts.

Answer: 5/9

4. If a pizza is cut into 6 equal slices and you eat 2 slices, what fraction of the pizza did you eat?

Answer: 2/6 (which can be simplified to 1/3)

Chapter 2: Types of Fractions

Proper Fractions

The numerator is smaller than the denominator.

Value is less than 1.

`1/2, 3/4, 5/8`

Improper Fractions

The numerator is greater than or equal to the denominator.

Value is greater than or equal to 1.

`5/4, 7/3, 9/9`

Mixed Numbers

A whole number and a proper fraction combined.

Another way to write improper fractions.

`1 1/2, 2 3/4`

Converting Between Improper Fractions and Mixed Numbers

Improper Fraction → Mixed Number

Convert `7/3`:

1. Divide: 7 ÷ 3 = 2 remainder 1
2. Whole number = 2
3. Remainder becomes new numerator = 1
4. Denominator stays the same = 3
5. Answer: `2 1/3`

Mixed Number → Improper Fraction

Convert `3 2/5`:

1. Multiply whole number by denominator: 3 × 5 = 15
2. Add the numerator: 15 + 2 = 17
3. Keep the same denominator: 5
4. Answer: `17/5`

Practice Questions

1. Is `4/7` a proper or improper fraction?

Answer: Proper fraction (4 < 7)

4. Which is larger: `5/3` or `1`?

Answer: 5/3 (it equals 1 2/3)

2. Convert 9/4 to a mixed number.

Answer: 2 1/4

5. Write 2 4/9 as an improper fraction.

Answer: 22/9

3. Convert 1 3/8 to an improper fraction.

Answer: 11/8

6. Convert 13/5 to a mixed number.

Answer: 2 3/5

Chapter 3: Equivalent Fractions

What are Equivalent Fractions?

Equivalent fractions are fractions that represent the same amount or value, even though they look different.

For example: `1/2 = 2/4 = 3/6 = 4/8`

Finding Equivalent Fractions

Method 1: Multiply

To find an equivalent fraction, multiply both numerator and denominator by the same number.

```
1/3 × 2/2 = 2/6
1/3 × 4/4 = 4/12
1/3 × 5/5 = 5/15
```

Method 2: Divide (Simplify)

To simplify a fraction, divide both numerator and denominator by the same number.

```
6/8 ÷ 2/2 = 3/4
10/15 ÷ 5/5 = 2/3
12/16 ÷ 4/4 = 3/4
```

Finding the Simplest Form

To write a fraction in its simplest form, find the greatest common factor (GCF) of the numerator and denominator, then divide both by this number.

Example: Simplify 12/18

1. Find factors of 12: 1, 2, 3, 4, 6, 12

2. Find factors of 18: 1, 2, 3, 6, 9, 18
3. Greatest common factor: 6
4. Divide both by 6: `12÷6/18÷6 = 2/3`

Practice Questions

1. Find an equivalent fraction for `2/5` with denominator 15.

Answer: 6/15 (multiply by 3/3)

2. Simplify `8/12`.

Answer: 2/3 (divide by 4/4)

3. Are `3/4` and `9/12` equivalent?

Answer: Yes (9/12 = 3/4 when simplified)

4. Find three equivalent fractions for `1/4`.

Answer: 2/8, 3/12, 4/16 (among others)

5. Simplify `15/20`.

Answer: 3/4 (divide by 5/5)

6. Which fraction is equivalent to `2/3`? A) 4/6 B) 3/4 C) 6/8

Answer: A) 4/6

7. Write `6/9` in simplest form.

Answer: 2/3 (divide by 3/3)

8. Find an equivalent fraction for `5/6` with numerator 15.

Answer: 15/18 (multiply by 3/3)

Chapter 4: Comparing Fractions

Strategies for Comparing Fractions

Same Denominators

Compare the numerators directly.

$$3/7 < 5/7$$

Same Numerators

The fraction with the smaller denominator is larger.

$$3/4 > 3/5$$

Comparing Different Fractions

Method 1: Find Common Denominators

Compare `2/3` and `3/4`:

1. Find common denominator: 12 (LCM of 3 and 4)
2. Convert: `2/3 = 8/12` and `3/4 = 9/12`
3. Compare: `8/12 < 9/12`
4. Therefore: `2/3 < 3/4`

Method 2: Convert to Decimals

Compare `3/5` and `7/10`:

1. `3/5 = 3 ÷ 5 = 0.6`
2. `7/10 = 7 ÷ 10 = 0.7`
3. Compare: 0.6 < 0.7
4. Therefore: `3/5 < 7/10`

Ordering Fractions

To order fractions from smallest to largest:

1. Find a common denominator for all fractions
2. Convert all fractions to equivalent fractions with this denominator
3. Order by comparing numerators
4. Write the answer using the original fractions

Example: Order `1/2, 2/3, 3/8` from smallest to largest

Common denominator: 24

`1/2 = 12/24, 2/3 = 16/24, 3/8 = 9/24`

Order: `9/24 < 12/24 < 16/24`

Answer: `3/8 < 1/2 < 2/3`

Practice Questions

1. Which is larger: `4/9` or `5/9`?

Answer: 5/9 (same denominator, compare numerators)

5. Compare: `3/4 ○ 5/6` (use <, >, or =)

Answer: 3/4 < 5/6 (9/12 < 10/12)

2. Which is larger: 2/5 or 3/7?

Answer: 3/7 (14/35 vs 15/35)

6. Order from largest to smallest: 2/3, 3/5, 7/10

Answer: 7/10 > 2/3 > 3/5

3. Order from smallest to largest: 1/3, 1/2, 1/4

Answer: 1/4 < 1/3 < 1/2

7. Which fraction is closest to 1: 7/8, 9/10, 5/6?

Answer: 9/10 (only 1/10 away from 1)

4. Which is smaller: 7/8 or 6/7?

Answer: 6/7 (49/56 vs 48/56)

8. Is 4/5 greater than 0.75?

Answer: Yes (4/5 = 0.8, and 0.8 > 0.75)

Chapter 5: Adding Fractions

Rules for Adding Fractions

Same Denominators

Add the numerators, keep the denominator the same.

$$2/7 + 3/7 = 5/7$$

Different Denominators

Find common denominators first, then add.

$$1/3 + 1/6 = 2/6 + 1/6 = 3/6$$

Step-by-Step Examples

Example 1: Same Denominators

Calculate: 3/8 + 2/8

1. The denominators are the same (8)
2. Add the numerators: 3 + 2 = 5
3. Keep the denominator: 8
4. Answer: 5/8

Example 2: Different Denominators

Calculate: 1/4 + 1/6

1. Find common denominator: LCM of 4 and 6 = 12

2. Convert fractions: $1/4 = 3/12$ and $1/6 = 2/12$
3. Add: $3/12 + 2/12 = 5/12$
4. Check if answer can be simplified: $5/12$ is already in simplest form

Example 3: Mixed Numbers

Calculate: $1\ 2/5 + 2\ 1/3$

1. Add whole numbers: 1 + 2 = 3
2. Add fractions: $2/5 + 1/3$
3. Common denominator: 15
4. Convert: $6/15 + 5/15 = 11/15$
5. Answer: $3\ 11/15$

NAPLAN Tips for Adding Fractions

- Always check if your answer can be simplified
- If adding results in an improper fraction, convert to a mixed number
- When adding mixed numbers, sometimes the fraction part exceeds 1 - remember to carry over
- Double-check by estimating: $1/3 + 1/4$ should be between 1/2 and 1

Practice Questions

1. $2/9 + 4/9 = ?$

Answer: 6/9 = 2/3

2. $1/3 + 1/4 = ?$

Answer: 4/12 + 3/12 = 7/12

3. $3/5 + 1/10 = ?$

Answer: 6/10 + 1/10 = 7/10

4. $2\ 1/4 + 1\ 1/8 = ?$

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

Answer: 4/8 + 3/8 = 7/8

7. $2/7 + 3/14 = ?$

Answer: 4/14 + 3/14 = 7/14 = 1/2

8. $1\ 3/5 + 2\ 4/5 = ?$

Answer: 3 + 7/5 = 3 + 1 2/5 = 4 2/5

9. $3/4 + 1/6 = ?$

Answer: 3 + 2/8 + 1/8 = 3 3/8

Answer: 9/12 + 2/12 = 11/12

5. `5/6 + 2/3 = ?`

Answer: 5/6 + 4/6 = 9/6 = 1 1/2

10. `4/5 + 3/10 = ?`

Answer: 8/10 + 3/10 = 11/10 = 1 1/10

Chapter 6: Subtracting Fractions

Rules for Subtracting Fractions

Same Denominators

Subtract the numerators, keep the denominator the same.

$$5/8 - 2/8 = 3/8$$

Different Denominators

Find common denominators first, then subtract.

$$3/4 - 1/6 = 9/12 - 2/12 = 7/12$$

Step-by-Step Examples

Example 1: Same Denominators

Calculate: `7/10 - 3/10`

1. The denominators are the same (10)
2. Subtract the numerators: 7 - 3 = 4
3. Keep the denominator: 10
4. Simplify if possible: `4/10 = 2/5`

Example 2: Different Denominators

Calculate: `2/3 - 1/4`

1. Find common denominator: LCM of 3 and 4 = 12
2. Convert fractions: `2/3 = 8/12` and `1/4 = 3/12`
3. Subtract: `8/12 - 3/12 = 5/12`
4. `5/12` is already in simplest form

Example 3: Mixed Numbers (Borrowing Required)

Calculate: `3 1/4 - 1 3/4`

1. Notice: Can't subtract 3/4 from 1/4
2. Borrow 1 from 3: `3 1/4 = 2 5/4`
3. Now subtract: `2 5/4 - 1 3/4`
4. Whole numbers: 2 - 1 = 1
5. Fractions: `5/4 - 3/4 = 2/4 = 1/2`
6. Answer: `1 1/2`

Borrowing in Mixed Numbers

When the fraction part of the first mixed number is smaller than the fraction part of the second mixed number, you need to "borrow" from the whole number part.

Example: `4 2/9 - 2 5/9`

1. Can't subtract 5/9 from 2/9
2. Borrow 1 whole (which equals 9/9) from 4
3. `4 2/9 = 3 11/9` (because 9/9 + 2/9 = 11/9)
4. Now subtract: `3 11/9 - 2 5/9 = 1 6/9 = 1 2/3`

Practice Questions

1. `8/9 - 3/9 = ?`

Answer: 5/9

2. `3/4 - 1/8 = ?`

Answer: 6/8 - 1/8 = 5/8

3. `5/6 - 1/3 = ?`

Answer: 5/6 - 2/6 = 3/6 = 1/2

4. `2 3/5 - 1 1/5 = ?`

Answer: 1 2/5

5. `4 - 2 3/7 = ?`

6. `7/8 - 3/4 = ?`

Answer: 7/8 - 6/8 = 1/8

7. `3 1/6 - 1 2/3 = ?`

Answer: 3 1/6 - 1 4/6 = 1 3/6 = 1 1/2

8. `5 2/9 - 3 5/9 = ?`

Answer: 4 11/9 - 3 5/9 = 1 6/9 = 1 2/3

9. `9/10 - 2/5 = ?`

Answer: 9/10 - 4/10 = 5/10 = 1/2

10. `6 - 2 3/8 = ?`

Answer: 1 4/7	Answer: 5 8/8 - 2 3/8 = 3 5/8

Chapter 7: Introduction to Decimals

What are Decimals?

Decimals are another way to represent parts of a whole. They use a decimal point (.) to separate the whole number part from the fractional part.

Decimals are based on powers of 10, making them easier to add, subtract, and compare than fractions.

Understanding Decimal Notation

Reading Decimals

`0.7` reads as "seven tenths"

`0.05` reads as "five hundredths"

`2.3` reads as "two and three tenths"

`0.25` reads as "twenty-five hundredths"

`1.45` reads as "one and forty-five hundredths"

`0.006` reads as "six thousandths"

Common Decimal-Fraction Equivalents

`1/2 = 0.5`	`1/4 = 0.25`	`3/4 = 0.75`	`1/5 = 0.2`
`1/10 = 0.1`	`2/5 = 0.4`	`3/5 = 0.6`	`4/5 = 0.8`

Money and Decimals

Money is the most common use of decimals in everyday life. Understanding money helps with decimal concepts.

Australian Currency Examples:

- $2.50 = 2 dollars and 50 cents
- $0.05 = 5 cents
- $1.25 = 1 dollar and 25 cents

- $10.75 = 10 dollars and 75 cents

Remember: The decimal point separates dollars from cents, just like it separates whole numbers from parts of whole numbers.

Practice Questions

1. Write 3/10 as a decimal.

Answer: 0.3

2. Write 7/100 as a decimal.

Answer: 0.07

3. How do you read 0.6?

Answer: Six tenths

4. Write "four and two tenths" as a decimal.

Answer: 4.2

5. Write $3.45 in words.

Answer: Three dollars and forty-five cents

6. Write 25/100 as a decimal.

Answer: 0.25

7. Which is larger: 0.7 or 0.70?

Answer: They are equal (0.7 = 0.70)

8. Write 1 3/10 as a decimal.

Answer: 1.3

9. How many tenths are in 0.8?

Answer: 8 tenths

10. Write "fifteen hundredths" as a decimal.

Answer: 0.15

Chapter 8: Decimal Place Value

Understanding Place Value in Decimals

Just like whole numbers, each digit in a decimal has a specific place value. The decimal point separates the whole number places from the decimal places.

Place Value Chart

Hundreds	Tens	Ones	.	Tenths	Hundredths	Thousandths
2	4	7	.	3	5	6

The number 247.356 = 200 + 40 + 7 + 0.3 + 0.05 + 0.006

Comparing Decimals

Steps to Compare Decimals

1. Line up the decimal points
2. Add zeros to make both numbers have the same number of decimal places
3. Compare digit by digit from left to right
4. The first different digit determines which is larger

Example: Compare 0.6 and 0.58

1. Line up: 0.6 and 0.58

2. Add zeros: 0.60 and 0.58

3. Compare: In the tenths place, 6 > 5

4. Therefore: 0.6 > 0.58

Rounding Decimals

Rounding decimals follows the same rules as rounding whole numbers:

Rounding Rules:

- If the digit to the right is 5 or more, round up
- If the digit to the right is less than 5, round down

Examples:

- Round 3.27 to the nearest tenth: 3.3 (7 ≥ 5, so round up)
- Round 2.43 to the nearest tenth: 2.4 (3 < 5, so round down)
- Round 0.68 to the nearest whole number: 1 (6 ≥ 5, so round up)

Practice Questions

1. What is the value of the digit 7 in 12.74?

Answer: 7 tenths or 0.7

6. Write 6.08 in expanded form.

Answer: 6 + 0.08 or 6 + 8/100

2. Compare: 0.8 ○ 0.79 (use <, >, or =)

Answer: 0.8 > 0.79 (0.80 > 0.79)

7. Round 2.95 to the nearest whole number.

Answer: 3

3. Round 4.67 to the nearest tenth.

Answer: 4.7

8. Which is larger: 0.3 or 0.30?

Answer: They are equal

4. What is the place value of 3 in 56.13?

Answer: Hundredths

9. What digit is in the thousandths place in 7.269?

Answer: 9

5. Order from smallest to largest: 0.5, 0.05, 0.55

Answer: 0.05, 0.5, 0.55

10. Round 8.24 to the nearest tenth.

Answer: 8.2

Chapter 9: Converting Between Fractions and Decimals

Why Convert Between Fractions and Decimals?

Sometimes fractions are easier to work with, and sometimes decimals are. Being able to convert between them helps you choose the best form for each situation.

NAPLAN often asks questions that require converting between these forms.

Converting Fractions to Decimals

Method 1: Division

Divide the numerator by the denominator.

Method 2: Equivalent Fractions

Convert to a fraction with denominator 10, 100, or 1000.

```
3/4 = 3 ÷ 4 = 0.75
1/8 = 1 ÷ 8 = 0.125
7/10 = 7 ÷ 10 = 0.7
```

```
3/5 = 6/10 = 0.6
1/4 = 25/100 = 0.25
2/5 = 4/10 = 0.4
```

Converting Decimals to Fractions

Step-by-Step Process

1. Count the number of decimal places
2. Write the decimal as a fraction with denominator 10, 100, or 1000
3. Simplify the fraction if possible

Example: 0.6

1. 1 decimal place
2. `6/10`
3. `3/5` (÷2)

Example: 0.25

1. 2 decimal places
2. `25/100`
3. `1/4` (÷25)

Example: 0.125

1. 3 decimal places
2. `125/1000`
3. `1/8` (÷125)

Important Equivalents to Memorise

These common fraction–decimal equivalents appear frequently in NAPLAN:

`1/2 = 0.5`	`1/4 = 0.25`	`3/4 = 0.75`	`1/5 = 0.2`
`2/5 = 0.4`	`3/5 = 0.6`	`4/5 = 0.8`	`1/10 = 0.1`

Practice Questions

1. Convert `3/5` to a decimal.

Answer: 0.6

6. Convert 0.125 to a fraction in simplest form.

Answer: 1/8

2. Convert 0.3 to a fraction in simplest form.

7. Convert `9/10` to a decimal.

Answer: 3/10

Answer: 0.9

3. Convert 7/8 to a decimal.

Answer: 0.875

8. Convert 0.45 to a fraction in simplest form.

Answer: 9/20

4. Convert 0.75 to a fraction in simplest form.

Answer: 3/4

9. Convert 1 3/4 to a decimal.

Answer: 1.75

5. Which is larger: 2/3 or 0.7?

Answer: 0.7 (2/3 ≈ 0.67, and 0.7 > 0.67)

10. Order from smallest to largest: 1/2, 0.6, 3/5

Answer: 1/2, 3/5, 0.6 (0.5, 0.6, 0.6)

Chapter 10: NAPLAN Practice Tests

Test-Taking Strategies

- Read each question carefully and identify what is being asked
- Look for key words like "simplest form," "mixed number," or "decimal"
- Check your answers by converting back or using estimation
- Use the multiple-choice options to check your work
- If stuck, eliminate obviously wrong answers first
- Show your working for partial credit

Practice Test 1: Mixed Review

1. Which fraction is equivalent to 2/3?

A) 4/5 B) 6/9 C) 3/4 D) 5/8

Answer: B) 6/9

6. Convert 0.25 to a fraction in simplest form.

A) 25/100 B) 1/4 C) 2/5 D) 5/20

Answer: B) 1/4

2. Convert 3/5 to a decimal.

A) 0.35 B) 0.53 C) 0.6 D) 0.65

Answer: C) 0.6

7. Calculate: 5/6 - 1/3

A) 4/3 B) 1/2 C) 2/6 D) 4/6

Answer: B) 1/2 (5/6 - 2/6 = 3/6 = 1/2)

3. Calculate: 1/4 + 1/8

A) 2/12 B) 3/8 C) 1/6 D) 2/8

Answer: B) 3/8

8. What is 2 3/4 as an improper fraction?

A) 9/4 B) 11/4 C) 8/4 D) 10/4

Answer: B) 11/4

4. Which is largest?

A) 0.7 B) 3/4 C) 0.72 D) 7/10

Answer: B) 3/4 (0.75)

9. Round 3.67 to the nearest tenth.

A) 3.6 B) 3.7 C) 4.0 D) 3.0

Answer: B) 3.7

5. Simplify: 12/16

A) 6/8 B) 4/6 C) 3/4 D) 2/3

Answer: C) 3/4

10. Order from smallest to largest: 1/3, 0.4, 2/5

A) 0.4, 1/3, 2/5 B) 1/3, 0.4, 2/5 C) 2/5, 0.4, 1/3 D) 1/3, 2/5, 0.4

Answer: B) 1/3, 0.4, 2/5

Practice Test 2: Real-World Problems

1. Sarah ate 1/4 of a pizza and Tom ate 3/8 of the same pizza. How much pizza did they eat altogether?

Answer: 1/4 + 3/8 = 2/8 + 3/8 = 5/8 of the pizza

2. A recipe calls for 2.5 cups of flour. How would you write this as a mixed number?

Answer: 2 1/2 cups (2.5 = 2 5/10 = 2 1/2)

3. In a class of 20 students, 0.75 of them passed the test. How many students passed?

Answer: 0.75 × 20 = 15 students (0.75 = 3/4, and 3/4 of 20 = 15)

4. Jamie has $4.50. She spends 2/3 of her money. How much does she spend?

Answer: 2/3 of $4.50 = 2/3 × 4.50 = $3.00

5. A ribbon is 1.25 metres long. Express this length as a mixed number in simplest form.

Answer: 1 1/4 metres (1.25 = 1 25/100 = 1 1/4)

6. Three friends share a chocolate bar equally. If each person gets 2/9 of the bar, how much of the chocolate bar is left?

Answer: 1 - (3 × 2/9) = 1 - 6/9 = 1 - 2/3 = 1/3 of the bar

7. A race is 2.4 kilometres long. What is this distance as a mixed number in simplest form?

Answer: 2 2/5 kilometres (2.4 = 2 4/10 = 2 2/5)

8. Emma drinks 3/4 litre of water in the morning and 0.5 litre in the afternoon. How much water does she drink in total?

Answer: 3/4 + 0.5 = 3/4 + 1/2 = 3/4 + 2/4 = 5/4 = 1 1/4 litres

9. A bag of lollies weighs 0.375 kg. Write this weight as a fraction in simplest form.

Answer: 3/8 kg (0.375 = 375/1000 = 3/8)

10. Alex completes 5/8 of his homework before dinner and 0.25 after dinner. What fraction of his homework has he completed?

Answer: 5/8 + 0.25 = 5/8 + 1/4 = 5/8 + 2/8 = 7/8 of his homework

Quick Reference Guide

Common Equivalents

```
1/2 = 0.5 = 50%
1/4 = 0.25 = 25%
3/4 = 0.75 = 75%
1/5 = 0.2 = 20%
1/10 = 0.1 = 10%
```

Key Formulas

Fraction to decimal: numerator ÷ denominator

Decimal to fraction: use place value

Adding fractions: find common denominator

Comparing: convert to same form

Simplifying: divide by GCF

Congratulations!

You've completed your journey through fractions and decimals!

Remember to practice regularly and use these skills in everyday situations to strengthen your understanding.

Final NAPLAN Tips

- Read questions carefully and identify what form the answer should be in
- Show your working steps clearly
- Check your answers using estimation or conversion
- Practice timing yourself with similar questions
- Stay calm and work systematically through each problem