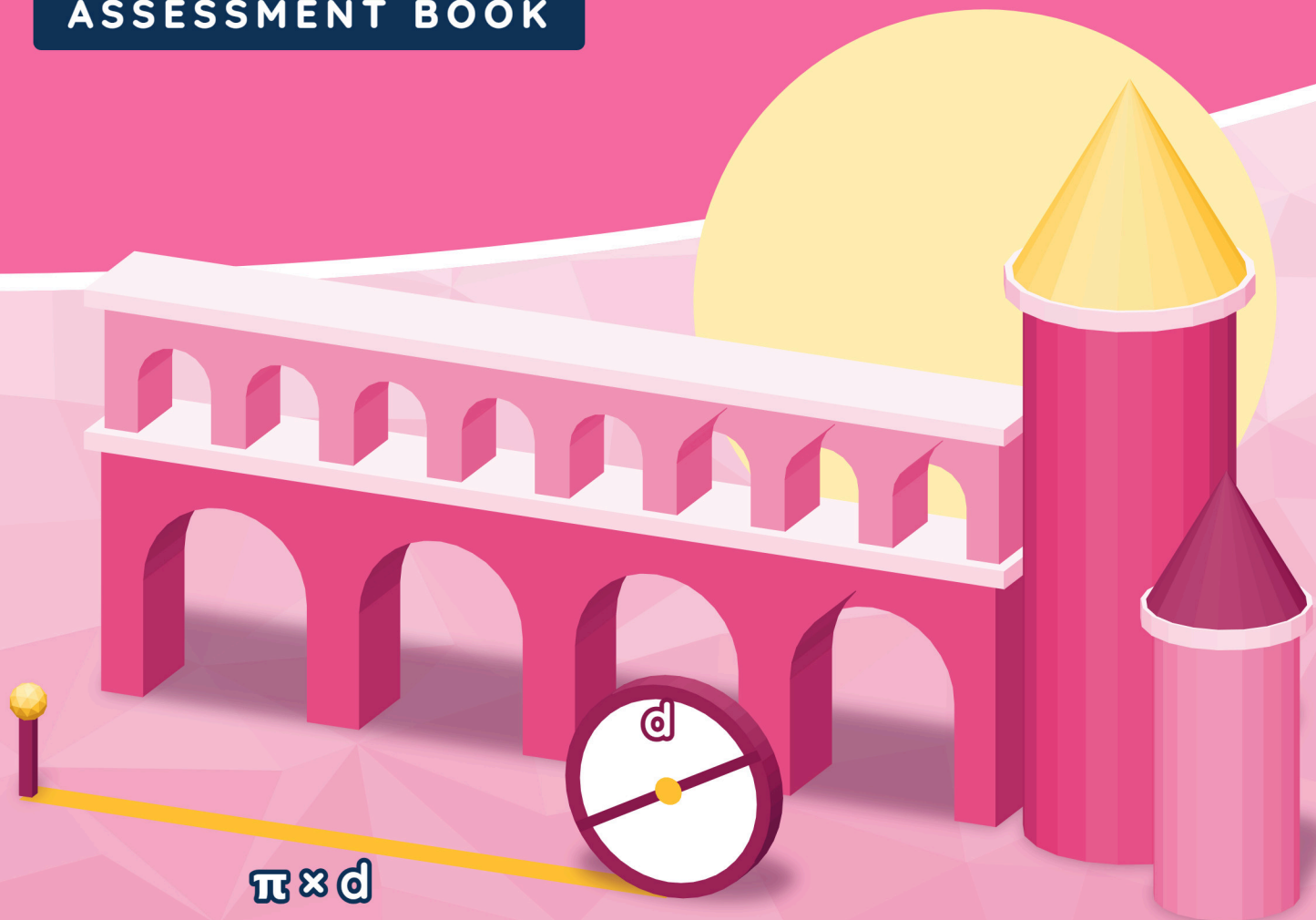
The Singapore Syllabus

ALIGNED TO THE LATEST 2027 EDITION MOE SYLLABUS

Primary 6 Mathematics

PSLE YEAR

ASSESSMENT BOOK



- **Notes** with worked examples
- **Practice questions** for every chapter
- **Answers** with full working
- **A full practice exam** with mark scheme

8 chapters **360** pages **284** questions

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CHAPTER 1

Fractions: Division

Part 1: Notes and Worked Examples



In the notes

31 ideas. Read each idea and its worked example, then try the Try This question before you check its answer. The practice questions start on page 24.

- Dividing Fractions: What It Means
- Dividing a Fraction by a Whole Number
- Model: Sharing a Fraction
- Rule for Fraction ÷ Whole Number
- Another Way: Multiply by the Reciprocal
- Dividing a Whole Number by a Fraction
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- Worked Example: Sharing Food Equally
- Worked Example: How Many Portions?
- Two-Step Fraction Problems
- Worked Example: Two-Step Problem
- Mixing the Four Operations
- Order of Working in Mixed Problems
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- Worked Example: Capacity Problem
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- Problem Solving Strategy: Work Backwards
- Final Checklist Before Submitting
- Formulas to Remember

Name: _____ Class: _____ Date: _____

PRIMARY 6 · MATHEMATICS · FRACTIONS: DIVISION

Fractions: Division

Theory and worked examples

Dividing Fractions: What It Means

Division means sharing equally or finding how many groups fit into an amount. With whole numbers, 12 ÷ 4 asks how many groups of 4 are in 12. With fractions, we ask the same question, but the amount or the group size is now a fraction. This idea carries through every type of fraction division.

KEY IDEA
Division finds how many equal groups, or the size of each equal share.

- 12 ÷ 4 = 3 groups of 4 in 12
- Sharing: $\frac{1}{2}$ shared by 2 people
- Grouping: how many $\frac{1}{4}$ in 2

TRY THIS
What does 10 ÷ 2 ask us to find?

Answer: How many groups of 2 are in 10

Dividing a Fraction by a Whole Number

When we divide a proper fraction by a whole number, we are sharing that fraction into more equal parts. For example, $\frac{1}{3} \div 2$ means sharing $\frac{1}{3}$ of a cake between 2 people. Each person gets a smaller piece than $\frac{1}{3}$, so the answer must be smaller than the fraction we started with.

KEY IDEA

A proper fraction divided by a whole number gives an even smaller fraction.

WORDS TO KNOW

proper fraction	A fraction smaller than 1, where the numerator is less than the denominator

TRY THIS

Will $\frac{1}{4} \div 3$ be bigger or smaller than $\frac{1}{4}$?

Answer: Smaller

Model: Sharing a Fraction

Picture a strip of paper standing for $\frac{1}{3}$. If we cut this $\frac{1}{3}$ strip into 2 equal pieces, each piece is $\frac{1}{6}$ of the whole strip. This happens because cutting the numerator's 1 part into 2 means we now have 2 times as many equal parts in the whole strip, so the denominator becomes 3×2.

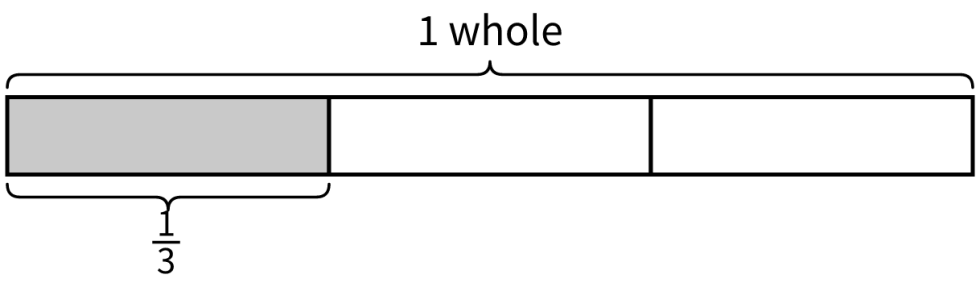
KEY IDEA

Fraction ÷ whole number: keep the numerator, multiply the denominator.

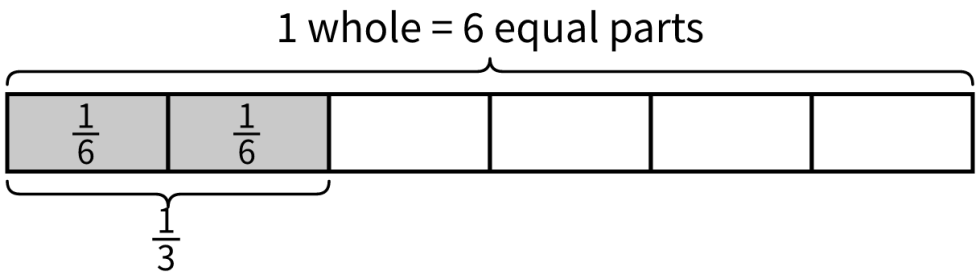
WORKED EXAMPLE

Find $\frac{1}{3} \div 2$.

1. Draw a strip for 1 whole, cut it into thirds and shade $\frac{1}{3}$.



2. Cut the shaded part into 2 equal pieces. Cut the other thirds the same way, so the whole strip has $3 \times 2 = 6$ equal parts.



3. Each small piece is $\frac{1}{6}$ of the whole strip.
4. So $\frac{1}{3} \div 2 = \frac{1}{6}$.

$\frac{1}{6}$

Rule for Fraction ÷ Whole Number

There is a quicker way than drawing every time. To divide a proper fraction by a whole number, multiply the denominator by that whole number and keep the numerator the same. Always check if the final answer can be written in simplest form before giving it as the answer.

- Keep the numerator unchanged
- Multiply the denominator by the whole number
- Simplify the fraction if possible

WORKED EXAMPLE

Find $\frac{3}{4} \div 6$.

1. Multiply denominator: $4 \times 6 = 24$.
2. Keep numerator: 3.
3. $\frac{3}{24}$ simplifies by dividing by 3.
4. $\frac{3}{24} = \frac{1}{8}$.

$\frac{1}{8}$

TRY THIS

Find $\frac{2}{5} \div 4$ in simplest form.

Answer: $\frac{1}{10}$

Another Way: Multiply by the Reciprocal

Dividing by a whole number gives the same answer as multiplying by its reciprocal, which is $\frac{1}{\text{that number}}$. This method is useful because it links division of fractions to multiplication, which pupils already know well from earlier topics in the fraction chapter.

KEY IDEA

Dividing by a number is the same as multiplying by its reciprocal.

WORDS TO KNOW

reciprocal	A number flipped upside down, so numerator and denominator swap places

WORKED EXAMPLE

Find $\frac{5}{6} \div 3$ using the reciprocal method.

1. Reciprocal of 3 is $\frac{1}{3}$.
2. $\frac{5}{6} \div 3$ becomes $\frac{5}{6} \times \frac{1}{3}$.
3. Multiply numerators: $5 \times 1 = 5$.
4. Multiply denominators: $6 \times 3 = 18$.
5. Answer is $\frac{5}{18}$.

$\frac{5}{18}$

Name: _____ Class: _____ Date: _____

PRIMARY 6 · MATHEMATICS · FRACTIONS: DIVISION

Fractions: Division

INSTRUCTIONS

- 29 questions, 63 marks in total.
- Answer all questions in the spaces provided.
- Show your working clearly. Marks are given for correct working.

Section A: Multiple Choice

Write the letter of the correct answer in the brackets.

1 What is the missing number?

$3\frac{4}{5} = \frac{\square}{5}$ ( ) [1]

(A) 13 (B) 15 (C) 19 (D) 23

2 A box contains red, blue and yellow beads. $\frac{1}{4}$ of the beads are red. There are twice as many blue beads as yellow beads. What fraction of the beads in the box are blue? ( ) [1]

(A) $\frac{1}{4}$ (B) $\frac{1}{2}$ (C) $\frac{3}{4}$ (D) $\frac{1}{8}$

3 Daniel spent \$36 of his money on a gift and $\frac{1}{3}$ of the remaining money on a book. In the end, he had $\frac{1}{2}$ of his money left. How much money did Daniel have at first? ( ) [2]

(A) \$36 (B) \$72 (C) \$108 (D) \$144

4 There were some children at a carnival. $\frac{1}{4}$ of the boys and $\frac{1}{3}$ of the girls went for a ride. $\frac{2}{5}$ of the children who went for the ride were girls. What fraction of the children went for the ride? ( ) [2]

Ⓐ $\frac{5}{18}$ Ⓑ $\frac{1}{6}$ Ⓒ $\frac{2}{9}$ Ⓓ $\frac{7}{18}$

5 Some children took part in a running competition. $\frac{1}{4}$ of the boys and $\frac{1}{6}$ of the girls were prize winners. There were 60 prize winners and $\frac{3}{10}$ of them were girls. How many children took part in the running competition? ( ) [2]

Ⓐ 168 Ⓑ 186 Ⓒ 216 Ⓓ 276

6 At first, Mdm Lee had three times as many red beads as yellow beads. She used $\frac{3}{4}$ of her yellow beads and some of her red beads to make some bracelets. In the end, $\frac{2}{3}$ of the beads left were red beads. What fraction of her red beads did Mdm Lee use? ( ) [2]

Ⓐ $\frac{5}{6}$ Ⓑ $\frac{3}{4}$ Ⓒ $\frac{2}{3}$ Ⓓ $\frac{1}{2}$

7 Find the value of $\frac{3}{4} \div 2$. ( ) [1]

Ⓐ $1\frac{1}{2}$ Ⓑ $\frac{2}{3}$ Ⓒ $\frac{3}{8}$ Ⓓ $\frac{1}{8}$

8 Find the value of $2 \div \frac{1}{3}$. ( ) [1]

Ⓐ $\frac{2}{3}$ Ⓑ $\frac{3}{2}$ Ⓒ $1\frac{2}{3}$ Ⓓ 6

9 Find the value of $\frac{5}{6} \div \frac{2}{3}$. Give your answer in its simplest form. ( ) [1]

Ⓐ $\frac{5}{9}$ Ⓑ $1\frac{1}{4}$ Ⓒ $\frac{2}{5}$ Ⓓ $1\frac{3}{4}$

Section B: Short Answer

10 Find the value of $\frac{4}{9} \times \frac{3}{8}$. Give your answer in its simplest form.

Ans: _____ [1]

11 Find the value of $9 \div \frac{3}{4}$.

Ans: _____ [2]

12 A shop owner has 240 pens and pencils. $\frac{1}{5}$ of the pens are equal in number to $\frac{1}{3}$ of the pencils. Find the total number of pencils.

Ans: _____ [2]

Chapter 1: Fractions: Division (Answer Key)

29 questions, 63 marks. M: method mark, A: answer mark, B: mark for the answer alone.

1. C. 19 **[1]**

B1 $3\frac{4}{5} = \frac{3 \times 5 + 4}{5} = \frac{19}{5}$

2. B. $\frac{1}{2}$ **[1]**

B1 Blue and yellow beads make up $1 - \frac{1}{4} = \frac{3}{4}$ of the beads. Blue is 2 units and yellow is 1 unit, so blue = $\frac{2}{3}$ of $\frac{3}{4} = \frac{2}{3} \times \frac{3}{4} = \frac{1}{2}$.

3. D. $144 **[2]**

M1 He had $\frac{1}{2}$ of his money left, which was $\frac{2}{3}$ of the money after the gift. Money after the gift = $\frac{1}{2} \div \frac{2}{3} = \frac{3}{4}$ of his money, so $36 = $1 - \frac{3}{4} = \frac{1}{4}$ of his money.

A1 $36 × 4 = $144. Daniel had $144 at first.

4. A. $\frac{5}{18}$ **[2]**

M1 Children who went for the ride: 5 units, 2 units girls and 3 units boys. All girls = $2 \div \frac{1}{3}$ = 6 units; all boys = $3 \div \frac{1}{4}$ = 12 units; all children = 6 + 12 = 18 units.

A1 $\frac{5}{18}$ of the children went for the ride.

5. D. 276 **[2]**

M1 Girl winners = $\frac{3}{10} \times 60 = 18$; boy winners = 60 − 18 = 42. Girls = $18 \div \frac{1}{6} = 108$; boys = $42 \div \frac{1}{4} = 168$.

A1 108 + 168 = 276. 276 children took part.

6. A. $\frac{5}{6}$ **[2]**

M1 Yellow beads: 4 parts, so red beads: 3 × 4 = 12 parts. Yellow left = $\frac{1}{4} \times 4 = 1$ part. Red left is $\frac{2}{3}$ of the beads left and yellow left is $\frac{1}{3}$, so red left = 2 × 1 = 2 parts.

A1 Red used = 12 − 2 = 10 parts, which is $\frac{10}{12} = \frac{5}{6}$ of her red beads.

7. C. $\frac{3}{8}$ **[1]**

B1 $\frac{3}{4} \div 2 = \frac{3}{4} \times \frac{1}{2} = \frac{3}{8}$

8. D. 6 **[1]**

B1 $2 \div \frac{1}{3} = 2 \times 3 = 6$