

FIRE JUNGLE

CAPS-aligned mathematics for South African learners



GRADE 5

Mathematics

TEXTBOOK

Definitions • Worked Examples • Exercises • Full Answers



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by Joseph Matthew Mitchell

Fire Jungle Grade 5 Mathematics

A CAPS-aligned study textbook for the FET phase

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How to use this book

Definitions. Each topic opens with the key terms you must know and be able to state in an exam.

Key formulas. The formulas and rules for the topic, gathered in one box for quick revision.

Worked examples. Fully solved problems. The right-hand notes explain the reason for every step.

Exercises. Practice questions. Try them before checking the back of the book.

Answers. Complete answers with working are collected in the Answers section at the end.

Digital edition. Scan the QR code on any page to open the interactive version of this textbook, with animated lessons, narration and unlimited generated practice.

Tip: work through the worked examples with a pen in hand, then attempt the exercises with the book closed. Use the digital edition for extra randomised practice on any topic you find hard.



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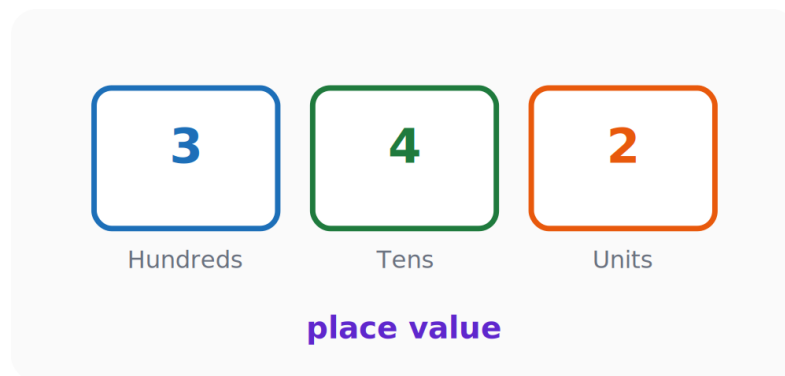


CHAPTER 1

Whole Numbers and Place Value

Place Place value
Round Rounding to the nearest 1000
Compare Comparing large numbers
Roman Roman numerals

Place value to millions



DEFINITIONS

Digit A single number symbol from 0 to 9.
Place value What a digit is worth, based on its position in the number.

KEY FORMULAS

- **Value of a digit = digit × its place value**
- **Places:** units (1), tens (10), hundreds (100), thousands (1 000), ten-thousands (10 000), hundred-thousands (100 000)
- **Example:** in 4 528, the 5 is in the hundreds place → $5 \times 100 = 500$



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WORKED EXAMPLES

Example 1: In 528 137, what is the value of the digit 5?

- ▶ The 5 is the leftmost digit of a 6-digit number.

Count the places.

- ▶ That position is the hundred-thousands place.

6th from the right.

- ▶ Value = $5 \times 100\,000 = 500\,000$.

Digit $\times$ place value.

- ▶ **500 000.**

Final answer.

EXERCISES (EASY $\rightarrow$ DIFFICULT)

1. In 810291, value of the tens digit:
2. In 538000, value of the hundred thousands digit:
3. In 662693, value of the hundreds digit:
4. In 863745, value of the thousands digit:
5. In 183781, value of the ten thousands digit:
6. In 734031, value of the thousands digit:
7. In 655206, value of the tens digit:
8. In 464884, value of the hundreds digit:
9. In 176436, value of the ten thousands digit:
10. In 474971, value of the ten thousands digit:

Round to nearest 1000

Rounding to the nearest 1000



round 247 to nearest 100

DEFINITIONS

Round

Replace a number with a nearby simpler number (a multiple of 1000 here).

Rounding digit

The digit to the RIGHT of the place you are rounding to. It decides up or down.

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KEY FORMULAS

- To round to the nearest 1000, look at the hundreds digit
- If it is 5 or more → round UP
- If it is 4 or less → round DOWN (keep the thousands the same)

WORKED EXAMPLES

Example 1: Round 4 730 to the nearest 1000.

- Look at the hundreds digit: 7.

Digit to the right of thousands.

- 7 is 5 or more, so round UP.

Rounding rule.

- 4 730 → 5 000.

Round up to next thousand.

- **5 000.**

Final answer.

EXERCISES (EASY → DIFFICULT)

1. Round 26678 to nearest 1000:
2. Round 13204 to nearest 1000:
3. Round 89635 to nearest 1000:
4. Round 95083 to nearest 1000:
5. Round 25936 to nearest 1000:
6. Round 51765 to nearest 1000:
7. Round 74628 to nearest 1000:
8. Round 89559 to nearest 1000:
9. Round 12597 to nearest 1000:
10. Round 88509 to nearest 1000:

Compare large numbers

Comparing large numbers

46 > 29

compare the numbers

DEFINITIONS

Greater than ($>$) The bigger number. The open mouth always faces the bigger number.

Less than ($<$) The smaller number.



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KEY FORMULAS

- **Compare from the LEFT** — start with the highest place value
- **More digits = bigger number** (if no leading zeros)
- **If the same length**, compare digit by digit from the left

WORKED EXAMPLES

Example 1: Compare 45 800 and 45 600. Use $<$, $>$, or $=$.

- Both have 5 digits, so compare from the left.

Same length.

- Ten-thousands and thousands match (45...).

Move right.

- Hundreds: 8 vs 6 $\rightarrow$ 8 is bigger.

First difference.

- **45 800 $>$ 45 600.**

Final answer.

EXERCISES (EASY $\rightarrow$ DIFFICULT)

1. Compare 743624 $\underline{\hspace{1cm}}$ 365542
2. Compare 356795 $\underline{\hspace{1cm}}$ 685840
3. Compare 220165 $\underline{\hspace{1cm}}$ 727323
4. Compare 137241 $\underline{\hspace{1cm}}$ 580247
5. Compare 887665 $\underline{\hspace{1cm}}$ 34050
6. Compare 841294 $\underline{\hspace{1cm}}$ 370981
7. Compare 401689 $\underline{\hspace{1cm}}$ 113866
8. Compare 853478 $\underline{\hspace{1cm}}$ 184302
9. Compare 493325 $\underline{\hspace{1cm}}$ 188493
10. Compare 891636 $\underline{\hspace{1cm}}$ 939090

Roman numerals to 1000

I=1 V=5 X=10 L=50

Roman numerals

DEFINITIONS

Roman numeral

An old way of writing numbers using letters: I, V, X, L, C, D, M.

Subtractive pair

A smaller letter before a bigger one means subtract, like CD = 400.



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KEY FORMULAS

- **I = 1, V = 5, X = 10, L = 50, C = 100, D = 500, M = 1000**
- **CD = 400** (100 before 500 = $500 - 100$)
- **CM = 900** (100 before 1000 = $1000 - 100$)

WORKED EXAMPLES

Example 1: Write 400 as a Roman numeral.

► $400 = 500 - 100$.

Use a subtractive pair.

► 100 is C, 500 is D. Put the smaller (C) before D.

C before D.

► **CD.**

Final answer.

EXERCISES (EASY → DIFFICULT)

1. Roman numeral for 400:
2. Roman numeral for 500:
3. Roman numeral for 1000:
4. Roman numeral for 100:
5. Roman numeral for 900:

End of Chapter 1 — Mixed Exercise

Ten questions across the whole chapter, from easy to difficult.

1. In 810291, value of the tens digit:
2. Round 13204 to nearest 1000:
3. Compare 220165 __ 727323
4. Roman numeral for 100:
5. In 183781, value of the ten thousands digit:
6. Round 51765 to nearest 1000:
7. Compare 401689 __ 113866
8. Roman numeral for 900:
9. In 176436, value of the ten thousands digit:
10. Round 88509 to nearest 1000:



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CHAPTER 2

Addition and Subtraction

Add Adding multi-digit numbers

Subtract Subtracting multi-digit numbers

Estimate Estimating sums and differences

Add multi-digit numbers

Adding multi-digit numbers


$$3 + 4 = 7$$

$$3 + 4 = 7$$

DEFINITIONS

Column addition

Writing numbers stacked so matching place values line up, then adding each column.

Carrying

When a column adds to 10 or more, carry the extra to the next column on the left.

KEY FORMULAS

- **Line up by place value** (units under units, tens under tens...)
- **Add each column from the RIGHT**
- **Carry** when a column total reaches 10 or more

WORKED EXAMPLES



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**Example 1: Calculate $3\,456 + 2\,178$.**

- Line up the numbers by place value.

Units under units.

- Units: $6 + 8 = 14 \rightarrow$ write 4, carry 1.

Carry the ten.

- Tens: $5 + 7 + 1 = 13 \rightarrow$ write 3, carry 1.

Carry again.

- Hundreds: $4 + 1 + 1 = 6$; thousands: $3 + 2 = 5$.

Finish columns.

- **5 634.**

Final answer.

EXERCISES (EASY $\rightarrow$ DIFFICULT)

1. $48495 + 25539 = ?$
2. $28005 + 49137 = ?$
3. $34772 + 38893 = ?$
4. $47268 + 36579 = ?$
5. $29837 + 17972 = ?$
6. $39117 + 33479 = ?$
7. $33104 + 26872 = ?$
8. $39945 + 40286 = ?$
9. $3148 + 13190 = ?$
10. $40526 + 9964 = ?$

Subtract multi-digit numbers

Subtracting multi-digit numbers



$$8 - 3 = 5$$

DEFINITIONS**Borrowing**

When the top digit is too small, take 10 from the next column on the left.

KEY FORMULAS

- **Line up by place value**
- **Subtract each column from the RIGHT**
- **Borrow** when the top digit is smaller than the bottom digit

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WORKED EXAMPLES

Example 1: Calculate $5\,234 - 1\,612$.

► Line up by place value.

Units under units.

► Units: $4 - 2 = 2$.

No borrow.

► Tens: $3 - 1 = 2$.

No borrow.

► Hundreds: $2 - 6 \rightarrow$ borrow. $12 - 6 = 6$, thousands becomes 4.

Borrow a thousand.

► Thousands: $4 - 1 = 3$. **$3\,622$.**

Final answer.

EXERCISES (EASY $\rightarrow$ DIFFICULT)

1. $55259 - 18452 = ?$
2. $53633 - 17493 = ?$
3. $74693 - 13376 = ?$
4. $55966 - 35848 = ?$
5. $50059 - 19838 = ?$
6. $92438 - 32537 = ?$
7. $54938 - 26789 = ?$
8. $54472 - 29791 = ?$
9. $68534 - 37087 = ?$
10. $54582 - 20054 = ?$

Estimate sums and differences

Estimating sums and differences



round 24 to nearest 10

DEFINITIONS

Estimate

A quick, rough answer found by rounding first.

KEY FORMULAS

- **Round each number first**, then add or subtract
- **Rounding to the nearest 1000** gives a quick estimate
- **Estimates are not exact** — they just check if an answer is reasonable

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WORKED EXAMPLES

Example 1: Estimate $4\ 800 + 3\ 100$ (round to 1000s).

► Round $4\ 800 \rightarrow 5\ 000$.

Hundreds digit 8 rounds up.

► Round $3\ 100 \rightarrow 3\ 000$.

Hundreds digit 1 rounds down.

► Add: $5\ 000 + 3\ 000 = 8\ 000$.

Estimate.

► **$\approx 8\ 000$.**

Final answer.

EXERCISES (EASY $\rightarrow$ DIFFICULT)

1. Estimate $3247 + 8368$ (round to 1000s):
2. Estimate $7012 + 5954$ (round to 1000s):
3. Estimate $4252 + 4277$ (round to 1000s):
4. Estimate $6309 + 2622$ (round to 1000s):
5. Estimate $8057 + 2760$ (round to 1000s):
6. Estimate $8077 + 4150$ (round to 1000s):
7. Estimate $2430 + 2556$ (round to 1000s):
8. Estimate $7009 + 4568$ (round to 1000s):
9. Estimate $7548 + 4308$ (round to 1000s):
10. Estimate $5590 + 4417$ (round to 1000s):

End of Chapter 2 — Mixed Exercise

Ten questions across the whole chapter, from easy to difficult.

1. $48495 + 25539 = ?$
2. $53633 - 17493 = ?$
3. Estimate $4252 + 4277$ (round to 1000s):
4. $47268 + 36579 = ?$
5. $50059 - 19838 = ?$
6. Estimate $8077 + 4150$ (round to 1000s):
7. $33104 + 26872 = ?$
8. $54472 - 29791 = ?$
9. Estimate $7548 + 4308$ (round to 1000s):
10. $40526 + 9964 = ?$

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CHAPTER 3

Multiplication

Multiply Multiplying 3-digit by 1-digit

Multiply Multiplying 2-digit by 2-digit

Multiply Multiplying by 10, 100, 1000

Square Square numbers

Multiply 3-digit by 1-digit

Multiplying 3-digit by 1-digit



$$3 \times 4 = 12$$

DEFINITIONS

Multiply Repeated addition — adding the same number many times.

Carrying When a digit product is 10 or more, carry the tens to the next column.

KEY FORMULAS

- **Multiply each digit** of the big number by the small number, from the RIGHT
- **Carry** when a product reaches 10 or more
- **Example:** $234 \times 3 = 702$

WORKED EXAMPLES



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**Example 1: Calculate 234×3 .**

► Units: $4 \times 3 = 12 \rightarrow$ write 2, carry 1.

Carry the ten.

► Tens: $3 \times 3 = 9$, + 1 carried = 10 $\rightarrow$ write 0, carry 1.

Carry again.

► Hundreds: $2 \times 3 = 6$, + 1 = 7.

Last column.

► **702.**

Final answer.

EXERCISES (EASY $\rightarrow$ DIFFICULT)

1. $115 \times 4 = ?$
2. $867 \times 9 = ?$
3. $257 \times 3 = ?$
4. $732 \times 4 = ?$
5. $934 \times 7 = ?$
6. $574 \times 4 = ?$
7. $210 \times 9 = ?$
8. $418 \times 9 = ?$
9. $788 \times 3 = ?$
10. $815 \times 8 = ?$

Multiply 2-digit by 2-digit

Multiplying 2-digit by 2-digit



$$3 \times 4 = 12$$

DEFINITIONS**Long multiplication**

Multiplying by each digit separately, then adding the results.

Partial product

The result of multiplying by one digit before adding them all up.

KEY FORMULAS

- **Multiply by the units digit first**, then the tens digit
- **Shift the second row one place left** (it is really tens)
- **Add the two partial products**

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WORKED EXAMPLES

Example 1: Calculate 23×14 .

► $23 \times 4 = 92$.

Multiply by units.

► $23 \times 10 = 230$.

Multiply by tens (shift left).

► Add: $92 + 230 = 322$.

Add partial products.

► **322.**

Final answer.

EXERCISES (EASY → DIFFICULT)

1. $86 \times 73 = ?$
2. $21 \times 86 = ?$
3. $65 \times 63 = ?$
4. $67 \times 25 = ?$
5. $16 \times 79 = ?$
6. $73 \times 27 = ?$
7. $67 \times 94 = ?$
8. $48 \times 21 = ?$
9. $84 \times 43 = ?$
10. $96 \times 73 = ?$

Multiply by 10, 100, 1000

Multiplying by 10, 100, 1000



$$3 \times 4 = 12$$

DEFINITIONS

Place value shift

Multiplying by 10 moves every digit one place to the left.

KEY FORMULAS

- $\times 10 \rightarrow$ add 1 zero
- $\times 100 \rightarrow$ add 2 zeros
- $\times 1000 \rightarrow$ add 3 zeros
- **Example:** $45 \times 100 = 4\,500$

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WORKED EXAMPLES

Example 1: Calculate 45×100 .

► $\times 100$ means add 2 zeros.

100 has 2 zeros.

► $45 \rightarrow 4\ 500$.

Append two zeros.

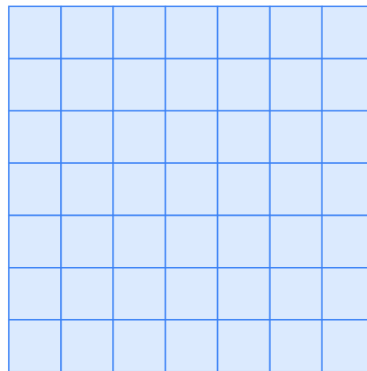
► **4 500.**

Final answer.

EXERCISES (EASY $\rightarrow$ DIFFICULT)

1. $332 \times 100 = ?$
2. $366 \times 10 = ?$
3. $54 \times 100 = ?$
4. $317 \times 100 = ?$
5. $383 \times 1000 = ?$
6. $127 \times 10 = ?$
7. $458 \times 100 = ?$
8. $354 \times 10 = ?$
9. $460 \times 10 = ?$
10. $116 \times 100 = ?$

Square numbers



side = 7

$$7 \times 7 = 49$$

A square of 7 has 49 small squares

DEFINITIONS

Square number A number multiplied by itself: $5^2 = 5 \times 5 = 25$.

Squared (2) The little 2 means "multiply the number by itself once".



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KEY FORMULAS

- $n^2 = n \times n$
- **First squares:** 1, 4, 9, 16, 25, 36, 49, 64, 81, 100
- **Example:** $7^2 = 7 \times 7 = 49$

WORKED EXAMPLES

Example 1: What is 7^2 ?

► 7^2 means 7×7 .

Square = multiply by itself.

► $7 \times 7 = 49$.

Multiply.

► **49.**

Final answer.

EXERCISES (EASY → DIFFICULT)

1. $15^2 = ?$
2. $13^2 = ?$
3. $9^2 = ?$
4. $10^2 = ?$
5. $11^2 = ?$
6. $12^2 = ?$
7. $2^2 = ?$
8. $14^2 = ?$
9. $5^2 = ?$
10. $4^2 = ?$

End of Chapter 3 — Mixed Exercise

Ten questions across the whole chapter, from easy to difficult.

1. $115 \times 4 = ?$
2. $21 \times 86 = ?$
3. $54 \times 100 = ?$
4. $10^2 = ?$
5. $934 \times 7 = ?$
6. $73 \times 27 = ?$
7. $458 \times 100 = ?$
8. $14^2 = ?$
9. $788 \times 3 = ?$
10. $96 \times 73 = ?$





CHAPTER 4

Division

Long Long division by a 1-digit number

Division Division with remainders

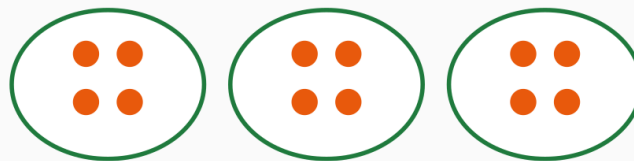
Estimate Estimating quotients

Square Square roots

Long Long Division — interactive game

Long division by 1-digit

Long division by a 1-digit number



12 shared into 3 groups

DEFINITIONS

Divide Sharing a number into equal groups.

Quotient The answer to a division.

KEY FORMULAS

- **Divide each digit from the LEFT**
- **Bring down the next digit** and continue
- **Check:** $\text{quotient} \times \text{divisor}$ should equal the original number

WORKED EXAMPLES



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**Example 1: Calculate $84 \div 4$.**

► $8 \div 4 = 2$.

Divide the tens.

► $4 \div 4 = 1$.

Divide the units.

► Quotient: 21.

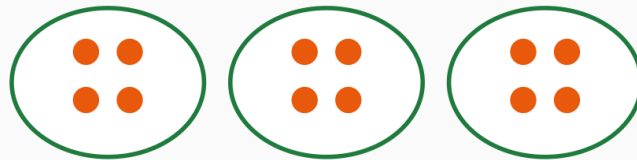
Combine.

► Check: $21 \times 4 = 84$. **21**.

Final answer.

EXERCISES (EASY → DIFFICULT)

1. $688 \div 8 = ?$
2. $396 \div 4 = ?$
3. $72 \div 2 = ?$
4. $348 \div 4 = ?$
5. $279 \div 9 = ?$
6. $336 \div 7 = ?$
7. $582 \div 6 = ?$
8. $207 \div 9 = ?$
9. $525 \div 7 = ?$
10. $195 \div 5 = ?$

Division with remainders

12 shared into 3 groups

DEFINITIONS**Remainder**

What is left over when a number does not divide evenly.

KEY FORMULAS

- **Divide as far as you can**, then what is left over is the remainder
- **Remainder must be smaller than the divisor**
- **Check:** (quotient $\times$ divisor) + remainder = original number

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WORKED EXAMPLES

Example 1: Calculate $47 \div 5$.

- How many 5s fit in 47? 9 fit ($5 \times 9 = 45$).

Largest multiple.

- Left over: $47 - 45 = 2$.

The remainder.

- **9 remainder 2.**

Final answer.

EXERCISES (EASY → DIFFICULT)

1. $190 \div 9 = ?$ remainder ?
2. $91 \div 4 = ?$ remainder ?
3. $115 \div 4 = ?$ remainder ?
4. $118 \div 4 = ?$ remainder ?
5. $49 \div 3 = ?$ remainder ?
6. $53 \div 5 = ?$ remainder ?
7. $131 \div 6 = ?$ remainder ?
8. $202 \div 8 = ?$ remainder ?
9. $66 \div 4 = ?$ remainder ?
10. $85 \div 4 = ?$ remainder ?

Estimate quotients

Estimating quotients



round 24 to nearest 10

DEFINITIONS

Estimate a quotient

Round to a friendly number first, then divide for a quick answer.

Compatible numbers

Numbers that divide easily, like $240 \div 6$.

KEY FORMULAS

- **Round to a number that divides nicely**, then divide
- **Example:** $62 \div 3 \approx 60 \div 3 = 20$



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WORKED EXAMPLES

Example 1: Estimate $62 \div 3$.

- Round 62 to a number close that divides by 3: 60.

Compatible number.

- $60 \div 3 = 20$.

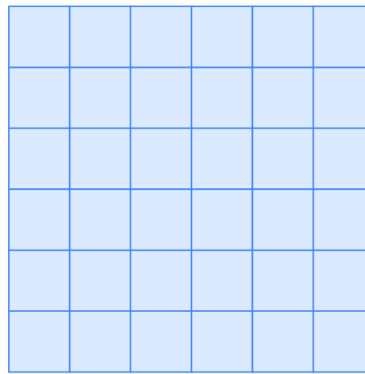
Easy division.

- ≈ 20 .

Final answer.

EXERCISES (EASY → DIFFICULT)

1. Estimate $122 \div 6$:
2. Estimate $63 \div 3$:
3. Estimate $106 \div 8$:
4. Estimate $171 \div 7$:
5. Estimate $33 \div 3$:
6. Estimate $154 \div 8$:
7. Estimate $82 \div 5$:
8. Estimate $236 \div 9$:
9. Estimate $55 \div 5$:
10. Estimate $180 \div 7$:

Square roots (perfect squares)

side = 6

36 squares $\rightarrow \sqrt{36} = 6$

$\sqrt{}$ finds the side of the square

DEFINITIONS

Square root The opposite of squaring. $\sqrt{25} = 5$ because $5 \times 5 = 25$.

Perfect square A number that is a whole number squared: 1, 4, 9, 16, 25...

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KEY FORMULAS

- $\sqrt{(n^2)} = n$
- **Common roots:** $\sqrt{4}=2$, $\sqrt{9}=3$, $\sqrt{16}=4$, $\sqrt{25}=5$, $\sqrt{36}=6$, $\sqrt{49}=7$, $\sqrt{64}=8$, $\sqrt{81}=9$, $\sqrt{100}=10$
- **Square root undoes squaring**

WORKED EXAMPLES

Example 1: What is $\sqrt{36}$?

- Ask: what number times itself equals 36?

Definition.

- $6 \times 6 = 36$.

Find it.

- $\sqrt{36} = 6$.

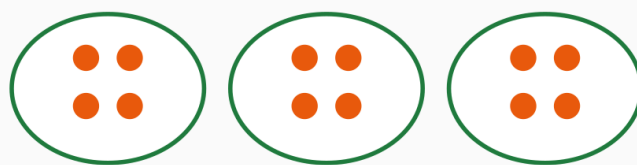
Final answer.

EXERCISES (EASY → DIFFICULT)

1. $\sqrt{81} = ?$
2. $\sqrt{64} = ?$
3. $\sqrt{16} = ?$
4. $\sqrt{36} = ?$
5. $\sqrt{121} = ?$
6. $\sqrt{9} = ?$
7. $\sqrt{100} = ?$
8. $\sqrt{144} = ?$
9. $\sqrt{49} = ?$
10. $\sqrt{4} = ?$

Long Division (game)

Long Division — interactive game



12 shared into 3 groups

DEFINITIONS

Long division	A step-by-step way to divide big numbers: divide, multiply, subtract, bring down.
Dividend	The number being divided (goes under the bracket).

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KEY FORMULAS

- **Divide → Multiply → Subtract → Bring down**, then repeat
- **dividend ÷ divisor = quotient (remainder r)**

WORKED EXAMPLES

Example 1: This opens the Division Quest game, where Tsuka guides you through every step with apple groups and 3-choice answers.

- ▶ Divide: how many times does the divisor fit?

Step 1.

- ▶ Multiply that digit by the divisor.

Step 2.

- ▶ Subtract, then bring down the next digit.

Step 3, then repeat.

EXERCISES (EASY → DIFFICULT)

1. Open the Long Division game to practise step by step.

End of Chapter 4 — Mixed Exercise

Ten questions across the whole chapter, from easy to difficult.

1. $688 \div 8 = ?$
2. $91 \div 4 = ?$ remainder ?
3. Estimate $106 \div 8$:
4. $\sqrt{36} = ?$
5. Open the Long Division game to practise step by step.
6. $336 \div 7 = ?$
7. $131 \div 6 = ?$ remainder ?
8. Estimate $236 \div 9$:
9. $\sqrt{49} = ?$
10. Open the Long Division game to practise step by step.



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CHAPTER 5

Number Theory

Prime Prime factorisation

HCF Highest Common Factor (HCF)

LCM Lowest Common Multiple (LCM)

Prime Prime or composite

Prime factorisation



$$2 \times 6 = 12$$

DEFINITIONS

Prime number A number with exactly two factors: 1 and itself (2, 3, 5, 7, 11...).

Prime factorisation Writing a number as a product of only prime numbers.

KEY FORMULAS

- **Divide by the smallest prime that fits**, then keep going
- **Use a factor tree**
- **Example:** $12 = 2 \times 2 \times 3 = 2^2 \times 3$

WORKED EXAMPLES



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**Example 1: Find the prime factorisation of 12.**

► $12 \div 2 = 6.$

Divide by smallest prime.

► $6 \div 2 = 3.$

Divide by 2 again.

► 3 is prime, stop.

Cannot divide further.

► $12 = 2 \times 2 \times 3 = 2^2 \times 3.$

Final answer.

EXERCISES (EASY → DIFFICULT)

1. Prime factorisation of 30:
2. Prime factorisation of 12:
3. Prime factorisation of 20:
4. Prime factorisation of 18:

HCF of two numbers

Highest Common Factor (HCF)



$$2 \times 6 = 12$$

DEFINITIONS

Factor	A number that divides into another exactly.
HCF	Highest Common Factor — the biggest number that divides into both.

KEY FORMULAS

- **List the factors of each number**, find the biggest shared one
- **Example:** $\text{HCF}(12, 18) = 6$

WORKED EXAMPLES**DIGITAL TEXTBOOK**

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**Example 1: Find the HCF of 12 and 18.**

► Factors of 12: 1, 2, 3, 4, 6, 12.

List them.

► Factors of 18: 1, 2, 3, 6, 9, 18.

List them.

► Common: 1, 2, 3, 6. Highest is 6.

Biggest shared.

► **6.**

Final answer.

EXERCISES (EASY → DIFFICULT)

1. HCF of 18 and 25:
2. HCF of 27 and 29:
3. HCF of 26 and 19:
4. HCF of 15 and 19:
5. HCF of 23 and 21:
6. HCF of 15 and 10:
7. HCF of 28 and 30:
8. HCF of 8 and 19:
9. HCF of 17 and 8:
10. HCF of 23 and 20:

LCM of two numbers

Lowest Common Multiple (LCM)



$$2 \times 6 = 12$$

DEFINITIONS**Multiple**

The answer when you multiply a number by 1, 2, 3, ... (multiples of 4: 4, 8, 12...).

LCM

Lowest Common Multiple — the smallest number both numbers divide into.

KEY FORMULAS

- **List multiples of each**, find the smallest shared one
- **Example:** $\text{LCM}(4, 6) = 12$

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WORKED EXAMPLES

Example 1: Find the LCM of 4 and 6.

- Multiples of 4: 4, 8, 12, 16...

List them.

- Multiples of 6: 6, 12, 18...

List them.

- Smallest shared: 12.

First common one.

- **12.**

Final answer.

EXERCISES (EASY → DIFFICULT)

1. LCM of 3 and 7:
2. LCM of 5 and 2:
3. LCM of 7 and 7:
4. LCM of 7 and 6:
5. LCM of 5 and 3:
6. LCM of 2 and 7:
7. LCM of 2 and 6:
8. LCM of 2 and 4:
9. LCM of 4 and 3:
10. LCM of 7 and 4:

Prime or composite



$$2 \times 6 = 12$$

DEFINITIONS

Prime	A number with exactly TWO factors: 1 and itself.
Composite	A number with MORE than two factors.

KEY FORMULAS

- **Prime:** only divisible by 1 and itself (2, 3, 5, 7, 11, 13...)
- **Composite:** has other factors too (4, 6, 8, 9, 10...)
- **Check:** try dividing by 2, 3, 5, 7... if any work, it's composite



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WORKED EXAMPLES

Example 1: Is 13 prime or composite?

- Try dividing 13 by 2, 3 — none work evenly.

Check small primes.

- Only 1 and 13 divide it.

Exactly two factors.

- **Prime.**

Final answer.

EXERCISES (EASY → DIFFICULT)

1. Is 8 prime or composite?
2. Is 14 prime or composite?
3. Is 10 prime or composite?
4. Is 28 prime or composite?
5. Is 19 prime or composite?
6. Is 12 prime or composite?
7. Is 11 prime or composite?
8. Is 16 prime or composite?
9. Is 26 prime or composite?
10. Is 3 prime or composite?

End of Chapter 5 — Mixed Exercise

Ten questions across the whole chapter, from easy to difficult.

1. Prime factorisation of 30:
2. HCF of 27 and 29:
3. LCM of 7 and 7:
4. Is 28 prime or composite?
5. Prime factorisation of 18:
6. HCF of 15 and 10:
7. LCM of 2 and 6:
8. Is 16 prime or composite?
9. Prime factorisation of 12:
10. HCF of 23 and 20:

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CHAPTER 6

Fractions

Equivalent Equivalent fractions

Simplify Simplifying fractions

Compare Comparing fractions

Add Adding fractions with the same denominator

Subtract Subtracting fractions with the same denominator

Mixed Mixed numbers and improper fractions

Fraction Fraction of a number

Equivalent fractions



$\frac{3}{4}$

DEFINITIONS

Numerator The TOP number of a fraction.

Denominator The BOTTOM number of a fraction.

KEY FORMULAS

- **Multiply (or divide) the top AND bottom by the same number**
- **Example:** $\frac{2}{3} = \frac{4}{6}$ (both $\times 2$) = $\frac{6}{9}$ (both $\times 3$)

WORKED EXAMPLES



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**Example 1: Fill in: $\frac{2}{3} = \frac{?}{9}$.**

- The bottom went $3 \rightarrow 9$, so it was multiplied by 3.

$$9 \div 3 = 3.$$

- Multiply the top by 3 too: $2 \times 3 = 6$.

Same factor.

- **$\frac{6}{9}$.**

Final answer.

EXERCISES (EASY $\rightarrow$ DIFFICULT)

1. $\frac{2}{3} = \frac{?}{(3 \times 2)}$
2. $\frac{2}{3} = \frac{?}{(3 \times 4)}$
3. $\frac{2}{3} = \frac{?}{(3 \times 3)}$
4. $\frac{2}{3} = \frac{?}{(3 \times 5)}$

Simplify fractions

Simplifying fractions



$\frac{3}{4}$

DEFINITIONS

Simplest form When the top and bottom share no common factor except 1.

KEY FORMULAS

- **Divide the top and bottom by their highest common factor**
- **Example:** $\frac{6}{8} \rightarrow$ divide both by 2 $\rightarrow \frac{3}{4}$

WORKED EXAMPLES**Example 1: Simplify $\frac{6}{8}$.**

- Find the HCF of 6 and 8 $\rightarrow 2$.

Biggest shared factor.

- Divide both by 2: $6 \div 2 = 3$, $8 \div 2 = 4$.

Apply.

- **$\frac{3}{4}$.**

Final answer.

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**EXERCISES (EASY → DIFFICULT)**

1. Simplify $2/6$:
2. Simplify $3/12$:
3. Simplify $12/20$:
4. Simplify $6/12$:
5. Simplify $15/30$:
6. Simplify $6/9$:
7. Simplify $6/8$:
8. Simplify $15/25$:
9. Simplify $6/15$:
10. Simplify $12/24$:

Compare fractions (different denoms)*Comparing fractions*

$$46 > 29$$

compare the numbers**DEFINITIONS****Common denominator**

The same bottom number for both fractions, needed to compare them.

KEY FORMULAS

- **Make the denominators the same**, then compare the tops
- **Common denominator**: multiply the two bottoms
- **Bigger top (with same bottom) = bigger fraction**

WORKED EXAMPLES**Example 1: Compare $1/2$ and $1/3$.**

► Common denominator: 6.

$$2 \times 3 = 6.$$

► $1/2 = 3/6$ and $1/3 = 2/6$.*Convert both.*► $3/6 > 2/6$, so $1/2 > 1/3$.*Compare tops.*► **$1/2 > 1/3$.***Final answer.***DIGITAL TEXTBOOK**Scan to open this section
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**EXERCISES (EASY → DIFFICULT)**

1. Compare $\frac{3}{5}$ $\frac{3}{4}$
2. Compare $\frac{3}{2}$ $\frac{1}{5}$
3. Compare $\frac{2}{4}$ $\frac{1}{4}$
4. Compare $\frac{2}{5}$ $\frac{2}{3}$
5. Compare $\frac{3}{2}$ $\frac{3}{5}$
6. Compare $\frac{2}{2}$ $\frac{3}{4}$
7. Compare $\frac{3}{4}$ $\frac{3}{4}$
8. Compare $\frac{2}{4}$ $\frac{1}{3}$
9. Compare $\frac{1}{2}$ $\frac{3}{3}$
10. Compare $\frac{1}{3}$ $\frac{3}{3}$

Add fractions (same denom)

Adding fractions with the same denominator

$$\frac{3}{7} + \frac{4}{7} = \frac{7}{7}$$

$$3 + 4 = 7$$

DEFINITIONS**Same denominator**

When the bottom numbers already match.

KEY FORMULAS

- **Add the tops, keep the bottom the same**
- **Example:** $\frac{2}{7} + \frac{3}{7} = \frac{5}{7}$

WORKED EXAMPLES**Example 1: Calculate $\frac{2}{7} + \frac{3}{7}$.**

- The bottoms are the same (7).

Just add tops.

- Add tops: $2 + 3 = 5$.

Numerators.

- Keep the bottom: $\frac{5}{7}$.

Denominator stays.

- **$\frac{5}{7}$.**

Final answer.

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**EXERCISES (EASY → DIFFICULT)**

1. $1/9 + 3/9 = ?/9$
2. $1/9 + 1/9 = ?/9$
3. $2/10 + 3/10 = ?/10$
4. $3/9 + 3/9 = ?/9$
5. $3/8 + 4/8 = ?/8$
6. $2/7 + 4/7 = ?/7$
7. $2/6 + 3/6 = ?/6$
8. $1/6 + 1/6 = ?/6$
9. $1/6 + 3/6 = ?/6$
10. $1/7 + 3/7 = ?/7$

Subtract fractions (same denom)

Subtracting fractions with the same denominator



$$8 - 3 = 5$$

DEFINITIONS**Subtract fractions**

When bottoms match, subtract the tops.

KEY FORMULAS

- **Subtract the tops, keep the bottom the same**
- **Example:** $5/8 - 2/8 = 3/8$

WORKED EXAMPLES**Example 1: Calculate $5/8 - 2/8$.**

- Bottoms match (8).

Just subtract tops.

- $5 - 2 = 3$.

Numerators.

- Keep bottom: $3/8$.

Denominator stays.

- **$3/8$.**

Final answer.

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**EXERCISES (EASY → DIFFICULT)**

1. $\frac{4}{6} - \frac{1}{6} = ?/6$
2. $\frac{4}{6} - \frac{3}{6} = ?/6$
3. $\frac{6}{6} - \frac{1}{6} = ?/6$
4. $\frac{3}{7} - \frac{1}{7} = ?/7$
5. $\frac{6}{10} - \frac{5}{10} = ?/10$
6. $\frac{6}{5} - \frac{4}{5} = ?/5$
7. $\frac{7}{9} - \frac{3}{9} = ?/9$
8. $\frac{7}{7} - \frac{2}{7} = ?/7$
9. $\frac{6}{9} - \frac{3}{9} = ?/9$
10. $\frac{5}{7} - \frac{2}{7} = ?/7$

Mixed numbers

Mixed numbers and improper fractions



$\frac{3}{4}$

DEFINITIONS

Mixed number	A whole number with a fraction beside it: $2\frac{3}{4}$.
Improper fraction	A fraction where the top is bigger than the bottom: $\frac{11}{4}$.

KEY FORMULAS

- **Mixed → Improper:** (whole $\times$ bottom) + top, all over the bottom
- **Example:** $2\frac{3}{4} = (2 \times 4 + 3)/4 = \frac{11}{4}$

WORKED EXAMPLES**Example 1: Write $2\frac{3}{4}$ as an improper fraction.**

- Multiply whole by bottom: $2 \times 4 = 8$.

Step 1.

- Add the top: $8 + 3 = 11$.

Step 2.

- Put over the bottom: $\frac{11}{4}$.

Step 3.

- **$\frac{11}{4}$.**

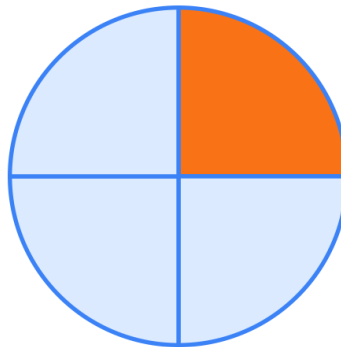
Final answer.

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**EXERCISES (EASY → DIFFICULT)**

1. $1 \frac{3}{5}$ as improper:
2. $4 \frac{1}{4}$ as improper:
3. $1 \frac{1}{2}$ as improper:
4. $1 \frac{1}{4}$ as improper:
5. $1 \frac{2}{3}$ as improper:
6. $4 \frac{3}{6}$ as improper:
7. $2 \frac{3}{5}$ as improper:
8. $3 \frac{3}{6}$ as improper:
9. $2 \frac{3}{6}$ as improper:
10. $5 \frac{3}{6}$ as improper:

Fraction of a number

$$\frac{1}{4} \text{ of } 20 = 5$$

5 out of 20 shaded

"of" means $\times$ in maths

DEFINITIONS**Fraction of a number**

"Of" means multiply. $\frac{1}{4}$ of 20 = $20 \div 4 = 5$.

KEY FORMULAS

- **Divide by the bottom, multiply by the top**
- $\frac{1}{4}$ of 20: $20 \div 4 = 5$
- $\frac{3}{4}$ of 20: $20 \div 4 \times 3 = 15$

WORKED EXAMPLES**DIGITAL TEXTBOOK**

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**Example 1: What is $\frac{1}{4}$ of 20?**

► $\frac{1}{4}$ of 20 = $20 \div 4$.

Divide by the bottom.

► = 5.

Calculate.

► 5.

Final answer.

EXERCISES (EASY → DIFFICULT)

1. $\frac{1}{4}$ of 12 =
2. $\frac{1}{4}$ of 24 =
3. $\frac{1}{4}$ of 16 =
4. $\frac{1}{4}$ of 20 =

End of Chapter 6 — Mixed Exercise

Ten questions across the whole chapter, from easy to difficult.

1. $\frac{2}{3} = ?/(3 \times 2)$
2. Simplify $\frac{3}{12}$:
3. Compare $\frac{2}{4}$ __ $\frac{1}{4}$
4. $\frac{3}{9} + \frac{3}{9} = ?/9$
5. $\frac{6}{10} - \frac{5}{10} = ?/10$
6. $4 \frac{3}{6}$ as improper:
7. $\frac{1}{4}$ of 20 =
8. $\frac{2}{3} = ?/(3 \times 5)$
9. Simplify $\frac{6}{15}$:
10. Compare $\frac{1}{3}$ __ $\frac{3}{3}$





CHAPTER 7

Decimals

- Read** Reading and writing decimals
- Compare** Comparing decimals
- Add** Adding decimals
- Convert** Converting decimals and fractions

Read and write decimals

Reading and writing decimals



$\frac{7}{8}$

DEFINITIONS

- Decimal point** The dot separating whole numbers from the fraction part.
- Tenths** The first digit after the decimal point.

KEY FORMULAS

- The dot is read as "point"
- First place after the dot = tenths
- Example: 3.5 is read "three point five"

WORKED EXAMPLES



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**Example 1: Write 3.5 in words.**

- The whole part is 3 → "three".

Before the dot.

- The dot is "point".

Read the dot.

- After the dot: 5 → "five".

Tenths digit.

- **three point five.**

Final answer.

EXERCISES (EASY → DIFFICULT)

1. 4.9 in words:
2. 2.8 in words:
3. 2.7 in words:
4. 5.6 in words:
5. 8.4 in words:
6. 3.4 in words:
7. 7.8 in words:
8. 1.8 in words:
9. 3.1 in words:
10. 6.8 in words:

Compare decimals

Comparing decimals

46 > 29

compare the numbers

DEFINITIONS**Compare decimals**

Line up the decimal points and compare digit by digit from the left.

KEY FORMULAS

- **Compare the whole-number parts first**
- **Then compare tenths, then hundredths** (left to right)
- **Tip:** add zeros to make them the same length ($0.5 = 0.50$)

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WORKED EXAMPLES

Example 1: Compare 0.7 and 0.65.

- Make same length: 0.70 vs 0.65.

Add a zero.

- Tenths: 7 vs 6 → 7 is bigger.

Compare from left.

- So $0.7 > 0.65$.

First difference wins.

- **$0.7 > 0.65$.**

Final answer.

EXERCISES (EASY → DIFFICULT)

1. Compare 5.3 __ 9.8
2. Compare 6 __ 5.9
3. Compare 4.4 __ 8.6
4. Compare 1.6 __ 8.7
5. Compare 8 __ 2.4
6. Compare 4.9 __ 6.9
7. Compare 7.3 __ 2.6
8. Compare 3.2 __ 2.7
9. Compare 2.6 __ 7.2
10. Compare 9.9 __ 1.2

Add decimals

Adding decimals

$$\bullet \bullet \bullet + \bullet \bullet \bullet = 7$$

$$3 + 4 = 7$$

DEFINITIONS

Line up the dots

Write the numbers so the decimal points are directly above each other.

KEY FORMULAS

- **Line up the decimal points** before adding
- **Add column by column**, carrying when needed
- **Bring the dot straight down** into the answer



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WORKED EXAMPLES

Example 1: Calculate $2.50 + 1.30$.

- Line up the decimal points.

Dots in a column.

- Add: hundredths $0+0=0$, tenths $5+3=8$, ones $2+1=3$.

Column by column.

- Bring the dot down.

Same position.

- **3.80.**

Final answer.

EXERCISES (EASY → DIFFICULT)

1. $9.90 + 8.30 = ?$
2. $2.60 + 9.80 = ?$
3. $6.70 + 5.90 = ?$
4. $5.10 + 5.50 = ?$
5. $5.60 + 3.40 = ?$
6. $5.90 + 2.50 = ?$
7. $3.70 + 8.50 = ?$
8. $2.30 + 8.60 = ?$
9. $5.50 + 3.40 = ?$
10. $9.70 + 5.30 = ?$

Convert decimal ↔ fraction

Converting decimals and fractions



$3/4$

DEFINITIONS

Tenths

The first decimal place. 0.7 means 7 tenths = $7/10$.

KEY FORMULAS

- **$0.1 = 1/10$, $0.3 = 3/10$, $0.7 = 7/10$**
- **One decimal place → over 10**
- **Two decimal places → over 100** ($0.25 = 25/100 = 1/4$)

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**WORKED EXAMPLES****Example 1: Write 0.7 as a fraction.**

► 0.7 means 7 tenths.

One decimal place.

► 7 tenths = $\frac{7}{10}$.

Over 10.

► **$\frac{7}{10}$.**

Final answer.

EXERCISES (EASY → DIFFICULT)

1. 0.3 as a fraction:
2. 0.6 as a fraction:
3. 0.1 as a fraction:
4. 0.4 as a fraction:
5. 0.9 as a fraction:
6. 0.7 as a fraction:
7. 0.8 as a fraction:
8. 0.2 as a fraction:
9. 0.5 as a fraction:

End of Chapter 7 — Mixed Exercise

Ten questions across the whole chapter, from easy to difficult.

1. 4.9 in words:
2. Compare 6 __ 5.9
3. $6.70 + 5.90 = ?$
4. 0.4 as a fraction:
5. 8.4 in words:
6. Compare 4.9 __ 6.9
7. $3.70 + 8.50 = ?$
8. 0.2 as a fraction:
9. 3.1 in words:
10. Compare 9.9 __ 1.2

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**CHAPTER 8**

Ratios and Rates

Simple Simple ratios

Equivalent Equivalent ratios

Unit Unit rates

Simple ratios



$$2 \times 3 = 6$$

DEFINITIONS

Ratio A comparison of two amounts, written a:b ("a to b").

Simplest form When the two numbers share no common factor except 1.

KEY FORMULAS

- To simplify a ratio, divide both parts by their highest common factor
- Example: 4:6 → divide both by 2 → 2:3

WORKED EXAMPLES

Example 1: There are 4 red and 6 blue counters. Write the ratio in simplest form.

► The ratio is 4:6.

Red to blue.

► Both divide by 2.

HCF = 2.

► $4 \div 2 = 2$, $6 \div 2 = 3$.

Divide both.

► **2:3.**

Final answer.



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**EXERCISES (EASY → DIFFICULT)**

1. 4 red and 8 blue: simplest ratio?
2. 10 red and 8 blue: simplest ratio?
3. 6 red and 4 blue: simplest ratio?
4. 10 red and 10 blue: simplest ratio?
5. 6 red and 10 blue: simplest ratio?
6. 4 red and 10 blue: simplest ratio?
7. 8 red and 4 blue: simplest ratio?
8. 10 red and 6 blue: simplest ratio?
9. 8 red and 8 blue: simplest ratio?
10. 4 red and 4 blue: simplest ratio?

Equivalent ratios

$$2 \times 3 = 6$$

DEFINITIONS**Equivalent ratios**

Ratios that mean the same thing, like 2:3 and 4:6.

KEY FORMULAS

- **Multiply (or divide) BOTH parts by the same number**
- **Example:** $2:3 = 4:6$ (both $\times 2$) = $6:9$ (both $\times 3$)

WORKED EXAMPLES**Example 1: Fill in: $2:3 = ?:9$.**

► The 3 became 9, so it was multiplied by 3.

$$9 \div 3 = 3.$$

► Multiply the 2 by 3: $2 \times 3 = 6$.

Same factor.

► **6:9.**

Final answer.

EXERCISES (EASY → DIFFICULT)

1. $2:3 = ?:12$
2. $2:3 = ?:9$
3. $2:3 = ?:6$

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Unit rates



$$2 \times 3 = 6$$

DEFINITIONS

Rate	A comparison of two different units, like km per hour.
Unit rate	How much per ONE unit (per 1 hour, per 1 item).

KEY FORMULAS

- **Unit rate = total ÷ number of units**
- **Speed = distance ÷ time**
- **Example:** 120 km in 2 h → $120 \div 2 = 60$ km/h

WORKED EXAMPLES

Example 1: A car travels 120 km in 2 hours. Find the speed.

► Speed = distance ÷ time.

Unit rate.

► $= 120 \div 2$.

Substitute.

► **60 km/h.**

Final answer.

EXERCISES (EASY → DIFFICULT)

1. 69 km in 3 h = ? km/h
2. 120 km in 2 h = ? km/h
3. 210 km in 5 h = ? km/h
4. 276 km in 2 h = ? km/h
5. 115 km in 5 h = ? km/h
6. 159 km in 3 h = ? km/h
7. 230 km in 2 h = ? km/h
8. 192 km in 3 h = ? km/h
9. 235 km in 5 h = ? km/h
10. 300 km in 3 h = ? km/h



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End of Chapter 8 — Mixed Exercise

Ten questions across the whole chapter, from easy to difficult.

1. 4 red and 8 blue: simplest ratio?
2. $2:3 = ? : 9$
3. 210 km in 5 h = ? km/h
4. 10 red and 10 blue: simplest ratio?
5. $2:3 = ? : 6$
6. 159 km in 3 h = ? km/h
7. 8 red and 4 blue: simplest ratio?
8. $2:3 = ? : 12$
9. 235 km in 5 h = ? km/h
10. 4 red and 4 blue: simplest ratio?



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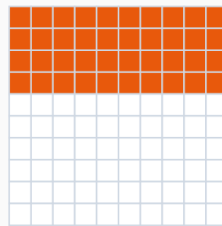
CHAPTER 9

Percentage

- Percent** Percent as a fraction
- Percent** Finding a percentage of a number
- Convert** Converting decimals and percents

Percent as fraction

Percent as a fraction



40% of 100

DEFINITIONS

Percent (%) Out of 100. 25% means 25 out of every 100.

KEY FORMULAS

- $p\% = p/100$
- **Example:** $25\% = 25/100$ (which simplifies to $1/4$)
- The word percent means "per hundred"

WORKED EXAMPLES

Example 1: Write 25% as a fraction over 100.

- Percent means "out of 100".

Definition.

- So $25\% = 25/100$.

Put over 100.

- **25/100.**

Final answer (= $1/4$).



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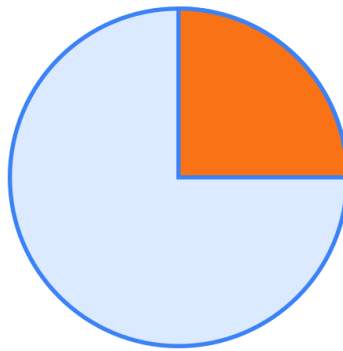
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**EXERCISES (EASY → DIFFICULT)**

1. 25% as a fraction (over 100):
2. 10% as a fraction (over 100):
3. 50% as a fraction (over 100):
4. 75% as a fraction (over 100):
5. 20% as a fraction (over 100):

Percent of a number

Finding a percentage of a number



$$25\% \text{ of } 80 = 20$$

20 out of 80

% means "out of 100"

DEFINITIONS**Percent of a number**

"Of" means multiply. $25\% \text{ of } 80 = 25/100 \times 80$.

KEY FORMULAS

- $p\% \text{ of } n = (p/100) \times n$
- **Shortcuts:** $10\% = \div 10$, $50\% = \div 2$, $25\% = \div 4$
- **Example:** $25\% \text{ of } 80 = 80 \div 4 = 20$

WORKED EXAMPLES**DIGITAL TEXTBOOK**

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**Example 1: Find 25% of 80.**

► $25\% = 25/100 = \frac{1}{4}$.

Convert.

► $\frac{1}{4}$ of 80 = $80 \div 4$.

"Of" means multiply.

► = 20.

Calculate.

► **20.**

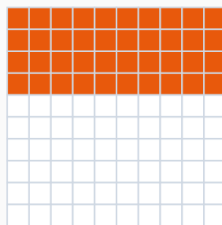
Final answer.

EXERCISES (EASY → DIFFICULT)

1. 10% of 8 =
2. 10% of 12 =
3. 25% of 12 =
4. 10% of 16 =
5. 25% of 8 =
6. 25% of 32 =
7. 50% of 16 =
8. 50% of 20 =
9. 50% of 12 =
10. 25% of 20 =

Convert decimal ↔ percent

Converting decimals and percents



40% of 100

DEFINITIONS**Decimal to percent**

Multiply by 100 (move the dot two places right).

KEY FORMULAS

- **Decimal → Percent:** multiply by 100. $0.25 = 25\%$
- **Percent → Decimal:** divide by 100. $50\% = 0.5$
- **Move the dot two places**

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**WORKED EXAMPLES****Example 1: Write 0.25 as a percent.**

- Multiply by 100.

Decimal to percent.

- $0.25 \times 100 = 25$.

Move dot 2 right.

- **25%.**

Final answer.

EXERCISES (EASY → DIFFICULT)

1. 0.1 as a percent:
2. 0.25 as a percent:
3. 0.05 as a percent:
4. 0.5 as a percent:

End of Chapter 9 — Mixed Exercise

Ten questions across the whole chapter, from easy to difficult.

1. 25% as a fraction (over 100):
2. 10% of 12 =
3. 0.05 as a percent:
4. 75% as a fraction (over 100):
5. 25% of 8 =
6. 0.5 as a percent:
7. 20% as a fraction (over 100):
8. 50% of 20 =
9. 0.1 as a percent:
10. 10% as a fraction (over 100):

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CHAPTER 10

Algebra

Find Finding a missing number (+, −)

Find Finding a missing number (×, ÷)

Substitute Substituting into an expression

Find missing number (+, −)

Finding a missing number (+, −)


$$\bullet \bullet \bullet + \bullet \bullet = 5$$

$$3 + 2 = 5$$

DEFINITIONS

Equation A maths sentence with an equals sign. Both sides must balance.

Inverse operation The opposite operation. + and − undo each other.

KEY FORMULAS

- **To undo + b:** subtract b from both sides
- **To undo − b:** add b to both sides
- **Example:** $x + 5 = 12 \rightarrow x = 12 - 5 = 7$

WORKED EXAMPLES



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**Example 1: Solve $x + 5 = 12$.**

- Undo the $+5$ by subtracting 5 from both sides.

Inverse operation.

► $x = 12 - 5$.

Apply to both sides.

► $x = 7$.

Check: $7 + 5 = 12$.

► $x = 7$.

Final answer.

EXERCISES (EASY → DIFFICULT)

1. $x + 15 = 23$. $x = ?$
2. $x + 11 = 26$. $x = ?$
3. $x + 4 = 10$. $x = ?$
4. $x + 14 = 24$. $x = ?$
5. $x + 7 = 9$. $x = ?$
6. $x + 17 = 21$. $x = ?$
7. $x + 19 = 29$. $x = ?$
8. $x + 15 = 29$. $x = ?$
9. $x + 7 = 12$. $x = ?$
10. $x + 6 = 20$. $x = ?$

Find missing number ($\times$, $\div$)

Finding a missing number ($\times$, $\div$)

$$\bullet \bullet \bullet + \bullet \bullet = 5$$

$$3 + 2 = 5$$

DEFINITIONS**Inverse for $\times$
and $\div$**

Multiplication and division undo each other.

KEY FORMULAS

- **To undo $\times$ b:** divide both sides by b
- **To undo $\div$ b:** multiply both sides by b
- **Example:** $3 \times x = 12 \rightarrow x = 12 \div 3 = 4$

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WORKED EXAMPLES

Example 1: Solve $3 \times x = 12$.

- Undo the $\times 3$ by dividing both sides by 3.

Inverse operation.

- $x = 12 \div 3$.

Apply to both sides.

- $x = 4$.

Check: $3 \times 4 = 12$.

- **$x = 4$.**

Final answer.

EXERCISES (EASY → DIFFICULT)

1. $9 \times x = 63$. $x = ?$
2. $6 \times x = 66$. $x = ?$
3. $6 \times x = 72$. $x = ?$
4. $3 \times x = 15$. $x = ?$
5. $9 \times x = 36$. $x = ?$
6. $9 \times x = 54$. $x = ?$
7. $8 \times x = 24$. $x = ?$
8. $3 \times x = 27$. $x = ?$
9. $2 \times x = 12$. $x = ?$
10. $9 \times x = 108$. $x = ?$

Substitute into expression

Substituting into an expression


$$\bullet \bullet \bullet + \bullet \bullet = 5$$

$$3 + 2 = 5$$

DEFINITIONS

Variable A letter that stands for a number, like x .

Substitute Replace the letter with a given number.

KEY FORMULAS

- **Replace the letter with its value, then calculate**
- **Example:** if $x = 3$, then $x + 5 = 3 + 5 = 8$



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WORKED EXAMPLES

Example 1: If $x = 3$, find the value of $x + 5$.

► Replace x with 3.

Substitute.

► $3 + 5$.

Now just add.

► $= 8$.

Calculate.

► **8.**

Final answer.

EXERCISES (EASY → DIFFICULT)

1. If $x = 7$, value of $x + 5$:
2. If $x = 2$, value of $x + 5$:
3. If $x = 6$, value of $x + 5$:
4. If $x = 5$, value of $x + 5$:
5. If $x = 4$, value of $x + 5$:
6. If $x = 8$, value of $x + 5$:
7. If $x = 3$, value of $x + 5$:

End of Chapter 10 — Mixed Exercise

Ten questions across the whole chapter, from easy to difficult.

1. $x + 15 = 23$. $x = ?$
2. $6 \times x = 66$. $x = ?$
3. If $x = 6$, value of $x + 5$:
4. $x + 14 = 24$. $x = ?$
5. $9 \times x = 36$. $x = ?$
6. If $x = 8$, value of $x + 5$:
7. $x + 19 = 29$. $x = ?$
8. $3 \times x = 27$. $x = ?$
9. If $x = 3$, value of $x + 5$:
10. $x + 6 = 20$. $x = ?$

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CHAPTER 11

Geometry

Triangle Types of triangles

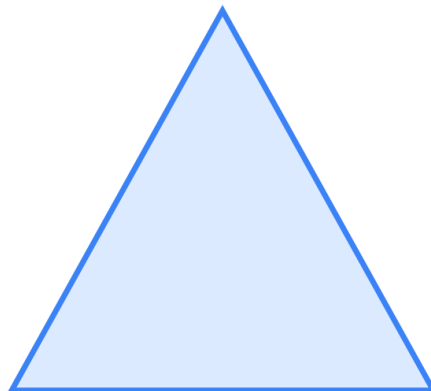
Quadrilaterals Quadrilaterals

Angles Angles in a triangle

Symmetry Lines of symmetry

Triangle types

Types of triangles



equilateral
3 equal sides, all 60°

DEFINITIONS

Equilateral All 3 sides equal and all 3 angles 60° .

Isosceles 2 equal sides and 2 equal angles.



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KEY FORMULAS

- **Equilateral:** 3 equal sides
- **Isosceles:** 2 equal sides
- **Scalene:** no equal sides
- **Right:** one 90° angle

WORKED EXAMPLES

Example 1: What is a triangle with 3 equal sides called?

- All three sides are the same length.

Read the property.

- That is an equilateral triangle.

Match the name.

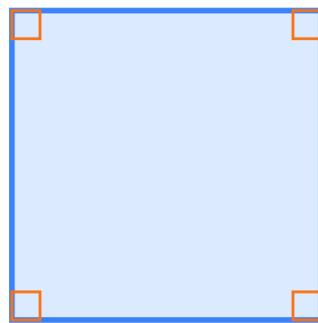
- **equilateral.**

Final answer.

EXERCISES (EASY → DIFFICULT)

1. A triangle with one 90° angle:
2. A triangle with 3 equal sides:
3. A triangle with 2 equal sides:
4. A triangle with no equal sides:

Quadrilaterals



square

4 equal sides, 4 right angles

DEFINITIONS

Square	4 equal sides and 4 right angles.
Rectangle	4 right angles, opposite sides equal.



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KEY FORMULAS

- **Square:** 4 equal sides + 4 right angles
- **Rectangle:** 4 right angles, opposite sides equal
- **Rhombus:** 4 equal sides
- **Trapezium:** one pair of parallel sides

WORKED EXAMPLES

Example 1: Which quadrilateral has 4 equal sides AND 4 right angles?

- 4 equal sides AND 4 right angles.

Both conditions.

- That is a square.

Match.

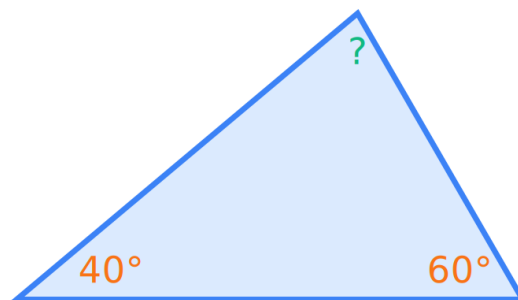
- **square.**

Final answer.

EXERCISES (EASY → DIFFICULT)

1. Quadrilateral with 4 equal sides:
2. Quadrilateral with one pair parallel sides:
3. Quadrilateral with 4 right angles:
4. Quadrilateral with 4 equal sides, 4 right angles:

Angles in a triangle



Triangle angles sum to 180°

DEFINITIONS

Interior angles The angles inside the triangle.

Triangle angle sum The three angles always add to 180° .



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KEY FORMULAS

- The three angles of a triangle add to 180°
- To find a missing angle: $180^\circ - (\text{sum of the other two})$

WORKED EXAMPLES

Example 1: Two angles of a triangle are 40° and 60° . Find the third.

► All three add to 180° .

Triangle rule.

► Known sum: $40 + 60 = 100$.

Add the two.

► Third: $180 - 100 = 80^\circ$.

Subtract.

► 80° .

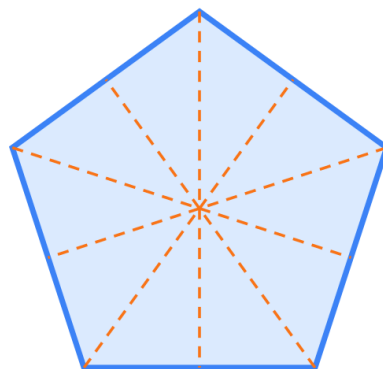
Final answer.

EXERCISES (EASY → DIFFICULT)

1. Two angles of a triangle: 54° , 53° . Third?
2. Two angles of a triangle: 53° , 43° . Third?
3. Two angles of a triangle: 78° , 49° . Third?
4. Two angles of a triangle: 49° , 41° . Third?
5. Two angles of a triangle: 65° , 80° . Third?
6. Two angles of a triangle: 76° , 65° . Third?
7. Two angles of a triangle: 39° , 39° . Third?
8. Two angles of a triangle: 73° , 73° . Third?
9. Two angles of a triangle: 57° , 43° . Third?
10. Two angles of a triangle: 54° , 49° . Third?

Symmetry

Lines of symmetry



A regular pentagon has 5 lines of symmetry



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DEFINITIONS

Line of symmetry

A line that splits a shape into two matching halves (mirror images).

Regular shape

A shape with all sides and all angles equal.

KEY FORMULAS

- **A regular shape has as many lines of symmetry as it has sides**
- **Square:** 4 lines. **Equilateral triangle:** 3 lines.
- **Regular pentagon:** 5 lines

WORKED EXAMPLES

Example 1: How many lines of symmetry does a regular pentagon have?

- ▶ A regular pentagon has 5 equal sides.

Count the sides.

- ▶ A regular shape has one line per side.

Rule.

- ▶ **5.**

Final answer.

EXERCISES (EASY → DIFFICULT)

1. Lines of symmetry in a regular pentagon:

End of Chapter 11 — Mixed Exercise

Ten questions across the whole chapter, from easy to difficult.

1. A triangle with one 90° angle:
2. Quadrilateral with one pair parallel sides:
3. Two angles of a triangle: 78° , 49° . Third?
4. Lines of symmetry in a regular pentagon:
5. A triangle with no equal sides:
6. Quadrilateral with 4 equal sides, 4 right angles:
7. Two angles of a triangle: 39° , 39° . Third?
8. Lines of symmetry in a regular pentagon:
9. A triangle with 3 equal sides:
10. Quadrilateral with 4 equal sides:

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**CHAPTER 12**

Measurement and Area

Perimeter Area of a rectangle

Area Area of a triangle

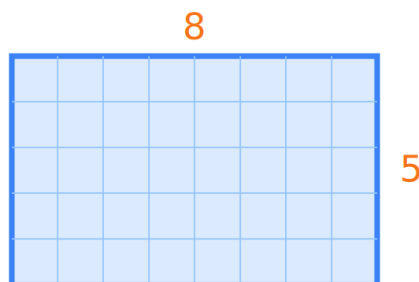
Volume Volume of a cube

Volume Volume of a cuboid

Capacity Capacity: litres and millilitres

Perimeter and area of rectangles

Area of a rectangle



$$A = l \times w = 40$$

Area = space inside

DEFINITIONS

Area The space inside a 2D shape, in square units (cm², m²).

Perimeter The distance all the way around a shape.



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KEY FORMULAS

- **Area of rectangle:** $A = \text{length} \times \text{width}$
- **Perimeter of rectangle:** $P = 2 \times (\text{length} + \text{width})$

WORKED EXAMPLES

Example 1: Find the area of a rectangle 8 long and 5 wide.

► $A = \text{length} \times \text{width}.$

Rectangle formula.

► $= 8 \times 5.$

Substitute.

► $= 40$ square units.

Multiply.

► **40.**

Final answer.

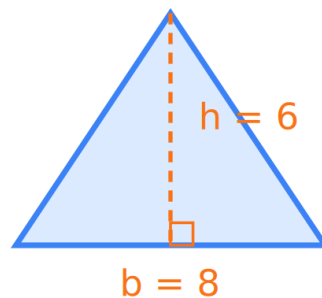
EXERCISES (EASY → DIFFICULT)

1. Area of 9×11 rectangle:
2. Area of 7×7 rectangle:
3. Area of 10×5 rectangle:
4. Area of 15×4 rectangle:
5. Area of 13×8 rectangle:
6. Area of 10×4 rectangle:
7. Area of 15×11 rectangle:
8. Area of 11×7 rectangle:
9. Area of 8×3 rectangle:
10. Area of 14×12 rectangle:

Area of triangle

Area of a triangle

$$A = \frac{1}{2} \times b \times h = 24$$



Height $\perp$ base



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DEFINITIONS

Base	A side of the triangle, usually the bottom.
Height	The straight-up (perpendicular) distance from the base to the top point.

KEY FORMULAS

- **Area of triangle:** $A = \frac{1}{2} \times \text{base} \times \text{height}$
- **Height must be perpendicular to the base**

WORKED EXAMPLES

Example 1: Find the area of a triangle with base 8 and height 6.

► $A = \frac{1}{2} \times \text{base} \times \text{height}.$

Triangle formula.

► $= \frac{1}{2} \times 8 \times 6 = \frac{1}{2} \times 48.$

Substitute.

► $= 24.$

Halve.

► **24.**

Final answer.

EXERCISES (EASY → DIFFICULT)

1. Area of triangle base 10, height 7:
2. Area of triangle base 4, height 5:
3. Area of triangle base 8, height 5:
4. Area of triangle base 4, height 6:
5. Area of triangle base 4, height 7:
6. Area of triangle base 4, height 3:
7. Area of triangle base 10, height 8:
8. Area of triangle base 6, height 3:
9. Area of triangle base 8, height 8:
10. Area of triangle base 10, height 4:



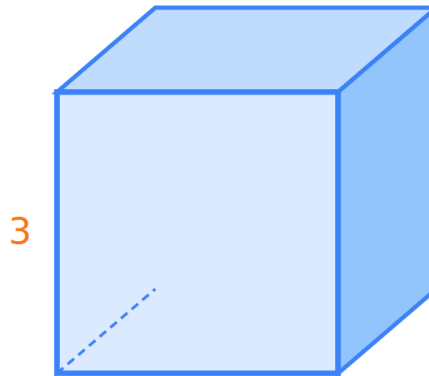
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Volume of cube

Volume of a cube



side = 3

$$V = \text{side}^3 = 27$$

Volume = space inside

DEFINITIONS

Volume	The space inside a 3D shape, in cubic units (cm^3).
Cube	A box where all edges are the same length.

KEY FORMULAS

- **Volume of cube:** $V = \text{side}^3 = \text{side} \times \text{side} \times \text{side}$
- **Example:** side 3 $\rightarrow 3 \times 3 \times 3 = 27$

WORKED EXAMPLES

Example 1: Find the volume of a cube with side 3.

► $V = \text{side} \times \text{side} \times \text{side}$.

Cube formula.

► $= 3 \times 3 \times 3$.

Substitute.

► $= 27$.

Multiply.

► **27.**

Final answer.

EXERCISES (EASY $\rightarrow$ DIFFICULT)

1. Volume of cube side 8:
2. Volume of cube side 3:
3. Volume of cube side 4:
4. Volume of cube side 5:
5. Volume of cube side 2:



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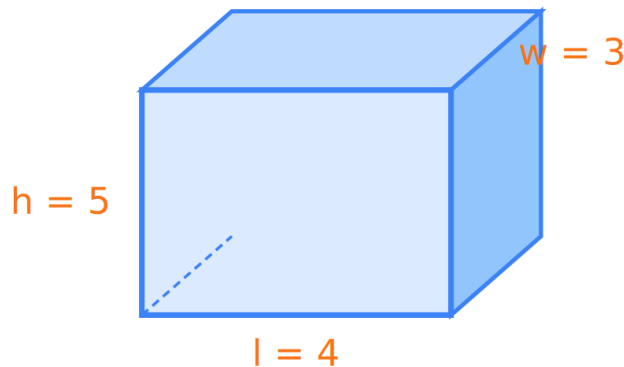
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6. Volume of cube side 6:
7. Volume of cube side 7:

Volume of cuboid

Volume of a cuboid



$$V = l \times w \times h = 60$$

Volume = space inside

DEFINITIONS

Cuboid

A box shape with 6 rectangular faces (length, width, height).

KEY FORMULAS

- **Volume of cuboid:** $V = \text{length} \times \text{width} \times \text{height}$
- **Multiply all three dimensions**

WORKED EXAMPLES

Example 1: Find the volume of a $4 \times 3 \times 5$ cuboid.

► $V = \text{length} \times \text{width} \times \text{height}$.

Cuboid formula.

► $= 4 \times 3 \times 5$.

Substitute.

► $= 12 \times 5 = 60$.

Multiply step by step.

► **60.**

Final answer.

EXERCISES (EASY → DIFFICULT)

1. Volume of $8 \times 3 \times 3$ cuboid:
2. Volume of $5 \times 5 \times 6$ cuboid:
3. Volume of $7 \times 6 \times 8$ cuboid:
4. Volume of $8 \times 4 \times 4$ cuboid:



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5. Volume of $6 \times 5 \times 4$ cuboid:
6. Volume of $2 \times 7 \times 8$ cuboid:
7. Volume of $6 \times 5 \times 5$ cuboid:
8. Volume of $4 \times 3 \times 3$ cuboid:
9. Volume of $5 \times 4 \times 4$ cuboid:
10. Volume of $3 \times 6 \times 4$ cuboid:

Capacity word problems

Capacity: litres and millilitres



$$7 - 3 = 4$$

DEFINITIONS

Capacity	How much liquid a container can hold.
Litre / millilitre	Units of capacity. 1 litre (L) = 1000 millilitres (ml).

KEY FORMULAS

- **1 L = 1000 ml**
- **L → ml:** multiply by 1000
- **ml → L:** divide by 1000

WORKED EXAMPLES

Example 1: A jug holds 3 L. How many millilitres is that?

► 1 L = 1000 ml.

Conversion fact.

► $3 \times 1000 = 3000$.

Multiply.

► **3000 ml.**

Final answer.

EXERCISES (EASY → DIFFICULT)

1. A jug holds 4 L = ? ml
2. A jug holds 3 L = ? ml
3. A jug holds 2 L = ? ml
4. A jug holds 5 L = ? ml



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End of Chapter 12 — Mixed Exercise

Ten questions across the whole chapter, from easy to difficult.

1. Area of 9×11 rectangle:
2. Area of triangle base 4, height 5:
3. Volume of cube side 4:
4. Volume of $8 \times 4 \times 4$ cuboid:
5. A jug holds 5 L = ? ml
6. Area of 10×4 rectangle:
7. Area of triangle base 10, height 8:
8. Volume of cube side 7:
9. Volume of $5 \times 4 \times 4$ cuboid:
10. A jug holds 4 L = ? ml





CHAPTER 13

Data and Probability

Mean Mean (average)

Median Median

Mode Mode

Range Range

Probability Probability: certain, impossible, likely

Mean (average)



DEFINITIONS

Mean The average: add all the values, then divide by how many there are.

KEY FORMULAS

- **Mean = sum of values ÷ how many values**
- **Example:** mean of 2, 4, 6 = $(2+4+6) \div 3 = 4$

WORKED EXAMPLES



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**Example 1: Find the mean of 4, 6, 8, 2.**

► Add them: $4 + 6 + 8 + 2 = 20$.

Find the sum.

► Count: there are 4 values.

The divisor.

► Mean = $20 \div 4 = 5$.

Divide.

► **5.**

Final answer.

EXERCISES (EASY → DIFFICULT)

1. Mean of 5, 9, 10, 2:
2. Mean of 9, 2, 2, 3:
3. Mean of 4, 9, 10, 3:
4. Mean of 2, 9, 2, 10:
5. Mean of 6, 8, 4, 7:
6. Mean of 5, 7, 8, 8:
7. Mean of 4, 9, 4, 4:
8. Mean of 2, 10, 9, 3:
9. Mean of 4, 10, 5, 7:
10. Mean of 5, 4, 5, 4:

Median

**DEFINITIONS****Median**

The middle value when the data is sorted in order.

KEY FORMULAS

- **Step 1:** sort the values from smallest to biggest
- **Step 2:** pick the middle one

WORKED EXAMPLES**DIGITAL TEXTBOOK**

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**Example 1: Find the median of 3, 1, 4, 1, 5.**

► Sort: 1, 1, 3, 4, 5.

Smallest to biggest.

► The middle (3rd of 5) is 3.

Middle value.

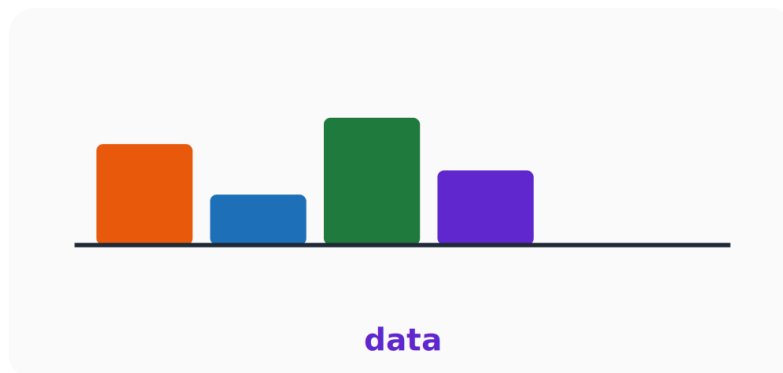
► **3.**

Final answer.

EXERCISES (EASY → DIFFICULT)

1. Median of 1, 2, 2, 3, 8:
2. Median of 1, 3, 6, 7, 9:
3. Median of 1, 3, 5, 5, 7:
4. Median of 2, 3, 4, 7, 8:
5. Median of 1, 2, 3, 5, 6:
6. Median of 1, 1, 3, 7, 8:
7. Median of 1, 2, 4, 8, 9:
8. Median of 4, 5, 6, 8, 8:
9. Median of 1, 2, 3, 3, 6:
10. Median of 1, 3, 3, 5, 8:

Mode

**DEFINITIONS****Mode**

The value that appears most often.

KEY FORMULAS

- **Mode = the most frequent value**
- **Memory:** M_{Od}e = M_Ost often

WORKED EXAMPLES**DIGITAL TEXTBOOK**

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**Example 1: Find the mode of 4, 4, 2, 7, 9.**

- Count how often each appears.

Tally them.

- 4 appears twice; the rest once.

Most frequent.

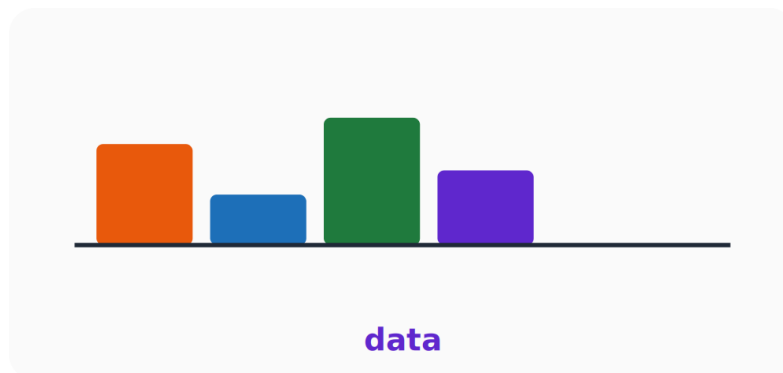
- **4.**

Final answer.

EXERCISES (EASY → DIFFICULT)

1. Mode of 2, 2, 4, 1, 2:
2. Mode of 5, 5, 3, 9, 5:
3. Mode of 2, 2, 1, 2, 3:
4. Mode of 3, 3, 6, 8, 4:
5. Mode of 2, 2, 4, 9, 5:
6. Mode of 2, 2, 7, 8, 1:
7. Mode of 7, 7, 3, 4, 2:
8. Mode of 5, 5, 9, 4, 3:
9. Mode of 5, 5, 5, 8, 7:
10. Mode of 2, 2, 7, 3, 2:

Range

**DEFINITIONS****Range**

The difference between the biggest and smallest values.

KEY FORMULAS

- **Range = maximum – minimum**
- **Shows how spread out the data is**

WORKED EXAMPLES**DIGITAL TEXTBOOK**

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in the interactive edition (M.4)

**Example 1: Find the range of 3, 8, 14.**

► Biggest: 14, smallest: 3.

Max and min.

► Range = $14 - 3 = 11$.

Subtract.

► **11.**

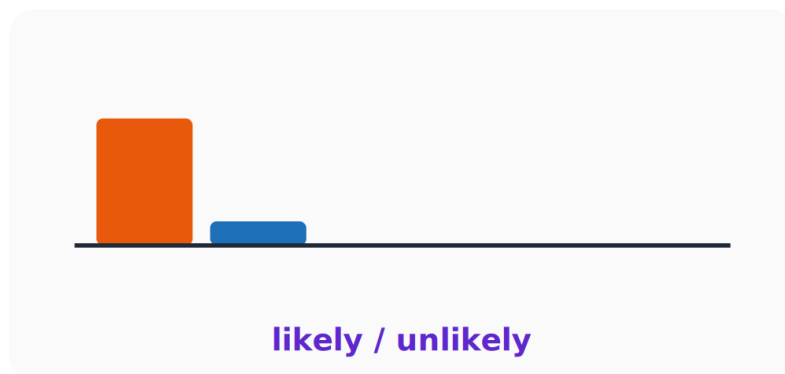
Final answer.

EXERCISES (EASY → DIFFICULT)

1. Range of 4, 9, 11:
2. Range of 1, 9, 11:
3. Range of 5, 7, 15:
4. Range of 2, 7, 12:
5. Range of 2, 10, 12:
6. Range of 4, 10, 12:
7. Range of 3, 10, 13:
8. Range of 5, 9, 11:
9. Range of 3, 7, 15:
10. Range of 1, 8, 12:

Probability — likely or unlikely

Probability: certain, impossible, likely

**DEFINITIONS**

Probability How likely something is, from 0 (impossible) to 1 (certain).

Impossible Cannot happen. Probability = 0.

KEY FORMULAS

- **$P(\text{event}) = \text{favourable outcomes} \div \text{total outcomes}$**
- **Impossible: $P = 0$. Certain: $P = 1$.**
- **A die only has the numbers 1 to 6**

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WORKED EXAMPLES

Example 1: What is the probability of rolling a 7 on a normal die?

- ▶ A die only has the numbers 1 to 6.

No 7 exists.

- ▶ There are 0 ways to roll a 7.

Impossible.

- ▶ $P = 0 \div 6 = 0$.

Favourable $\div$ total.

- ▶ **0.**

Final answer.

EXERCISES (EASY $\rightarrow$ DIFFICULT)

1. P(rolling 7 on a 6-sided die):

End of Chapter 13 — Mixed Exercise

Ten questions across the whole chapter, from easy to difficult.

1. Mean of 5, 9, 10, 2:
2. Median of 1, 3, 6, 7, 9:
3. Mode of 2, 2, 1, 2, 3:
4. Range of 2, 7, 12:
5. P(rolling 7 on a 6-sided die):
6. Mean of 5, 7, 8, 8:
7. Median of 1, 2, 4, 8, 9:
8. Mode of 5, 5, 9, 4, 3:
9. Range of 3, 7, 15:
10. P(rolling 7 on a 6-sided die):

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ANSWERS

Worked solutions to all exercises

Each answer gives the final result first, followed by the key working steps. For fully animated, step-by-step solutions, open the digital edition with the QR code on any page.

CHAPTER 1 — Whole Numbers and Place Value

Place value to millions

- 90
- 500000
- 600
- 3000
- 80000
- 4000
- 0
- 800
- 70000
- 70000

Round to nearest 1000

- 27000
- 13000
- 90000
- 95000
- 26000
- 52000
- 75000
- 90000
- 13000
- 89000

Compare large numbers

- >
- <
- <
- <
- >
- >
- >
- >
- >
- <



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**Roman numerals to 1000**

1. CD
2. D
3. M
4. C
5. CM

End of Chapter 1 — Mixed Exercise

1. 90
2. 13000
3. <
4. C
5. 80000
6. 52000
7. >
8. CM
9. 70000
10. 89000

CHAPTER 2 — Addition and Subtraction**Add multi-digit numbers**

1. 74034
2. 77142
3. 73665
4. 83847
5. 47809
6. 72596
7. 59976
8. 80231
9. 16338
10. 50490

Subtract multi-digit numbers

1. 36807
2. 36140
3. 61317
4. 20118
5. 30221
6. 59901
7. 28149
8. 24681
9. 31447
10. 34528

Estimate sums and differences

1. 11000
2. 13000
3. 8000
4. 9000
5. 11000
6. 12000
7. 5000
8. 12000





9. 12000
10. 10000

End of Chapter 2 — Mixed Exercise

1. 74034
2. 36140
3. 8000
4. 83847
5. 30221
6. 12000
7. 59976
8. 24681
9. 12000
10. 50490

CHAPTER 3 — Multiplication

Multiply 3-digit by 1-digit

1. 460
2. 7803
3. 771
4. 2928
5. 6538
6. 2296
7. 1890
8. 3762
9. 2364
10. 6520

Multiply 2-digit by 2-digit

1. 6278
2. 1806
3. 4095
4. 1675
5. 1264
6. 1971
7. 6298
8. 1008
9. 3612
10. 7008

Multiply by 10, 100, 1000

1. 33200
2. 3660
3. 5400
4. 31700
5. 383000
6. 1270
7. 45800
8. 3540
9. 4600
10. 11600



**Square numbers**

1. 225
2. 169
3. 81
4. 100
5. 121
6. 144
7. 4
8. 196
9. 25
10. 16

End of Chapter 3 — Mixed Exercise

1. 460
2. 1806
3. 5400
4. 100
5. 6538
6. 1971
7. 45800
8. 196
9. 2364
10. 7008

CHAPTER 4 — Division

Long division by 1-digit

1. 86
2. 99
3. 36
4. 87
5. 31
6. 48
7. 97
8. 23
9. 75
10. 39

Division with remainders

1. 21 R 1
2. 22 R 3
3. 28 R 3
4. 29 R 2
5. 16 R 1
6. 10 R 3
7. 21 R 5
8. 25 R 2
9. 16 R 2
10. 21 R 1



**Estimate quotients**

1. 20
2. 21
3. 13
4. 24
5. 11
6. 19
7. 16
8. 26
9. 11
10. 25

Square roots (perfect squares)

1. 9
2. 8
3. 4
4. 6
5. 11
6. 3
7. 10
8. 12
9. 7
10. 2

Long Division (game)

1. play

End of Chapter 4 — Mixed Exercise

1. 86
2. 22 R 3
3. 13
4. 6
5. play
6. 48
7. 21 R 5
8. 26
9. 7
10. play

CHAPTER 5 — Number Theory**Prime factorisation**

1. $2 \times 3 \times 5$
2. $2^2 \times 3$
3. $2^2 \times 5$
4. 2×3^2

HCF of two numbers

1. 1
2. 1
3. 1
4. 1
5. 1
6. 5
7. 2





8. 1
9. 1
10. 1

LCM of two numbers

1. 21
2. 10
3. 7
4. 42
5. 15
6. 14
7. 6
8. 4
9. 12
10. 28

Prime or composite

1. composite
2. composite
3. composite
4. composite
5. prime
6. composite
7. prime
8. composite
9. composite
10. prime

End of Chapter 5 — Mixed Exercise

1. $2 \times 3 \times 5$
2. 1
3. 7
4. composite
5. 2×3^2
6. 5
7. 6
8. composite
9. $2^2 \times 3$
10. 1

CHAPTER 6 — Fractions

Equivalent fractions

1. 4
2. 8
3. 6
4. 10

Simplify fractions

1. $\frac{1}{3}$
2. $\frac{1}{4}$
3. $\frac{3}{5}$
4. $\frac{1}{2}$
5. $\frac{3}{6}$
6. $\frac{2}{3}$





7. $\frac{3}{4}$
8. $\frac{3}{5}$
9. $\frac{2}{5}$
10. $\frac{2}{4}$

Compare fractions (different denoms)

1. $<$
2. $>$
3. $>$
4. $<$
5. $>$
6. $>$
7. $=$
8. $>$
9. $<$
10. $<$

Add fractions (same denom)

1. 4
2. 2
3. 5
4. 6
5. 7
6. 6
7. 5
8. 2
9. 4
10. 4

Subtract fractions (same denom)

1. 3
2. 1
3. 5
4. 2
5. 1
6. 2
7. 4
8. 5
9. 3
10. 3

Mixed numbers

1. $\frac{8}{5}$
2. $\frac{17}{4}$
3. $\frac{3}{2}$
4. $\frac{5}{4}$
5. $\frac{5}{3}$
6. $\frac{27}{6}$
7. $\frac{13}{5}$
8. $\frac{21}{6}$
9. $\frac{15}{6}$
10. $\frac{33}{6}$



**Fraction of a number**

1. 3
2. 6
3. 4
4. 5

End of Chapter 6 — Mixed Exercise

1. 4
2. $\frac{1}{4}$
3. $>$
4. 6
5. 1
6. $\frac{27}{6}$
7. 5
8. 10
9. $\frac{2}{5}$
10. $<$

CHAPTER 7 — Decimals**Read and write decimals**

1. 4 point 9
2. 2 point 8
3. 2 point 7
4. 5 point 6
5. 8 point 4
6. 3 point 4
7. 7 point 8
8. 1 point 8
9. 3 point 1
10. 6 point 8

Compare decimals

1. $<$
2. $>$
3. $<$
4. $<$
5. $>$
6. $<$
7. $>$
8. $>$
9. $<$
10. $>$

Add decimals

1. 18.2
2. 12.4
3. 12.6
4. 10.6
5. 9
6. 8.4
7. 12.2
8. 10.9
9. 8.9
10. 15



**Convert decimal $\leftrightarrow$ fraction**

1. $\frac{3}{10}$
2. $\frac{6}{10}$
3. $\frac{1}{10}$
4. $\frac{4}{10}$
5. $\frac{9}{10}$
6. $\frac{7}{10}$
7. $\frac{8}{10}$
8. $\frac{2}{10}$
9. $\frac{5}{10}$

End of Chapter 7 — Mixed Exercise

1. 4 point 9
2. $>$
3. 12.6
4. $\frac{4}{10}$
5. 8 point 4
6. $<$
7. 12.2
8. $\frac{2}{10}$
9. 3 point 1
10. $>$

CHAPTER 8 — Ratios and Rates**Simple ratios**

1. 2:4
2. 5:4
3. 3:2
4. 5:5
5. 3:5
6. 2:5
7. 4:2
8. 5:3
9. 4:4
10. 2:2

Equivalent ratios

1. 8
2. 6
3. 4

Unit rates

1. 23
2. 60
3. 42
4. 138
5. 23
6. 53
7. 115
8. 64
9. 47
10. 100



**End of Chapter 8 — Mixed Exercise**

1. 2:4
2. 6
3. 42
4. 5:5
5. 4
6. 53
7. 4:2
8. 8
9. 47
10. 2:2

CHAPTER 9 — Percentage**Percent as fraction**

1. 25/100
2. 10/100
3. 50/100
4. 75/100
5. 20/100

Percent of a number

1. 0.8
2. 1.2
3. 3
4. 1.6
5. 2
6. 8
7. 8
8. 10
9. 6
10. 5

Convert decimal ↔ percent

1. 10%
2. 25%
3. 5%
4. 50%

End of Chapter 9 — Mixed Exercise

1. 25/100
2. 1.2
3. 5%
4. 75/100
5. 2
6. 50%
7. 20/100
8. 10
9. 10%
10. 10/100





CHAPTER 10 — Algebra

Find missing number (+, -)

1. 8
2. 15
3. 6
4. 10
5. 2
6. 4
7. 10
8. 14
9. 5
10. 14

Find missing number ($\times$, $\div$)

1. 7
2. 11
3. 12
4. 5
5. 4
6. 6
7. 3
8. 9
9. 6
10. 12

Substitute into expression

1. 12
2. 7
3. 11
4. 10
5. 9
6. 13
7. 8

End of Chapter 10 — Mixed Exercise

1. 8
2. 11
3. 11
4. 10
5. 4
6. 13
7. 10
8. 9
9. 8
10. 14





CHAPTER 11 — Geometry

Triangle types

1. right
2. equilateral
3. isosceles
4. scalene

Quadrilaterals

1. rhombus
2. trapezium
3. rectangle
4. square

Angles in a triangle

1. 73
2. 84
3. 53
4. 90
5. 35
6. 39
7. 102
8. 34
9. 80
10. 77

Symmetry

1. 5

End of Chapter 11 — Mixed Exercise

1. right
2. trapezium
3. 53
4. 5
5. scalene
6. square
7. 102
8. 5
9. equilateral
10. rhombus

CHAPTER 12 — Measurement and Area

Perimeter and area of rectangles

1. 99
2. 49
3. 50
4. 60
5. 104
6. 40
7. 165
8. 77
9. 24





10. 168

Area of triangle

1. 35
2. 10
3. 20
4. 12
5. 14
6. 6
7. 40
8. 9
9. 32
10. 20

Volume of cube

1. 512
2. 27
3. 64
4. 125
5. 8
6. 216
7. 343

Volume of cuboid

1. 72
2. 150
3. 336
4. 128
5. 120
6. 112
7. 150
8. 36
9. 80
10. 72

Capacity word problems

1. 4000
2. 3000
3. 2000
4. 5000

End of Chapter 12 — Mixed Exercise

1. 99
2. 10
3. 64
4. 128
5. 5000
6. 40
7. 40
8. 343
9. 80
10. 4000





CHAPTER 13 — Data and Probability

Mean (average)

1. 6.5
2. 4
3. 6.5
4. 5.75
5. 6.25
6. 7
7. 5.25
8. 6
9. 6.5
10. 4.5

Median

1. 2
2. 6
3. 5
4. 4
5. 3
6. 3
7. 4
8. 6
9. 3
10. 3

Mode

1. 2
2. 5
3. 2
4. 3
5. 2
6. 2
7. 7
8. 5
9. 5
10. 2

Range

1. 7
2. 10
3. 10
4. 10
5. 10
6. 8
7. 10
8. 6
9. 12
10. 11





Probability — likely or unlikely

1. 0

End of Chapter 13 — Mixed Exercise

1. 6.5

2. 6

3. 2

4. 10

5. 0

6. 7

7. 4

8. 5

9. 12

10. 0



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