

# FIRE JUNGLE

CAPS-aligned mathematics for South African learners



**GRADE 4**

# Mathematics

## TEXTBOOK

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*Definitions • Worked Examples • Exercises • Full Answers*



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**by Joseph Matthew Mitchell**

# Fire Jungle Grade 4 Mathematics

*A CAPS-aligned study textbook for the FET phase*

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## How to use this book

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**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

**Numbers** Writing numbers in words

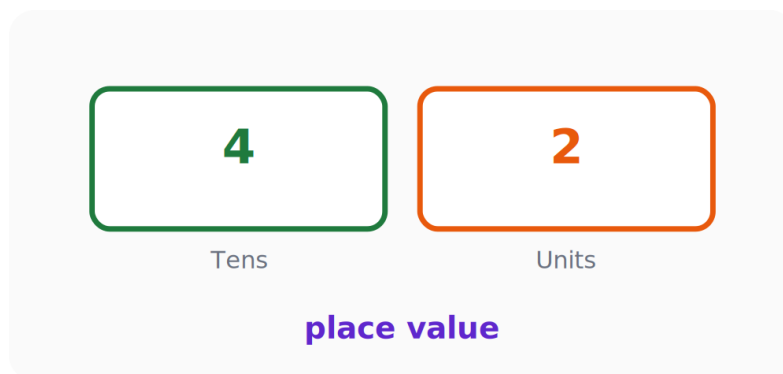
**Round** Rounding to the nearest 10

**Round** Rounding to the nearest 100

**Compare** Comparing 4-digit numbers

**Roman** Roman numerals

## Place value to 10 000



### DEFINITIONS

**Digit** A single number symbol from 0 to 9.

**Place value** What a digit is worth, based on where it sits in the number.

### KEY FORMULAS

- **Value of a digit = digit × its place value**
- **Places (right to left):** units (1), tens (10), hundreds (100), thousands (1 000)
- **Example:** in 4 567, the 4 is worth  $4 \times 1\,000 = 4\,000$



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## WORKED EXAMPLES

**Example 1: In 4 567, what is the value of the thousands digit?**

- The thousands digit is the first one: 4.

*Leftmost of 4 digits.*

- Its place value is 1 000.

*Thousands place.*

- Value =  $4 \times 1\,000 = 4\,000$ .

*Digit  $\times$  place value.*

- **4 000.**

*Final answer.*

## EXERCISES (EASY → DIFFICULT)

1. In 1445, what is the value of the thousands digit?
2. In 8271, what is the value of the thousands digit?
3. In 3760, what is the value of the thousands digit?
4. In 6668, what is the value of the thousands digit?
5. In 5128, what is the value of the thousands digit?
6. In 3983, what is the value of the thousands digit?
7. In 8579, what is the value of the thousands digit?
8. In 2735, what is the value of the thousands digit?
9. In 3885, what is the value of the thousands digit?
10. In 3726, what is the value of the thousands digit?

## Numbers in words

*Writing numbers in words*

**23 = twenty-three**

**numbers in words**

## DEFINITIONS

- |                       |                                                                                |
|-----------------------|--------------------------------------------------------------------------------|
| <b>Number name</b>    | How we say or write a number using words instead of digits.                    |
| <b>Tens and units</b> | A two-digit number is made of tens and units, like $47 = \text{forty-seven}$ . |

## KEY FORMULAS

- **Tens words:** twenty, thirty, forty, fifty, sixty, seventy, eighty, ninety
- **Join with a hyphen:**  $47 \rightarrow \text{forty-seven}$
- **Special teens:** eleven, twelve, thirteen ... nineteen



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## WORKED EXAMPLES

**Example 1: Write 47 in words.**

- Split into tens and units: 40 and 7.

*Place value.*

- 40 is 'forty', 7 is 'seven'.

*Name each part.*

- Join with a hyphen: forty-seven.

*Combine.*

- **forty-seven.**

*Final answer.*

## Round to nearest 10

*Rounding to the nearest 10*



**round 24 to nearest 10**

## DEFINITIONS

**Round** Change a number to a nearby tidy number (a multiple of 10 here).

**Units digit** The last digit. It decides whether to round up or down.

## KEY FORMULAS

- **Look at the units digit**
- **5 or more** → round UP
- **4 or less** → round DOWN

## WORKED EXAMPLES

**Example 1: Round 47 to the nearest 10.**

- Look at the units digit: 7.

*Last digit.*

- 7 is 5 or more, so round UP.

*Rounding rule.*

- 47 → 50.

*Up to the next ten.*

- **50.**

*Final answer.*

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**EXERCISES (EASY → DIFFICULT)**

1. Round 832 to nearest 10:
2. Round 138 to nearest 10:
3. Round 867 to nearest 10:
4. Round 461 to nearest 10:
5. Round 721 to nearest 10:
6. Round 272 to nearest 10:
7. Round 657 to nearest 10:
8. Round 542 to nearest 10:
9. Round 843 to nearest 10:
10. Round 930 to nearest 10:

**Round to nearest 100***Rounding to the nearest 100***round 247 to nearest 100****DEFINITIONS****Tens digit**

The second digit from the right. It decides rounding to the nearest 100.

**KEY FORMULAS**

- **Look at the tens digit**
- **5 or more** → round UP
- **4 or less** → round DOWN

**WORKED EXAMPLES****Example 1: Round 473 to the nearest 100.**

- Look at the tens digit: 7.

*Second from right.*

- 7 is 5 or more, so round UP.

*Rule.*

- 473 → 500.

*Up to next hundred.*

- **500.**

*Final answer.***DIGITAL TEXTBOOK**Scan to open this section  
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**EXERCISES (EASY → DIFFICULT)**

1. Round 596 to nearest 100:
2. Round 703 to nearest 100:
3. Round 857 to nearest 100:
4. Round 101 to nearest 100:
5. Round 57 to nearest 100:
6. Round 795 to nearest 100:
7. Round 566 to nearest 100:
8. Round 195 to nearest 100:
9. Round 67 to nearest 100:
10. Round 361 to nearest 100:

**Compare 4-digit numbers***Comparing 4-digit numbers*

$$46 > 29$$

**compare the numbers****DEFINITIONS**

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

**Less than ( $<$ )** The smaller number.

**KEY FORMULAS**

- **Compare from the LEFT** — start with the thousands
- **First place that differs decides it**
- **Same start? move right** to the next digit

**WORKED EXAMPLES**

**Example 1: Compare 4 580 and 4 560. Use  $<$ ,  $>$ , or  $=$ .**

- ▶ Thousands match (4), hundreds match (5).

*Move right.*

- ▶ Tens: 8 vs 6 → 8 is bigger.

*First difference.*

- ▶ So  $4\ 580 > 4\ 560$ .

*Bigger wins.*

- ▶  **$4\ 580 > 4\ 560$ .**

*Final answer.*

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**EXERCISES (EASY → DIFFICULT)**

1. Compare 4343 \_ 6822
2. Compare 9076 \_ 8268
3. Compare 7112 \_ 4253
4. Compare 4952 \_ 1223
5. Compare 1700 \_ 2710
6. Compare 5800 \_ 9927
7. Compare 8184 \_ 3246
8. Compare 8942 \_ 6413
9. Compare 2098 \_ 1805
10. Compare 4593 \_ 6598

**Roman numerals to 100**

**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.

**Subtractive pair**

A smaller letter before a bigger one means subtract, like IV = 4.

**KEY FORMULAS**

- **I = 1, V = 5, X = 10, L = 50, C = 100**
- **IV = 4** (1 before 5 = 5 - 1)
- **IX = 9, XL = 40, XC = 90**

**WORKED EXAMPLES****Example 1: Write 4 as a Roman numeral.**

►  $4 = 5 - 1$ .

*Use a subtractive pair.*

► 1 is I, 5 is V. Put the smaller (I) before V.

*I before V.*

► **IV.**

*Final answer.*

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**EXERCISES (EASY → DIFFICULT)**

1. Roman numeral for 9:
2. Roman numeral for 99:
3. Roman numeral for 90:
4. Roman numeral for 49:
5. Roman numeral for 4:
6. Roman numeral for 40:
7. Roman numeral for 19:
8. Roman numeral for 100:
9. Roman numeral for 50:
10. Roman numeral for 14:

---

**End of Chapter 1 — Mixed Exercise**

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

1. In 1445, what is the value of the thousands digit?
2. Round 138 to nearest 10:
3. Round 857 to nearest 100:
4. Compare 4952 \_\_ 1223
5. Roman numeral for 4:
6. In 3983, what is the value of the thousands digit?
7. Round 657 to nearest 10:
8. Round 195 to nearest 100:
9. Compare 2098 \_\_ 1805
10. Roman numeral for 14:

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## CHAPTER 2

# Addition and Subtraction

**Add** Adding 4-digit numbers

**Subtract** Subtracting 4-digit numbers

**Estimate** Estimating sums

**Word** Addition and subtraction word problems

## Add 4-digit numbers

*Adding 4-digit numbers*



$$4 + 4 = 8$$

### DEFINITIONS

**Column addition**

Stacking numbers 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



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## WORKED EXAMPLES

**Example 1: Calculate  $2\,345 + 1\,234$ .**

- Line up the numbers by place value.

*Units under units.*

- Units:  $5 + 4 = 9$ ; tens:  $4 + 3 = 7$ .

*Add columns.*

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

*Continue.*

- **3 579.**

*Final answer.*

## EXERCISES (EASY → DIFFICULT)

1.  $3253 + 1210 = ?$
2.  $3794 + 1978 = ?$
3.  $2157 + 3330 = ?$
4.  $1787 + 1099 = ?$
5.  $1114 + 2515 = ?$
6.  $1277 + 3032 = ?$
7.  $3669 + 1422 = ?$
8.  $3633 + 3454 = ?$
9.  $1542 + 2637 = ?$
10.  $1555 + 1980 = ?$

**Subtract 4-digit numbers**

*Subtracting 4-digit numbers*



$$8 - 4 = 4$$

## 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  $5\,678 - 1\,234$ .**

► Line up by place value.

*Units under units.*

► Units:  $8 - 4 = 4$ ; tens:  $7 - 3 = 4$ .

*Subtract columns.*

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

*Continue.*

► **4 444.**

*Final answer.*

## EXERCISES (EASY → DIFFICULT)

1.  $5064 - 3379 = ?$
2.  $8028 - 1874 = ?$
3.  $9757 - 2431 = ?$
4.  $6450 - 3208 = ?$
5.  $8055 - 2157 = ?$
6.  $5384 - 1660 = ?$
7.  $7264 - 3216 = ?$
8.  $8120 - 2790 = ?$
9.  $5363 - 1518 = ?$
10.  $6418 - 1954 = ?$

## Estimate sums

*Estimating sums*



**round 24 to nearest 10**

## DEFINITIONS

**Estimate**

A quick, rough answer found by rounding first.

## KEY FORMULAS

- **Round each number first**, then add
- **Rounding to the nearest 100** gives a quick estimate
- **Estimates are not exact** — they just check if an answer is sensible



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## WORKED EXAMPLES

**Example 1: Estimate  $480 + 310$  (round to 100s).**

► Round 480 → 500.

*Tens digit 8 rounds up.*

► Round 310 → 300.

*Tens digit 1 rounds down.*

► Add:  $500 + 300 = 800$ .

*Estimate.*

►  $\approx 800$ .

*Final answer.*

**EXERCISES (EASY → DIFFICULT)**

1. Estimate  $781 + 684$  (round to 100s):
2. Estimate  $715 + 519$  (round to 100s):
3. Estimate  $157 + 452$  (round to 100s):
4. Estimate  $405 + 217$  (round to 100s):
5. Estimate  $483 + 784$  (round to 100s):
6. Estimate  $721 + 243$  (round to 100s):
7. Estimate  $223 + 126$  (round to 100s):
8. Estimate  $599 + 426$  (round to 100s):
9. Estimate  $663 + 273$  (round to 100s):
10. Estimate  $417 + 798$  (round to 100s):

**Word problems: + and –**

*Addition and subtraction word problems*

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

$$3 + 2 = 5$$

**DEFINITIONS**

**Word problem** A maths question written as a short story.

**Leave / join** "Leave" means subtract; "join" means add.

**KEY FORMULAS**

- **Read carefully** and find what is added and what is taken away
- **Subtract** for things that leave
- **Add** for things that join — work step by step

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## WORKED EXAMPLES

**Example 1: A school has 1 000 learners. 200 leave and 300 join. How many now?**

► Start: 1 000.

*The beginning amount.*

► Subtract those who leave:  $1\,000 - 200 = 800$ .

*Leave = subtract.*

► Add those who join:  $800 + 300 = 1\,100$ .

*Join = add.*

► **1 100.**

*Final answer.*

## EXERCISES (EASY → DIFFICULT)

1. A school has 1920 learners. 458 leave, 351 join. How many now?
2. A school has 894 learners. 344 leave, 206 join. How many now?
3. A school has 1072 learners. 299 leave, 485 join. How many now?
4. A school has 527 learners. 304 leave, 365 join. How many now?
5. A school has 1522 learners. 369 leave, 115 join. How many now?
6. A school has 1281 learners. 117 leave, 220 join. How many now?
7. A school has 1179 learners. 419 leave, 357 join. How many now?
8. A school has 975 learners. 335 leave, 109 join. How many now?
9. A school has 1934 learners. 112 leave, 371 join. How many now?
10. A school has 1544 learners. 376 leave, 134 join. How many now?

**End of Chapter 2 — Mixed Exercise**

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

1.  $3253 + 1210 = ?$
2.  $8028 - 1874 = ?$
3. Estimate  $157 + 452$  (round to 100s):
4. A school has 527 learners. 304 leave, 365 join. How many now?
5.  $1114 + 2515 = ?$
6.  $5384 - 1660 = ?$
7. Estimate  $223 + 126$  (round to 100s):
8. A school has 975 learners. 335 leave, 109 join. How many now?
9.  $1542 + 2637 = ?$
10.  $6418 - 1954 = ?$





## CHAPTER 3

# Multiplication

**Times** Times tables

**Multiply** Multiplying 2-digit by 1-digit

**Multiply** Multiplying 3-digit by 1-digit

**Multiply** Multiplying by 10, 100, 1000

**Square** Square numbers

## Times tables to 12



$$3 \times 4 = 12$$

### DEFINITIONS

**Multiply** Adding the same number many times.  $4 \times 3$  means 4 groups of 3.

**Times table** A list of multiplication facts you learn by heart.

### KEY FORMULAS

- $a \times b = b \times a$  (order does not matter)
- **Learn tables 2 to 12 by heart**
- **Example:**  $7 \times 8 = 56$

### WORKED EXAMPLES



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**Example 1: What is  $7 \times 8$ ?**

- $7 \times 8$  means 7 groups of 8.

*Meaning of times.*

- Recall from the 7 (or 8) times table.

*Known fact.*

- **56.**

*Final answer.*

**EXERCISES (EASY → DIFFICULT)**

1.  $2 \times 8 = ?$
2.  $9 \times 10 = ?$
3.  $4 \times 12 = ?$
4.  $9 \times 8 = ?$
5.  $5 \times 4 = ?$
6.  $2 \times 6 = ?$
7.  $12 \times 12 = ?$
8.  $4 \times 7 = ?$
9.  $2 \times 4 = ?$
10.  $2 \times 12 = ?$

**Multiply 2-digit by 1-digit**

*Multiplying 2-digit by 1-digit*



$$3 \times 4 = 12$$

**DEFINITIONS****Break apart**

Split a number into tens and units to multiply each part.

**KEY FORMULAS**

- **Break the 2-digit number into tens + units**
- **Multiply each part, then add**
- **Example:**  $23 \times 4 = (20 \times 4) + (3 \times 4) = 80 + 12 = 92$

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## WORKED EXAMPLES

**Example 1: Calculate  $23 \times 4$ .**

- Break 23 into  $20 + 3$ .

*Tens and units.*

- $20 \times 4 = 80$ .

*Tens part.*

- $3 \times 4 = 12$ .

*Units part.*

- Add:  $80 + 12 = 92$ .

*Final answer.*

## EXERCISES (EASY → DIFFICULT)

1.  $81 \times 2 = ?$
2.  $28 \times 7 = ?$
3.  $62 \times 8 = ?$
4.  $50 \times 6 = ?$
5.  $97 \times 9 = ?$
6.  $21 \times 2 = ?$
7.  $36 \times 9 = ?$
8.  $62 \times 7 = ?$
9.  $50 \times 4 = ?$
10.  $41 \times 7 = ?$

**Multiply 3-digit by 1-digit**

*Multiplying 3-digit by 1-digit*



$$3 \times 4 = 12$$

## DEFINITIONS

**Place value parts**

Hundreds, tens, and units — multiply each by the single digit.

## KEY FORMULAS

- **Multiply each place value by the single digit**, then add
- **Example:**  $123 \times 3 = (100 \times 3) + (20 \times 3) + (3 \times 3) = 369$

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## WORKED EXAMPLES

**Example 1: Calculate  $123 \times 3$ .**

►  $100 \times 3 = 300$ .

*Hundreds.*

►  $20 \times 3 = 60$ ;  $3 \times 3 = 9$ .

*Tens and units.*

► Add:  $300 + 60 + 9 = 369$ .

*Combine.*

► **369.**

*Final answer.*

## EXERCISES (EASY → DIFFICULT)

1.  $471 \times 2 = ?$
2.  $154 \times 3 = ?$
3.  $194 \times 3 = ?$
4.  $324 \times 5 = ?$
5.  $326 \times 2 = ?$
6.  $323 \times 3 = ?$
7.  $449 \times 4 = ?$
8.  $352 \times 3 = ?$
9.  $201 \times 3 = ?$
10.  $421 \times 2 = ?$

**Multiply by 10, 100, 1000**

*Multiplying by 10, 100, 1000*



$$3 \times 4 = 12$$

## DEFINITIONS

**Adding zeros** Multiplying by 10, 100 or 1000 just adds that many zeros.

## KEY FORMULAS

- $\times 10 \rightarrow$  add 1 zero
- $\times 100 \rightarrow$  add 2 zeros
- $\times 1000 \rightarrow$  add 3 zeros



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## WORKED EXAMPLES

**Example 1: Calculate  $25 \times 100$ .**

►  $\times 100$  means add 2 zeros.

*100 has 2 zeros.*

►  $25 \rightarrow 2\ 500$ .

*Append two zeros.*

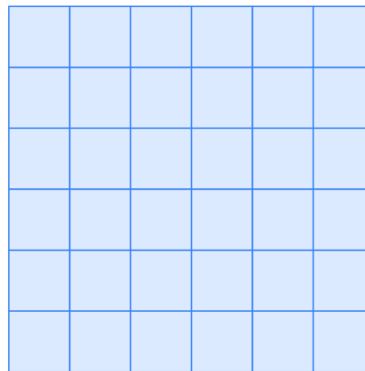
► **2 500.**

*Final answer.*

EXERCISES (EASY  $\rightarrow$  DIFFICULT)

1.  $3 \times 100 = ?$
2.  $18 \times 100 = ?$
3.  $5 \times 100 = ?$
4.  $20 \times 1000 = ?$
5.  $7 \times 10 = ?$
6.  $23 \times 100 = ?$
7.  $35 \times 1000 = ?$
8.  $6 \times 10 = ?$
9.  $45 \times 100 = ?$
10.  $4 \times 1000 = ?$

## Square numbers



side = 6

$$6 \times 6 = 36$$

A square of 6 has 36 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".



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## KEY FORMULAS

- $n^2 = n \times n$
- **First squares:** 1, 4, 9, 16, 25, 36, 49, 64, 81, 100
- **Example:**  $6^2 = 6 \times 6 = 36$

## WORKED EXAMPLES

**Example 1: What is  $6^2$ ?**

►  $6^2$  means  $6 \times 6$ .

*Square = times itself.*

►  $6 \times 6 = 36$ .

*Multiply.*

► **36.**

*Final answer.*

## EXERCISES (EASY → DIFFICULT)

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

**End of Chapter 3 — Mixed Exercise**

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

1.  $2 \times 8 = ?$
2.  $28 \times 7 = ?$
3.  $194 \times 3 = ?$
4.  $20 \times 1000 = ?$
5.  $3^2 = ?$
6.  $2 \times 6 = ?$
7.  $36 \times 9 = ?$
8.  $352 \times 3 = ?$
9.  $45 \times 100 = ?$
10.  $10^2 = ?$





## CHAPTER 4

# Division

**Division** Division facts

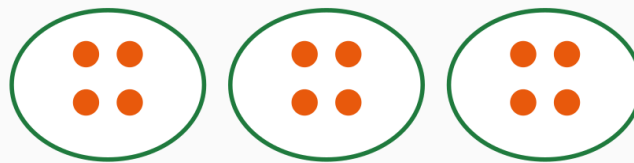
**Divide** Dividing 2-digit by 1-digit

**Division** Division with remainders

**Divisibility** Divisibility rules

**Long** Long Division — interactive game

## Division facts to 12



**12 shared into 3 groups**

### DEFINITIONS

**Divide** Sharing a number into equal groups.

**Division and times tables** Division is the opposite of multiplying:  $56 \div 7 = 8$  because  $7 \times 8 = 56$ .

### KEY FORMULAS

- **Division undoes multiplication**
- $a \div b = c$  means  $b \times c = a$
- **Example:**  $56 \div 8 = 7$

### WORKED EXAMPLES



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**Example 1: What is  $56 \div 8$ ?**

► Ask: 8 times what gives 56?

*Use the times table.*

►  $8 \times 7 = 56$ .

*Find it.*

►  $56 \div 8 = 7$ .

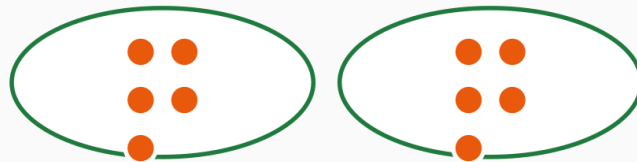
*Final answer.*

**EXERCISES (EASY → DIFFICULT)**

1.  $110 \div 10 = ?$
2.  $32 \div 8 = ?$
3.  $48 \div 6 = ?$
4.  $63 \div 9 = ?$
5.  $77 \div 11 = ?$
6.  $16 \div 2 = ?$
7.  $42 \div 6 = ?$
8.  $108 \div 12 = ?$
9.  $96 \div 12 = ?$
10.  $60 \div 12 = ?$

**Divide 2-digit by 1-digit**

*Dividing 2-digit by 1-digit*



**10 shared into 2 groups**

**DEFINITIONS****Quotient**

The answer to a division.

**KEY FORMULAS**

- **Think:** how many of the divisor fit into the number?
- **Check:** quotient  $\times$  divisor should equal the original number
- **Example:**  $84 \div 4 = 21$  because  $4 \times 21 = 84$

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## WORKED EXAMPLES

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

► Split:  $80 \div 4 = 20$ .

*Easy part.*

►  $4 \div 4 = 1$ .

*Rest.*

► Add:  $20 + 1 = 21$ .

*Combine.*

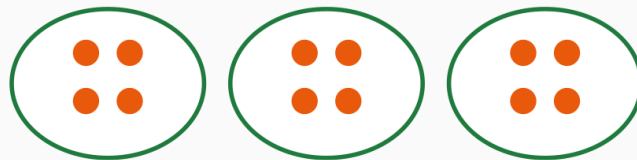
► **21.**

*Final answer.*

## EXERCISES (EASY → DIFFICULT)

1.  $69 \div 3 = ?$
2.  $120 \div 6 = ?$
3.  $196 \div 7 = ?$
4.  $135 \div 9 = ?$
5.  $203 \div 7 = ?$
6.  $48 \div 4 = ?$
7.  $114 \div 6 = ?$
8.  $70 \div 5 = ?$
9.  $135 \div 5 = ?$
10.  $115 \div 5 = ?$

## 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**
- **Write it as:** quotient R remainder



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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.*

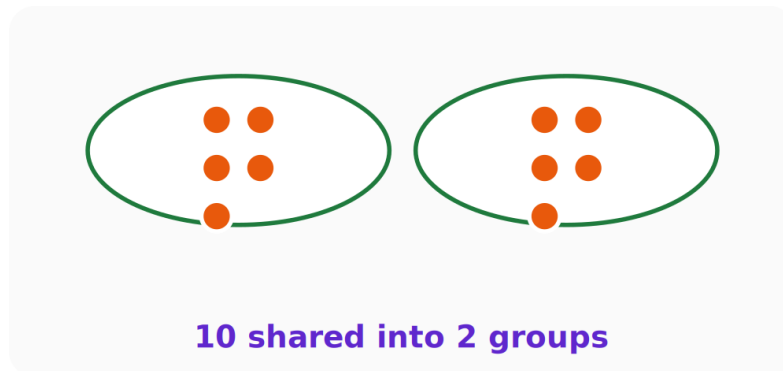
- **9 R 2.**

*Final answer.*

## EXERCISES (EASY → DIFFICULT)

1.  $45 \div 4 = ?$  remainder ?
2.  $77 \div 6 = ?$  remainder ?
3.  $29 \div 5 = ?$  remainder ?
4.  $48 \div 7 = ?$  remainder ?
5.  $83 \div 8 = ?$  remainder ?
6.  $17 \div 3 = ?$  remainder ?
7.  $116 \div 9 = ?$  remainder ?
8.  $64 \div 7 = ?$  remainder ?
9.  $50 \div 6 = ?$  remainder ?
10.  $47 \div 7 = ?$  remainder ?

## Divisibility rules (2, 5, 10)



## DEFINITIONS

|                   |                                                                |
|-------------------|----------------------------------------------------------------|
| <b>Divisible</b>  | One number divides into another exactly, with no remainder.    |
| <b>Last digit</b> | The units digit — it tells you about dividing by 2, 5, and 10. |

## KEY FORMULAS

- $\div 2$ : last digit is even (0, 2, 4, 6, 8)
- $\div 5$ : last digit is 0 or 5
- $\div 10$ : last digit is 0



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## WORKED EXAMPLES

**Example 1: Is 40 divisible by 5?**

- Look at the last digit: 0.

*Units digit.*

- $\div 5$  needs last digit 0 or 5. It's 0.

*Rule met.*

- **Yes.**

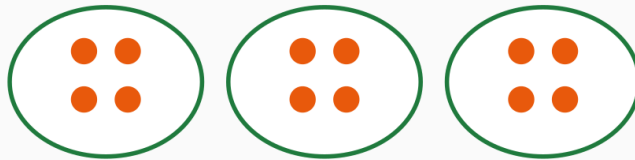
*Final answer.*

**EXERCISES (EASY → DIFFICULT)**

1. Is 29 divisible by 5? (yes/no)
2. Is 198 divisible by 5? (yes/no)
3. Is 126 divisible by 2? (yes/no)
4. Is 174 divisible by 2? (yes/no)
5. Is 200 divisible by 10? (yes/no)
6. Is 108 divisible by 10? (yes/no)
7. Is 133 divisible by 10? (yes/no)
8. Is 118 divisible by 10? (yes/no)
9. Is 41 divisible by 10? (yes/no)
10. Is 186 divisible by 5? (yes/no)

**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).

**KEY FORMULAS**

- **Divide → Multiply → Subtract → Bring down**, then repeat
- **$\text{dividend} \div \text{divisor} = \text{quotient (remainder } r)$**

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## 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.  $110 \div 10 = ?$
2.  $120 \div 6 = ?$
3.  $29 \div 5 = ?$  remainder ?
4. Is 174 divisible by 2? (yes/no)
5. Open the Long Division game to practise step by step.
6.  $16 \div 2 = ?$
7.  $114 \div 6 = ?$
8.  $64 \div 7 = ?$  remainder ?
9. Is 41 divisible by 10? (yes/no)
10. Open the Long Division game to practise step by step.

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## CHAPTER 5

# Number Theory

**Factors** Factors

**Multiples** Multiples

**Prime** Prime numbers

## Factors of a number



$$2 \times 6 = 12$$

### DEFINITIONS

**Factor** A number that divides into another exactly, with no remainder.

**Factor pairs** Two numbers that multiply to give the number, like  $2 \times 6 = 12$ .

### KEY FORMULAS

- Find all numbers that divide in exactly
- Always include 1 and the number itself
- **Example:** factors of 12 are 1, 2, 3, 4, 6, 12

### WORKED EXAMPLES



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**Example 1: How many factors does 12 have?**

- Find numbers that divide 12 exactly.

*Test 1, 2, 3...*

- 1, 2, 3, 4, 6, 12 all divide 12.

*List them.*

- Count: 6 factors.

*Count the list.*

- **6.**

*Final answer.*

**EXERCISES (EASY → DIFFICULT)**

1. How many factors does 15 have?
2. How many factors does 24 have?
3. How many factors does 18 have?
4. How many factors does 6 have?
5. How many factors does 20 have?
6. How many factors does 8 have?
7. How many factors does 12 have?
8. How many factors does 10 have?

## Multiples



$$2 \times 6 = 12$$

**DEFINITIONS****Multiple**

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

**KEY FORMULAS**

- **The  $n$ th multiple of  $a = a \times n$**
- **Example:** the 3rd multiple of 4 =  $4 \times 3 = 12$
- **Multiples go on forever**

**WORKED EXAMPLES****DIGITAL TEXTBOOK**

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**Example 1: What is the 3rd multiple of 4?**

► Multiples of 4: 4, 8, 12, 16...

*List them.*

► The 3rd one is  $4 \times 3 = 12$ .

*Multiply by 3.*

► **12.**

*Final answer.*

**EXERCISES (EASY → DIFFICULT)**

1. The 3th multiple of 2 is:
2. The 3th multiple of 6 is:
3. The 2th multiple of 4 is:
4. The 5th multiple of 3 is:
5. The 5th multiple of 6 is:
6. The 2th multiple of 2 is:
7. The 3th multiple of 5 is:
8. The 2th multiple of 5 is:
9. The 4th multiple of 9 is:
10. The 3th multiple of 9 is:

**Prime numbers**

$$2 \times 6 = 12$$

**DEFINITIONS**

**Prime number** A number with exactly two factors: 1 and itself.

**Examples** The first primes are 2, 3, 5, 7, 11, 13, 17, 19.

**KEY FORMULAS**

- **Prime = exactly 2 factors** (1 and itself)
- **First primes:** 2, 3, 5, 7, 11, 13, 17, 19
- **2 is the only even prime**

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## WORKED EXAMPLES

**Example 1: Is 7 prime?**

- Find the factors of 7.

*Test dividers.*

- Only 1 and 7 divide it.

*Exactly two factors.*

- **Yes, 7 is prime.**

*Final answer.*

## EXERCISES (EASY → DIFFICULT)

1. Is 3 prime? (yes/no)
2. Is 13 prime? (yes/no)
3. Is 2 prime? (yes/no)
4. Is 17 prime? (yes/no)
5. Is 19 prime? (yes/no)
6. Is 11 prime? (yes/no)
7. Is 5 prime? (yes/no)
8. Is 7 prime? (yes/no)

**End of Chapter 5 — Mixed Exercise**

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

1. How many factors does 15 have?
2. The 3th multiple of 6 is:
3. Is 2 prime? (yes/no)
4. How many factors does 6 have?
5. The 5th multiple of 6 is:
6. Is 11 prime? (yes/no)
7. How many factors does 12 have?
8. The 2th multiple of 5 is:
9. Is 7 prime? (yes/no)
10. How many factors does 10 have?

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## CHAPTER 6

# Fractions

**Identify** Identifying fractions

**Equivalent** Equivalent fractions

**Simplify** Simplifying fractions

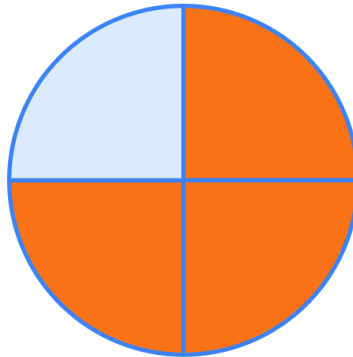
**Compare** Comparing fractions

**Add** Adding fractions

**Mixed** Mixed numbers

## Identify fractions

*Identifying fractions*



$\frac{3}{4}$  shaded

3 orange of 4 equal parts  
top = shaded, bottom = total

### DEFINITIONS

**Fraction** A part of a whole, written top over bottom.

**Numerator** The TOP number — how many parts you have.



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## KEY FORMULAS

- **Fraction = parts shaded ÷ total parts**
- **Top = parts you have**
- **Bottom = total equal parts**

## WORKED EXAMPLES

**Example 1: 3 of 4 parts are shaded. What fraction is shaded?**

- Top = parts shaded = 3.

*Numerator.*

- Bottom = total parts = 4.

*Denominator.*

- Fraction =  $\frac{3}{4}$ .

*Top over bottom.*

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

*Final answer.*

## EXERCISES (EASY → DIFFICULT)

1. 1 of 8 parts shaded. Fraction?
2. 3 of 8 parts shaded. Fraction?
3. 2 of 6 parts shaded. Fraction?
4. 4 of 8 parts shaded. Fraction?
5. 2 of 7 parts shaded. Fraction?
6. 2 of 4 parts shaded. Fraction?
7. 4 of 7 parts shaded. Fraction?
8. 4 of 6 parts shaded. Fraction?
9. 1 of 7 parts shaded. Fraction?
10. 4 of 5 parts shaded. Fraction?

## Equivalent fractions



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

## DEFINITIONS

**Equivalent fractions**

Fractions that show the same amount, like  $\frac{1}{2}$  and  $\frac{2}{4}$ .



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## KEY FORMULAS

- **Multiply the top AND bottom by the same number**
- **Example:**  $1/2 = 2/4$  (both  $\times 2$ ) =  $4/8$  (both  $\times 4$ )

## WORKED EXAMPLES

**Example 1: Fill in:  $1/2 = ?/8$ .**

- ▶ The bottom went  $2 \rightarrow 8$ , so it was multiplied by 4.  
 $8 \div 2 = 4$ .
- ▶ Multiply the top by 4 too:  $1 \times 4 = 4$ .  
*Same factor.*
- ▶  **$4/8$ .**  
*Final answer.*

EXERCISES (EASY  $\rightarrow$  DIFFICULT)

1.  $1/2 = ?/8$
2.  $1/2 = ?/4$
3.  $1/2 = ?/10$
4.  $1/2 = ?/6$

## Simplify fractions

*Simplifying fractions* **$3/4$** 

## DEFINITIONS

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

## KEY FORMULAS

- **Divide the top and bottom by the same number**
- **Example:**  $4/8 \rightarrow$  divide both by 4  $\rightarrow 1/2$

## WORKED EXAMPLES

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**Example 1: Simplify 6/9.**

- Both 6 and 9 divide by 3.

*Common factor.*

- $6 \div 3 = 2$ ,  $9 \div 3 = 3$ .

*Divide both.*

- **2/3.**

*Final answer.*

**EXERCISES (EASY → DIFFICULT)**

1. Simplify 8/20:
2. Simplify 8/16:
3. Simplify 9/12:
4. Simplify 4/16:
5. Simplify 15/30:
6. Simplify 12/20:
7. Simplify 3/12:
8. Simplify 10/20:
9. Simplify 6/12:
10. Simplify 6/8:

**Compare fractions (same denom.)**

*Comparing fractions*

$$46 > 29$$

**compare the numbers**

**DEFINITIONS****Same denominator**

When the bottom numbers are equal, just compare the tops.

**KEY FORMULAS**

- **Same bottom?** the bigger top is the bigger fraction
- **Example:**  $3/5 > 2/5$

**WORKED EXAMPLES****DIGITAL TEXTBOOK**

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**Example 1: Compare  $\frac{3}{7}$  and  $\frac{5}{7}$ .**

- Bottoms are the same (7).

*Just compare tops.*

- Tops: 3 vs 5 → 5 is bigger.

*Bigger top wins.*

- $\frac{3}{7} < \frac{5}{7}$ .

*Final answer.*

**EXERCISES (EASY → DIFFICULT)**

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

**Add fractions (same denom.)**

*Adding fractions*

3 + 4 = 7

$3 + 4 = 7$

**DEFINITIONS**

**Add fractions** With the same bottom, add the tops and keep the bottom.

**KEY FORMULAS**

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

**WORKED EXAMPLES****DIGITAL TEXTBOOK**

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

- 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.*

**EXERCISES (EASY → DIFFICULT)**

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

**Mixed numbers**

$\frac{3}{4}$

**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:**  $2\frac{3}{4} = (2 \times 4 + 3)/4 = \frac{11}{4}$

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## 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:  $11/4$ .

Step 3.

- **$11/4$ .**

Final answer.

**EXERCISES (EASY → DIFFICULT)**

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

**End of Chapter 6 — Mixed Exercise**

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

1. 1 of 8 parts shaded. Fraction?
2.  $1/2 = ?/4$
3. Simplify  $9/12$ :
4. Compare  $2/5$  \_\_\_  $4/5$
5.  $1/6 + 1/6 = ?/6$
6.  $1\frac{3}{4}$  as improper fraction:
7. 4 of 7 parts shaded. Fraction?
8.  $1/2 = ?/6$
9. Simplify  $6/12$ :
10. Compare  $6/8$  \_\_\_  $4/8$

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**CHAPTER 7**

# Decimals

**Tenths** Tenths as decimals

**Compare** Comparing decimals

**Add** Adding decimals

## Tenths as decimals



$\frac{7}{8}$

### DEFINITIONS

**Decimal point** The dot separating whole numbers from the part.

**Tenths** The first digit after the decimal point.  $0.7 = 7$  tenths.

### KEY FORMULAS

- $n/10 = 0.n$
- **Example:**  $7/10 = 0.7$
- **One decimal place = tenths**

### WORKED EXAMPLES

**Example 1: Write  $7/10$  as a decimal.**

- $7/10$  means 7 tenths.

*Out of ten.*

- Tenths is the first decimal place: 0.7.

*Write it.*

- **0.7.**

*Final answer.*



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**EXERCISES (EASY → DIFFICULT)**

1.  $8/10$  as decimal:
2.  $2/10$  as decimal:
3.  $9/10$  as decimal:
4.  $1/10$  as decimal:
5.  $5/10$  as decimal:
6.  $4/10$  as decimal:
7.  $7/10$  as decimal:
8.  $6/10$  as decimal:
9.  $3/10$  as decimal:

**Compare decimals***Comparing decimals*

$$46 > 29$$

**compare the numbers****DEFINITIONS****Compare decimals**

Look at the digit after the dot to see which is bigger.

**KEY FORMULAS**

- **Compare the tenths digit** (the first after the dot)
- **Bigger tenths = bigger decimal**
- **Example:**  $0.7 > 0.3$

**WORKED EXAMPLES****Example 1: Compare 0.7 and 0.3.**

- Look at the tenths: 7 vs 3.

*First decimal place.*

- 7 is bigger than 3.

*Bigger tenths.*

- **$0.7 > 0.3$ .**

*Final answer.***EXERCISES (EASY → DIFFICULT)**

1. Compare  $0.4$  \_\_\_  $0.6$
2. Compare  $0.5$  \_\_\_  $0.3$
3. Compare  $0.7$  \_\_\_  $0.6$

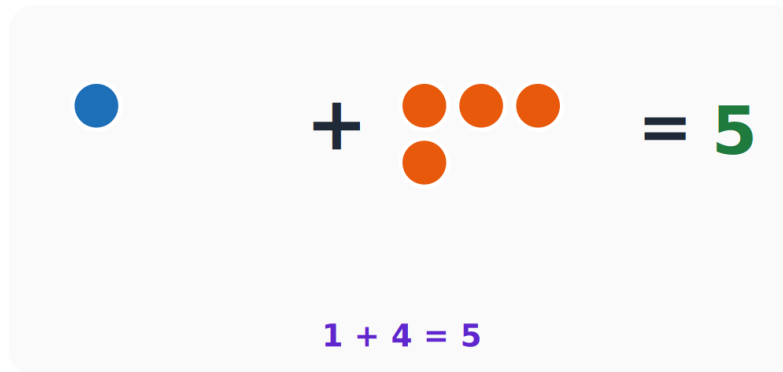
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4. Compare 0.1 \_\_ 0.4
5. Compare 0.8 \_\_ 0.3
6. Compare 0.6 \_\_ 0.6
7. Compare 0.1 \_\_ 0.1
8. Compare 0.5 \_\_ 0.6
9. Compare 0.3 \_\_ 0.7
10. Compare 0.8 \_\_ 0.8

## Add decimals (1dp)

*Adding decimals*



### 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 normally**, then bring the dot straight down
- **Example:**  $1.5 + 2.3 = 3.8$

### WORKED EXAMPLES

#### Example 1: Calculate $1.5 + 2.3$ .

- Line up the decimal points.

*Dots in a column.*

- Add tenths:  $5 + 3 = 8$ ; ones:  $1 + 2 = 3$ .

*Add columns.*

- Bring the dot down: 3.8.

*Same place.*

- **3.8.**

*Final answer.*

### EXERCISES (EASY → DIFFICULT)

1.  $3.2 + 3.9 = ?$
2.  $2.0 + 2.5 = ?$
3.  $5.7 + 6.1 = ?$
4.  $6.1 + 1.8 = ?$



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5.  $6.2 + 7.2 = ?$
6.  $2.3 + 3.0 = ?$
7.  $9.7 + 6.7 = ?$
8.  $5.1 + 8.2 = ?$
9.  $2.6 + 3.4 = ?$
10.  $6.7 + 2.9 = ?$

---

## End of Chapter 7 — Mixed Exercise

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

1.  $8/10$  as decimal:
2. Compare  $0.5$  \_\_  $0.3$
3.  $5.7 + 6.1 = ?$
4.  $1/10$  as decimal:
5. Compare  $0.8$  \_\_  $0.3$
6.  $2.3 + 3.0 = ?$
7.  $7/10$  as decimal:
8. Compare  $0.5$  \_\_  $0.6$
9.  $2.6 + 3.4 = ?$
10.  $3/10$  as decimal:





## CHAPTER 8

# Geometry

**2D** 2D shapes: sides and angles

**Angle** Types of angles

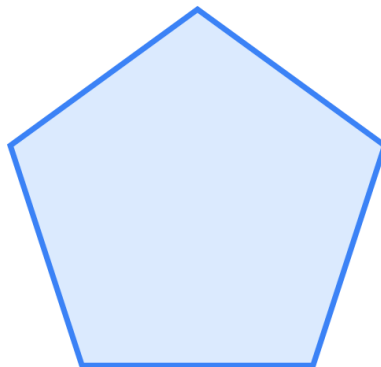
**3D** 3D shapes

**Lines:** Parallel and perpendicular lines

**Symmetry** Lines of symmetry

## 2D shapes — sides and angles

*2D shapes: sides and angles*



5 sides, 5 angles

pentagon

### DEFINITIONS

**Polygon** A flat shape with straight sides.

**Sides and angles** A polygon has the same number of sides as angles (corners).



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## KEY FORMULAS

- **Number of angles = number of sides**
- **Triangle:** 3 sides, 3 angles. **Square:** 4 sides, 4 angles.
- **Pentagon:** 5; **Hexagon:** 6

## WORKED EXAMPLES

**Example 1: How many angles does a polygon with 5 sides have?**

- A polygon has as many angles as sides.

*The rule.*

- 5 sides → 5 angles.

*Apply.*

- **5.**

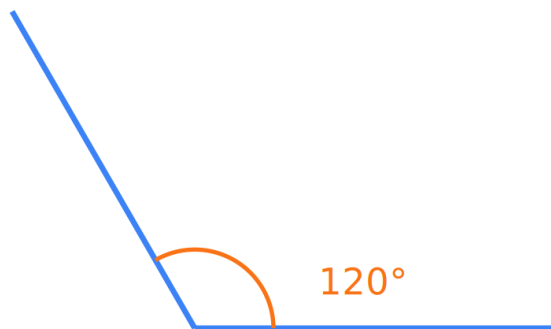
*Final answer.*

## EXERCISES (EASY → DIFFICULT)

1. Polygon with 4 sides has how many angles?
2. Polygon with 3 sides has how many angles?
3. Polygon with 8 sides has how many angles?
4. Polygon with 5 sides has how many angles?
5. Polygon with 6 sides has how many angles?

**Angle types: acute, right, obtuse**

*Types of angles*



obtuse: more than  $90^\circ$



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## DEFINITIONS

|                    |                                          |
|--------------------|------------------------------------------|
| <b>Acute angle</b> | Smaller than $90^\circ$ (a sharp angle). |
| <b>Right angle</b> | Exactly $90^\circ$ (a square corner).    |

## KEY FORMULAS

- **Less than  $90^\circ$**  → acute
- **Exactly  $90^\circ$**  → right
- **More than  $90^\circ$**  → obtuse

## WORKED EXAMPLES

**Example 1: What type of angle is  $120^\circ$ ?**

- Compare with  $90^\circ$ .

*The dividing point.*

- $120^\circ$  is more than  $90^\circ$ .

*Bigger.*

- **obtuse.**

*Final answer.*

## EXERCISES (EASY → DIFFICULT)

1. A  $140^\circ$  angle is:
2. A  $118^\circ$  angle is:
3. A  $161^\circ$  angle is:
4. A  $98^\circ$  angle is:
5. A  $91^\circ$  angle is:
6. A  $60^\circ$  angle is:
7. A  $28^\circ$  angle is:
8. A  $105^\circ$  angle is:
9. A  $39^\circ$  angle is:
10. A  $23^\circ$  angle is:

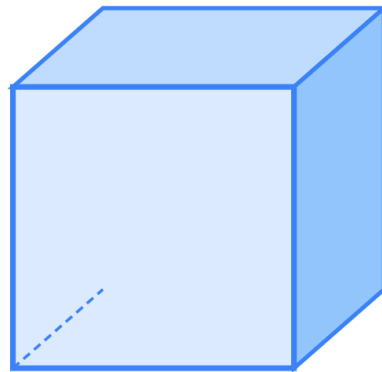


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## 3D shapes: faces, edges, vertices



cube

6 faces, 12 edges, 8 vertices

### DEFINITIONS

|             |                               |
|-------------|-------------------------------|
| <b>Face</b> | A flat surface of a 3D shape. |
| <b>Edge</b> | A line where two faces meet.  |

### KEY FORMULAS

- **Cube:** 6 faces, 12 edges, 8 vertices
- **Cuboid:** 6 faces, 12 edges, 8 vertices
- **Triangular prism:** 5 faces, 9 edges, 6 vertices

### WORKED EXAMPLES

#### Example 1: How many faces does a cube have?

- A cube is box-shaped with flat square sides.

*Picture it.*

- Count: top, bottom, and 4 around = 6.

*Count faces.*

- **6.**

*Final answer.*

### EXERCISES (EASY → DIFFICULT)

1. Faces of a cuboid:
2. Faces of a triangular prism:
3. Faces of a cube:



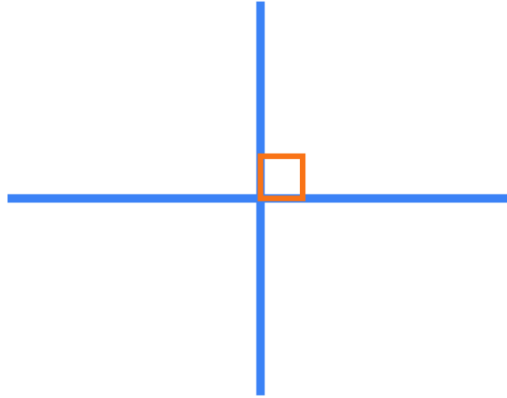
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## Lines: parallel and perpendicular

Parallel and perpendicular lines



perpendicular  
cross at a right angle ( $90^\circ$ )

### DEFINITIONS

|                            |                                                         |
|----------------------------|---------------------------------------------------------|
| <b>Parallel lines</b>      | Lines that stay the same distance apart and never meet. |
| <b>Perpendicular lines</b> | Lines that cross at a right angle ( $90^\circ$ ).       |

### KEY FORMULAS

- **Parallel:** never meet, like train tracks
- **Perpendicular:** meet at  $90^\circ$  (a square corner)

### WORKED EXAMPLES

#### Example 1: What do we call lines that meet at $90^\circ$ ?

- Meeting at a right angle is the key.

*$90^\circ$  corner.*

- That is perpendicular.

*Match the word.*

- **perpendicular.**

*Final answer.*

### EXERCISES (EASY → DIFFICULT)

1. Lines that meet at  $90^\circ$  are:



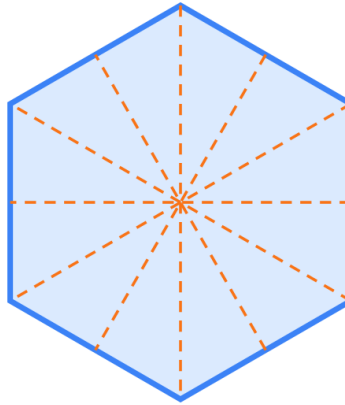
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# Symmetry

Lines of symmetry



A regular hexagon has 6 lines of symmetry

## DEFINITIONS

**Line of symmetry**

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

**Regular shape**

A shape with all sides and angles equal.

## KEY FORMULAS

- A regular shape has one line of symmetry per side
- **Square:** 4 lines. **Hexagon:** 6 lines.
- **Equilateral triangle:** 3 lines

## WORKED EXAMPLES

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

- A regular hexagon has 6 equal sides.

*Count sides.*

- A regular shape has one line per side.

*Rule.*

- **6.**

*Final answer.*

## EXERCISES (EASY → DIFFICULT)

1. Lines of symmetry in a regular hexagon:

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## End of Chapter 8 — Mixed Exercise

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

1. Polygon with 4 sides has how many angles?
2. A  $118^\circ$  angle is:
3. Faces of a cube:
4. Lines that meet at  $90^\circ$  are:
5. Lines of symmetry in a regular hexagon:
6. Polygon with 6 sides has how many angles?
7. A  $28^\circ$  angle is:
8. Faces of a cuboid:
9. Lines that meet at  $90^\circ$  are:
10. Lines of symmetry in a regular hexagon:





## CHAPTER 9

# Measurement

**Length** Length: km and m

**Mass** Mass: kg and g

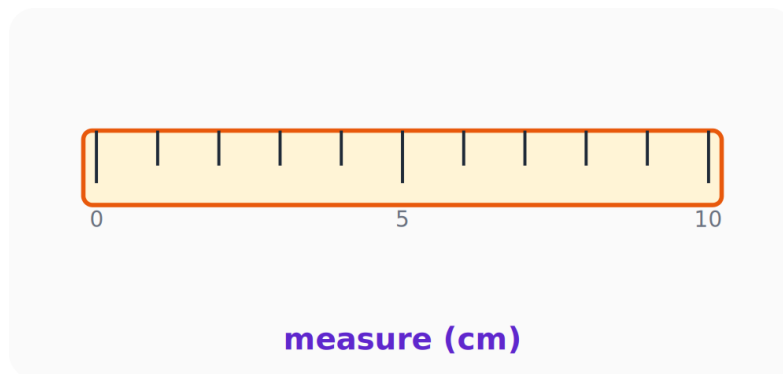
**Capacity** Capacity: L and ml

**Perimeter** Perimeter of a rectangle

**Area** Area of a rectangle

## Length conversions

*Length: km and m*



### DEFINITIONS

**Length** How long something is.

**Kilometre / metre** Units of length.  $1 \text{ km} = 1000 \text{ m}$ .

### KEY FORMULAS

- $1 \text{ km} = 1000 \text{ m}$
- $\text{km} \rightarrow \text{m}$ : multiply by 1000
- $\text{m} \rightarrow \text{km}$ : divide by 1000



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## WORKED EXAMPLES

**Example 1: How many metres are in 5 km?**

►  $1 \text{ km} = 1000 \text{ m}$ .

*Conversion fact.*

►  $5 \times 1000 = 5000$ .

*Multiply.*

► **5000 m.**

*Final answer.*

## EXERCISES (EASY → DIFFICULT)

1.  $4 \text{ km} = ? \text{ m}$
2.  $1 \text{ km} = ? \text{ m}$
3.  $6 \text{ km} = ? \text{ m}$
4.  $3 \text{ km} = ? \text{ m}$
5.  $9 \text{ km} = ? \text{ m}$
6.  $8 \text{ km} = ? \text{ m}$
7.  $5 \text{ km} = ? \text{ m}$
8.  $2 \text{ km} = ? \text{ m}$
9.  $7 \text{ km} = ? \text{ m}$

**Mass conversions**

*Mass: kg and g*



**heavier / lighter**

## DEFINITIONS

|                        |                                                  |
|------------------------|--------------------------------------------------|
| <b>Mass</b>            | How heavy something is.                          |
| <b>Kilogram / gram</b> | Units of mass. $1 \text{ kg} = 1000 \text{ g}$ . |

## KEY FORMULAS

- **$1 \text{ kg} = 1000 \text{ g}$**
- **kg → g:** multiply by 1000
- **g → kg:** divide by 1000

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## WORKED EXAMPLES

**Example 1: How many grams are in 4 kg?**

►  $1 \text{ kg} = 1000 \text{ g}$ .

*Conversion fact.*

►  $4 \times 1000 = 4000$ .

*Multiply.*

► **4000 g.**

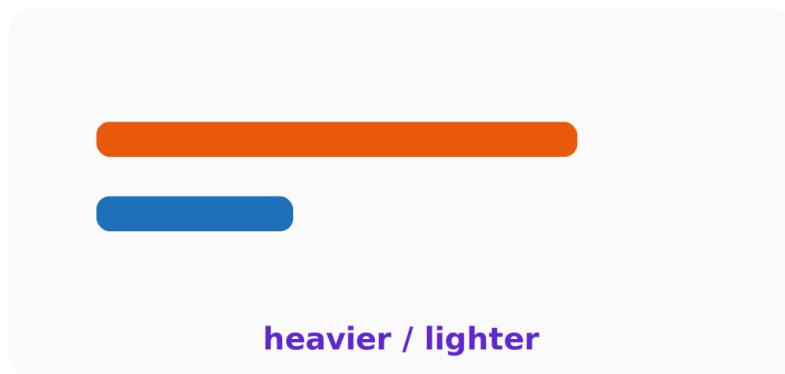
*Final answer.*

## EXERCISES (EASY → DIFFICULT)

1.  $2 \text{ kg} = ? \text{ g}$
2.  $1 \text{ kg} = ? \text{ g}$
3.  $3 \text{ kg} = ? \text{ g}$
4.  $7 \text{ kg} = ? \text{ g}$
5.  $4 \text{ kg} = ? \text{ g}$
6.  $8 \text{ kg} = ? \text{ g}$
7.  $5 \text{ kg} = ? \text{ g}$
8.  $6 \text{ kg} = ? \text{ g}$
9.  $9 \text{ kg} = ? \text{ g}$

**Capacity conversions**

*Capacity: L and ml*



## DEFINITIONS

**Capacity** How much liquid a container can hold.

**Litre / millilitre** Units of capacity.  $1 \text{ L} = 1000 \text{ ml}$ .

## KEY FORMULAS

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



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## WORKED EXAMPLES

**Example 1: How many millilitres are in 6 L?**

► 1 L = 1000 ml.

*Conversion fact.*

►  $6 \times 1000 = 6000$ .

*Multiply.*

► **6000 ml.**

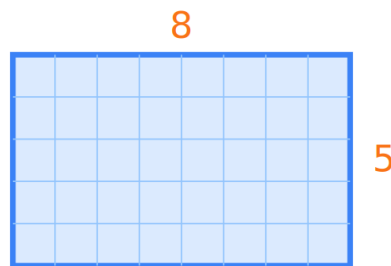
*Final answer.*

**EXERCISES (EASY → DIFFICULT)**

1. 1 L = ? ml
2. 3 L = ? ml
3. 7 L = ? ml
4. 9 L = ? ml
5. 5 L = ? ml
6. 6 L = ? ml
7. 4 L = ? ml
8. 8 L = ? ml
9. 2 L = ? ml

**Perimeter of rectangle**

*Perimeter of a rectangle*



$$P = 2 \times (8 + 5) = 26$$

Perimeter = distance around

**DEFINITIONS****Perimeter**

The distance all the way around a shape.

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## KEY FORMULAS

- **Perimeter of rectangle:**  $P = 2 \times (\text{length} + \text{width})$
- **Or:** add up all four sides

## WORKED EXAMPLES

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

- Add length and width:  $8 + 5 = 13$ .

*One long + one short side.*

- Double it:  $2 \times 13 = 26$ .

*There are two of each.*

- **26.**

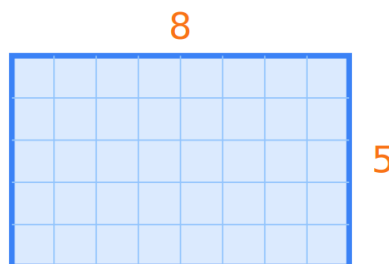
*Final answer.*

## EXERCISES (EASY → DIFFICULT)

1. Perimeter of  $6 \times 5$  rectangle:
2. Perimeter of  $6 \times 3$  rectangle:
3. Perimeter of  $4 \times 11$  rectangle:
4. Perimeter of  $12 \times 2$  rectangle:
5. Perimeter of  $9 \times 7$  rectangle:
6. Perimeter of  $15 \times 10$  rectangle:
7. Perimeter of  $6 \times 6$  rectangle:
8. Perimeter of  $11 \times 11$  rectangle:
9. Perimeter of  $10 \times 3$  rectangle:
10. Perimeter of  $14 \times 10$  rectangle:

## Area of rectangle

*Area of a rectangle*



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

Area = space inside



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**DEFINITIONS****Area**

The space inside a flat shape, in square units.

**KEY FORMULAS**

- **Area of rectangle:**  $A = \text{length} \times \text{width}$
- **Area is in square units** ( $\text{cm}^2$ ,  $\text{m}^2$ )

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

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

*Rectangle formula.*

►  $= 8 \times 5 = 40.$

*Multiply.*

► **40.**

*Final answer.*

**EXERCISES (EASY → DIFFICULT)**

1. Area of  $5 \times 9$  rectangle:
2. Area of  $14 \times 5$  rectangle:
3. Area of  $6 \times 4$  rectangle:
4. Area of  $9 \times 12$  rectangle:
5. Area of  $5 \times 3$  rectangle:
6. Area of  $9 \times 2$  rectangle:
7. Area of  $11 \times 10$  rectangle:
8. Area of  $6 \times 11$  rectangle:
9. Area of  $12 \times 11$  rectangle:
10. Area of  $9 \times 5$  rectangle:

**End of Chapter 9 — Mixed Exercise**

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

1.  $4 \text{ km} = ? \text{ m}$
2.  $1 \text{ kg} = ? \text{ g}$
3.  $7 \text{ L} = ? \text{ ml}$
4. Perimeter of  $12 \times 2$  rectangle:
5. Area of  $5 \times 3$  rectangle:
6.  $8 \text{ km} = ? \text{ m}$
7.  $5 \text{ kg} = ? \text{ g}$
8.  $8 \text{ L} = ? \text{ ml}$
9. Perimeter of  $10 \times 3$  rectangle:
10. Area of  $9 \times 5$  rectangle:

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## CHAPTER 10

# Time

**Read** Reading clocks

**Elapsed** Elapsed time

**12-hour** 12-hour and 24-hour time

## Read clocks: minutes

*Reading clocks*



3:30

short hand = hour, long hand = minutes

### DEFINITIONS

**Hour hand** The SHORT hand. It points to the hour.

**Minute hand** The LONG hand. Each number it points to is 5 minutes.

### KEY FORMULAS

- Write time as hour:minutes
- Minutes always have two digits (e.g. 3:05)
- Each clock number = 5 minutes



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## WORKED EXAMPLES

**Example 1: The hour is 3 and there are 30 minutes. Write the time.**

► Hour = 3.

*Short hand.*

► Minutes = 30, written as 30.

*Long hand.*

► Time = 3:30.

*hour:minutes.*

► **3:30.**

*Final answer.*

## EXERCISES (EASY → DIFFICULT)

1. Hour 11, minutes 30. Time?
2. Hour 4, minutes 25. Time?
3. Hour 3, minutes 15. Time?
4. Hour 6, minutes 20. Time?
5. Hour 10, minutes 10. Time?
6. Hour 9, minutes 50. Time?
7. Hour 10, minutes 50. Time?
8. Hour 2, minutes 40. Time?
9. Hour 7, minutes 25. Time?
10. Hour 11, minutes 40. Time?

## Elapsed time



tell the time

## DEFINITIONS

**Elapsed time** How much time has passed from a start time.

## KEY FORMULAS

- Add the hours to the start hour
- Add the minutes
- **Example:** start 3:00, after 2 h 15 min → 5:15



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## WORKED EXAMPLES

**Example 1: Start at 3:00. After 2 hours and 15 minutes, what time is it?**

► Add hours:  $3 + 2 = 5$ .

*Hours.*

► Add minutes:  $00 + 15 = 15$ .

*Minutes.*

► Time = 5:15.

*Combine.*

► **5:15.**

*Final answer.*

## EXERCISES (EASY → DIFFICULT)

1. Start 3:00. After 1 hr 15 min?
2. Start 3:00. After 3 hr 45 min?
3. Start 5:00. After 2 hr 15 min?
4. Start 2:00. After 1 hr 30 min?
5. Start 8:00. After 1 hr 15 min?
6. Start 2:00. After 2 hr 0 min?
7. Start 1:00. After 3 hr 15 min?
8. Start 2:00. After 4 hr 45 min?
9. Start 6:00. After 4 hr 30 min?
10. Start 4:00. After 4 hr 30 min?

## 12-hour and 24-hour time



**tell the time**

## DEFINITIONS

**24-hour time** Hours counted 0 to 23. Afternoon hours are 13, 14, ... 23.

**PM** Afternoon and evening (after midday).

## KEY FORMULAS

- **24-hour → 12-hour (afternoon):** subtract 12, add PM
- **Example:** 15:00 → 3:00 PM
- **Morning hours (under 12)** stay the same, add AM



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## WORKED EXAMPLES

**Example 1: Write 15:00 in 12-hour time.**

- 15 is after 12, so subtract 12.

*Afternoon.*

- $15 - 12 = 3$ , and it's PM.

*Calculate.*

- Time = 3:00 PM.

*Add PM.*

- **3:00 PM.**

*Final answer.*

## EXERCISES (EASY → DIFFICULT)

1. 17:00 in 12-hour:
2. 14:00 in 12-hour:
3. 18:00 in 12-hour:
4. 16:00 in 12-hour:
5. 15:00 in 12-hour:
6. 22:00 in 12-hour:
7. 23:00 in 12-hour:
8. 21:00 in 12-hour:
9. 13:00 in 12-hour:
10. 19:00 in 12-hour:

**End of Chapter 10 — Mixed Exercise**

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

1. Hour 11, minutes 30. Time?
2. Start 3:00. After 3 hr 45 min?
3. 18:00 in 12-hour:
4. Hour 6, minutes 20. Time?
5. Start 8:00. After 1 hr 15 min?
6. 22:00 in 12-hour:
7. Hour 10, minutes 50. Time?
8. Start 2:00. After 4 hr 45 min?
9. 13:00 in 12-hour:
10. Hour 11, minutes 40. Time?



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## CHAPTER 11

# Money

**Add** Adding and subtracting money

**Multiply** Multiplying money

**Word** Money word problems

## Add and subtract money

*Adding and subtracting money*

A visual representation of the addition 3 + 4 = 7. On the left, there are three blue dots. In the middle, there is a plus sign. To the right of the plus sign, there are four orange dots. Further right is an equals sign, followed by a large green number 7.

$$3 + 4 = 7$$

### DEFINITIONS

**Rand (R)** South African money. We write amounts like R50.

### KEY FORMULAS

- **Add or subtract money like normal numbers**
- **Keep the R sign** in the answer
- **Example:** R100 – R30 = R70

### WORKED EXAMPLES

**Example 1: Calculate R100 – R30.**

- Subtract the numbers:  $100 - 30 = 70$ .

*Like normal numbers.*

- Keep the R sign.

*It is money.*

- **R70.**

*Final answer.*



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**EXERCISES (EASY → DIFFICULT)**

1.  $R140 - R59 = ?$
2.  $R117 - R46 = ?$
3.  $R91 - R58 = ?$
4.  $R121 - R26 = ?$
5.  $R64 - R36 = ?$
6.  $R133 - R33 = ?$
7.  $R104 - R52 = ?$
8.  $R50 - R80 = ?$
9.  $R72 - R34 = ?$
10.  $R143 - R56 = ?$

## Multiply money

*Multiplying money*



$$3 \times 4 = 12$$

**DEFINITIONS****Total cost**

Number of items  $\times$  price of each item.

**KEY FORMULAS**

- **Total = number of items  $\times$  price each**
- **Example:** 3 items at R20 =  $3 \times R20 = R60$

**WORKED EXAMPLES****Example 1: 3 items cost R20 each. What is the total?**

► Total = number  $\times$  price each.

*The rule.*

► =  $3 \times R20$ .

*Substitute.*

► = R60.

*Multiply.*

► **R60.**

*Final answer.*

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**EXERCISES (EASY → DIFFICULT)**

1. 4 items at R15 each. Total?
2. 4 items at R17 each. Total?
3. 4 items at R40 each. Total?
4. 5 items at R28 each. Total?
5. 4 items at R39 each. Total?
6. 2 items at R38 each. Total?
7. 4 items at R28 each. Total?
8. 2 items at R16 each. Total?
9. 5 items at R36 each. Total?
10. 2 items at R22 each. Total?

**Word problems: money***Money word problems*

$$7 - 3 = 4$$

**DEFINITIONS****Earnings**

Money earned = pay per day × number of days.

**KEY FORMULAS**

- **Total earned = pay per day × number of days**
- **Read carefully** to find what to multiply

**WORKED EXAMPLES****Example 1: A worker earns R100 a day and works 5 days. How much in total?**

► Total = pay per day × days.

*The rule.*

► =  $R100 \times 5$ .

*Substitute.*

► = R500.

*Multiply.*

► **R500.**

*Final answer.*

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**EXERCISES (EASY → DIFFICULT)**

1. Earns R107/day, works 3 days. Total?
2. Earns R142/day, works 3 days. Total?
3. Earns R101/day, works 4 days. Total?
4. Earns R54/day, works 5 days. Total?
5. Earns R144/day, works 6 days. Total?
6. Earns R138/day, works 3 days. Total?
7. Earns R88/day, works 3 days. Total?
8. Earns R146/day, works 5 days. Total?
9. Earns R136/day, works 4 days. Total?
10. Earns R147/day, works 4 days. Total?

---

**End of Chapter 11 — Mixed Exercise**

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

1.  $R140 - R59 = ?$
2. 4 items at R17 each. Total?
3. Earns R101/day, works 4 days. Total?
4.  $R121 - R26 = ?$
5. 4 items at R39 each. Total?
6. Earns R138/day, works 3 days. Total?
7.  $R104 - R52 = ?$
8. 2 items at R16 each. Total?
9. Earns R136/day, works 4 days. Total?
10.  $R143 - R56 = ?$

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## CHAPTER 12

# Data

**Read** Reading pictographs

**Read** Reading bar graphs

**Mode** Mode and range

## Read pictographs

*Reading pictographs*



each ★ = 5

$$4 \times 5 = 20$$

4 pictures, each worth 5

### DEFINITIONS

**Pictograph** A graph that uses pictures to show numbers.

**Key** Tells you how much one picture stands for.

### KEY FORMULAS

- **Total = number of pictures × value of each picture**
- **Example:** if each picture = 5 and there are 4 pictures →  $4 \times 5 = 20$



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## WORKED EXAMPLES

**Example 1: Each picture stands for 5. There are 4 pictures. How many in total?**

► Each picture = 5.

*The key.*

► Multiply:  $4 \times 5 = 20$ .

*Pictures  $\times$  value.*

► **20.**

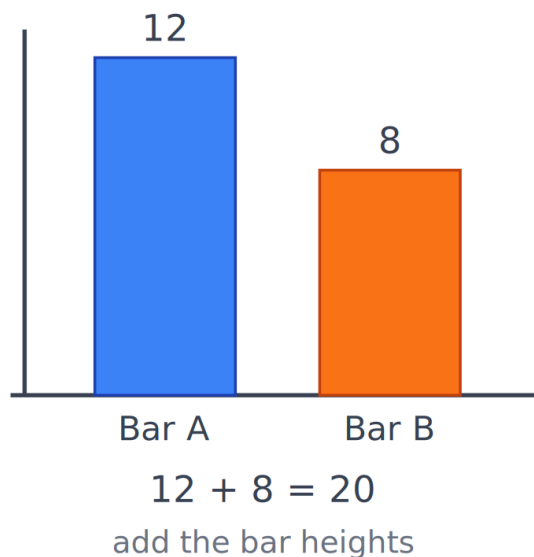
*Final answer.*

EXERCISES (EASY  $\rightarrow$  DIFFICULT)

1. Each pic = 10. 3 pics = ?
2. Each pic = 10. 4 pics = ?
3. Each pic = 2. 6 pics = ?
4. Each pic = 2. 4 pics = ?
5. Each pic = 10. 2 pics = ?
6. Each pic = 5. 5 pics = ?
7. Each pic = 5. 2 pics = ?
8. Each pic = 5. 3 pics = ?
9. Each pic = 5. 4 pics = ?
10. Each pic = 10. 5 pics = ?

## Read bar graphs

*Reading bar graphs*



## DEFINITIONS

**Bar graph**

A graph that uses bars of different heights to show numbers.



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## KEY FORMULAS

- Read the height of each bar
- To find a total, add the bar values

## WORKED EXAMPLES

**Example 1: Bar A = 12 and Bar B = 8. What is the total?**

- Read the bars:  $A = 12$ ,  $B = 8$ .

*Heights.*

- Add them:  $12 + 8 = 20$ .

*Total.*

- **20.**

*Final answer.*

## EXERCISES (EASY → DIFFICULT)

1. Bar A=6, Bar B=20. Total?
2. Bar A=17, Bar B=26. Total?
3. Bar A=5, Bar B=12. Total?
4. Bar A=6, Bar B=16. Total?
5. Bar A=6, Bar B=30. Total?
6. Bar A=30, Bar B=22. Total?
7. Bar A=12, Bar B=15. Total?
8. Bar A=16, Bar B=23. Total?
9. Bar A=19, Bar B=6. Total?
10. Bar A=14, Bar B=22. Total?

## Mode and range



## DEFINITIONS

|              |                                             |
|--------------|---------------------------------------------|
| <b>Mode</b>  | The value that appears most often.          |
| <b>Range</b> | The biggest value minus the smallest value. |



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## KEY FORMULAS

- **Range = largest – smallest**
- **Mode = the most common value**

## WORKED EXAMPLES

**Example 1: Find the range of 3, 8, 5, 12, 7.**

► Largest = 12, smallest = 3.

*Find both ends.*

► Range =  $12 - 3 = 9$ .

*Subtract.*

► **9.**

*Final answer.*

## EXERCISES (EASY → DIFFICULT)

1. Range of 3, 8, 5, 12, 7:

---

**End of Chapter 12 — Mixed Exercise**

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

1. Each pic = 10. 3 pics = ?
2. Bar A=17, Bar B=26. Total?
3. Range of 3, 8, 5, 12, 7:
4. Each pic = 2. 4 pics = ?
5. Bar A=6, Bar B=30. Total?
6. Range of 3, 8, 5, 12, 7:
7. Each pic = 5. 2 pics = ?
8. Bar A=16, Bar B=23. Total?
9. Range of 3, 8, 5, 12, 7:
10. Each pic = 10. 5 pics = ?

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## CHAPTER 13

# Patterns

**Number** Number patterns

**Multiplication** Multiplication patterns

## Number patterns



what comes next?

### DEFINITIONS

**Pattern** A list of numbers that follows a rule.

**Common difference** The same amount added each time to get the next number.

### KEY FORMULAS

- **Find the difference between terms**
- **Add the difference** to get the next number
- **Example:** 2, 5, 8, ... rule +3, next is 11

### WORKED EXAMPLES

**Example 1: Find the next number: 2, 5, 8, \_\_**

► Find the difference:  $5 - 2 = 3$ .

*Same each time.*

► Add it to the last term:  $8 + 3 = 11$ .

*Apply the rule.*

► **11.**

*Final answer.*



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**EXERCISES (EASY → DIFFICULT)**

1. 9, 16, 23, \_\_
2. 6, 13, 20, \_\_
3. 5, 8, 11, \_\_
4. 4, 9, 14, \_\_
5. 3, 6, 9, \_\_
6. 4, 6, 8, \_\_
7. 5, 9, 13, \_\_
8. 5, 11, 17, \_\_
9. 8, 10, 12, \_\_
10. 2, 4, 6, \_\_

**Multiplication patterns**

$$3 \times 4 = 12$$

**DEFINITIONS**

**Multiplication pattern** A pattern made by multiplying: like the times table of a number.

**KEY FORMULAS**

- Each term is the number  $\times$  1, 2, 3, 4, ...
- The next term adds one more group
- **Example:** 3, 6, 9, 12, ... next is  $3 \times 5 = 15$

**WORKED EXAMPLES**

**Example 1: Find the next number: 3, 6, 9, 12, \_\_**

- These are  $3 \times 1$ ,  $3 \times 2$ ,  $3 \times 3$ ,  $3 \times 4$ .

*Multiples of 3.*

- Next is  $3 \times 5 = 15$ .

*One more group.*

- **15.**

*Final answer.*

**EXERCISES (EASY → DIFFICULT)**

1. 3, 6, 9, 12, \_\_
2. 6, 12, 18, 24, \_\_
3. 7, 14, 21, 28, \_\_

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4. 2, 4, 6, 8, \_\_
5. 4, 8, 12, 16, \_\_
6. 5, 10, 15, 20, \_\_

---

## End of Chapter 13 — Mixed Exercise

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

1. 9, 16, 23, \_\_
2. 6, 12, 18, 24, \_\_
3. 5, 8, 11, \_\_
4. 2, 4, 6, 8, \_\_
5. 3, 6, 9, \_\_
6. 5, 10, 15, 20, \_\_
7. 5, 9, 13, \_\_
8. 3, 6, 9, 12, \_\_
9. 8, 10, 12, \_\_
10. 7, 14, 21, 28, \_\_





## 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 10 000

1. 1000
2. 8000
3. 3000
4. 6000
5. 5000
6. 3000
7. 8000
8. 2000
9. 3000
10. 3000

### Round to nearest 10

1. 830
2. 140
3. 870
4. 460
5. 720
6. 270
7. 660
8. 540
9. 840
10. 930

### Round to nearest 100

1. 600
2. 700
3. 900
4. 100
5. 100
6. 800
7. 600
8. 200
9. 100
10. 400



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**Compare 4-digit numbers**

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

**Roman numerals to 100**

1. IX
2. XCIX
3. XC
4. XLIX
5. IV
6. XL
7. XIX
8. C
9. L
10. XIV

**End of Chapter 1 — Mixed Exercise**

1. 1000
2. 140
3. 900
4. >
5. IV
6. 3000
7. 660
8. 200
9. >
10. XIV

**CHAPTER 2 — Addition and Subtraction**

---

**Add 4-digit numbers**

1. 4463
2. 5772
3. 5487
4. 2886
5. 3629
6. 4309
7. 5091
8. 7087
9. 4179
10. 3535



**Subtract 4-digit numbers**

1. 1685
2. 6154
3. 7326
4. 3242
5. 5898
6. 3724
7. 4048
8. 5330
9. 3845
10. 4464

**Estimate sums**

1. 1500
2. 1200
3. 700
4. 600
5. 1300
6. 900
7. 300
8. 1000
9. 1000
10. 1200

**Word problems: + and –**

1. 1813
2. 756
3. 1258
4. 588
5. 1268
6. 1384
7. 1117
8. 749
9. 2193
10. 1302

**End of Chapter 2 — Mixed Exercise**

1. 4463
2. 6154
3. 700
4. 588
5. 3629
6. 3724
7. 300
8. 749
9. 4179
10. 4464





## CHAPTER 3 — Multiplication

---

### Times tables to 12

1. 16
2. 90
3. 48
4. 72
5. 20
6. 12
7. 144
8. 28
9. 8
10. 24

### Multiply 2-digit by 1-digit

1. 162
2. 196
3. 496
4. 300
5. 873
6. 42
7. 324
8. 434
9. 200
10. 287

### Multiply 3-digit by 1-digit

1. 942
2. 462
3. 582
4. 1620
5. 652
6. 969
7. 1796
8. 1056
9. 603
10. 842

### Multiply by 10, 100, 1000

1. 300
2. 1800
3. 500
4. 20000
5. 70
6. 2300
7. 35000
8. 60
9. 4500
10. 4000



**Square numbers**

1. 144
2. 36
3. 4
4. 16
5. 9
6. 64
7. 49
8. 81
9. 25
10. 100

**End of Chapter 3 — Mixed Exercise**

1. 16
2. 196
3. 582
4. 20000
5. 9
6. 12
7. 324
8. 1056
9. 4500
10. 100

**CHAPTER 4 — Division**

---

**Division facts to 12**

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

**Divide 2-digit by 1-digit**

1. 23
2. 20
3. 28
4. 15
5. 29
6. 12
7. 19
8. 14
9. 27
10. 23



**Division with remainders**

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

**Divisibility rules (2, 5, 10)**

1. no
2. no
3. yes
4. yes
5. yes
6. no
7. no
8. no
9. no
10. no

**Long Division (game)**

1. play

**End of Chapter 4 — Mixed Exercise**

1. 11
2. 20
3. 5 R 4
4. yes
5. play
6. 8
7. 19
8. 9 R 1
9. no
10. play

**CHAPTER 5 — Number Theory****Factors of a number**

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



**Multiples**

1. 6
2. 18
3. 8
4. 15
5. 30
6. 4
7. 15
8. 10
9. 36
10. 27

**Prime numbers**

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

**End of Chapter 5 — Mixed Exercise**

1. 4
2. 18
3. yes
4. 4
5. 30
6. yes
7. 6
8. 10
9. yes
10. 4

**CHAPTER 6 — Fractions****Identify fractions**

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

**Equivalent fractions**

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



**Simplify fractions**

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

**Compare fractions (same denom.)**

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

**Add fractions (same denom.)**

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

**Mixed numbers**

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

**End of Chapter 6 — Mixed Exercise**

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





7.  $\frac{4}{7}$
8. 3
9.  $\frac{3}{6}$
10.  $>$

## CHAPTER 7 — Decimals

---

### Tenths as decimals

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

### Compare decimals

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

### Add decimals (1dp)

1. 7.1
2. 4.5
3. 11.8
4. 7.9
5. 13.4
6. 5.3
7. 16.4
8. 13.3
9. 6
10. 9.6

### End of Chapter 7 — Mixed Exercise

1. 0.8
2.  $>$
3. 11.8
4. 0.1
5.  $>$
6. 5.3
7. 0.7
8.  $<$
9. 6
10. 0.3





## CHAPTER 8 — Geometry

---

### 2D shapes — sides and angles

1. 4
2. 3
3. 8
4. 5
5. 6

### Angle types: acute, right, obtuse

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

### 3D shapes: faces, edges, vertices

1. 6
2. 5
3. 6

### Lines: parallel and perpendicular

1. perpendicular

### Symmetry

1. 6

### End of Chapter 8 — Mixed Exercise

1. 4
2. obtuse
3. 6
4. perpendicular
5. 6
6. 6
7. acute
8. 6
9. perpendicular
10. 6

## CHAPTER 9 — Measurement

---

### Length conversions

1. 4000
2. 1000
3. 6000
4. 3000
5. 9000
6. 8000





7. 5000
8. 2000
9. 7000

**Mass conversions**

1. 2000
2. 1000
3. 3000
4. 7000
5. 4000
6. 8000
7. 5000
8. 6000
9. 9000

**Capacity conversions**

1. 1000
2. 3000
3. 7000
4. 9000
5. 5000
6. 6000
7. 4000
8. 8000
9. 2000

**Perimeter of rectangle**

1. 22
2. 18
3. 30
4. 28
5. 32
6. 50
7. 24
8. 44
9. 26
10. 48

**Area of rectangle**

1. 45
2. 70
3. 24
4. 108
5. 15
6. 18
7. 110
8. 66
9. 132
10. 45

**End of Chapter 9 — Mixed Exercise**

1. 4000
2. 1000
3. 7000
4. 28
5. 15





6. 8000
7. 5000
8. 8000
9. 26
10. 45

## CHAPTER 10 — Time

---

### Read clocks: minutes

1. 11:30
2. 4:25
3. 3:15
4. 6:20
5. 10:10
6. 9:50
7. 10:50
8. 2:40
9. 7:25
10. 11:40

### Elapsed time

1. 4:15
2. 6:45
3. 7:15
4. 3:30
5. 9:15
6. 4:00
7. 4:15
8. 6:45
9. 10:30
10. 8:30

### 12-hour and 24-hour time

1. 5:00 PM
2. 2:00 PM
3. 6:00 PM
4. 4:00 PM
5. 3:00 PM
6. 10:00 PM
7. 11:00 PM
8. 9:00 PM
9. 1:00 PM
10. 7:00 PM

### End of Chapter 10 — Mixed Exercise

1. 11:30
2. 6:45
3. 6:00 PM
4. 6:20
5. 9:15
6. 10:00 PM
7. 10:50
8. 6:45
9. 1:00 PM
10. 11:40





## CHAPTER 11 — Money

---

### Add and subtract money

1. 81
2. 71
3. 33
4. 95
5. 28
6. 100
7. 52
8. -30
9. 38
10. 87

### Multiply money

1. 60
2. 68
3. 160
4. 140
5. 156
6. 76
7. 112
8. 32
9. 180
10. 44

### Word problems: money

1. 321
2. 426
3. 404
4. 270
5. 864
6. 414
7. 264
8. 730
9. 544
10. 588

### End of Chapter 11 — Mixed Exercise

1. 81
2. 68
3. 404
4. 95
5. 156
6. 414
7. 52
8. 32
9. 544
10. 87





## CHAPTER 12 — Data

---

### Read pictographs

1. 30
2. 40
3. 12
4. 8
5. 20
6. 25
7. 10
8. 15
9. 20
10. 50

### Read bar graphs

1. 26
2. 43
3. 17
4. 22
5. 36
6. 52
7. 27
8. 39
9. 25
10. 36

### Mode and range

1. 9

### End of Chapter 12 — Mixed Exercise

1. 30
2. 43
3. 9
4. 8
5. 36
6. 9
7. 10
8. 39
9. 9
10. 50

## CHAPTER 13 — Patterns

---

### Number patterns

1. 30
2. 27
3. 14
4. 19
5. 12
6. 10
7. 17
8. 23
9. 14





**10. 8**

**Multiplication patterns**

- 1. 15**
- 2. 30**
- 3. 35**
- 4. 10**
- 5. 20**
- 6. 25**

**End of Chapter 13 — Mixed Exercise**

- 1. 30**
- 2. 30**
- 3. 14**
- 4. 10**
- 5. 12**
- 6. 25**
- 7. 17**
- 8. 15**
- 9. 14**
- 10. 35**





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