65%

**Cambridge Assessment International Education**

# Cambridge Lower Secondary Checkpoint

**MATHEMATICS**            **1112/01**

Paper 1

You must answer on the question paper.

You will need:     Geometrical instruments
                   Tracing paper (optional)

## INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You should show all your working in the booklet.
- You are **not** allowed to use a calculator.

## INFORMATION

- The total mark for this paper is 50.
- The number of marks for each question or part question is shown in brackets [ ].

$$\frac{18.8}{23}$$

**1** Work out the value of $5^2 + \sqrt{121}$

$5^2 = 25$

$\sqrt{121} = 7$

$25 + 7 = 36$

........................ **36** ✓ [1]

**2** Simplify.

$$x^6 \times x^3$$

$x^6 \times x^3 =$

$= 6 \times 3 = 9$

$x^9$

........................ $x^9$ ✓ [1]

**3 (a)** Write $\dfrac{14}{3}$ as a mixed number.

$4\frac{2}{3}$

........................ $4\frac{2}{3}$ ✓ [1]

**(b)** Write 8 as a percentage of 32

$32 \div 8 = 25\%$

$= 4$

$= 25\%$

........................ $25\%$ ✓ % [1]

**4** Simplify.

$$-6p + 4p - 5p$$

$-6p + 4p =$

$-2p - 5p =$

$-7p$

........................ $-7p$ ✓ [1]

5   Solve.

$$5x + 35 = 75$$

75 - 35 = 40
40 ÷ 5 = 8

$x =$ 8 .................................................... [1]

9   (a) Complete the table to show equivalent numbers.
       The first row is completed for you.

| Power of 10 | Ordinary number |
|---|---|
| $10^2$ | 100 |
| $10^4$ | 10 000 |
| $10^5$ | 100,000 |

[1]

   (b) Work out.

$$1.2 \div 0.01$$

1,2 ÷ 0,01 =
1,2 × 100 =
120

120 .................................................... [1]

**18** Here is a number fact.

$$13\,442 \div 47 = 286$$

Use this fact to work out

**(a)** $13.442 \div 4.7$

2.86 ✓ [1]

**(b)** $2.86 \times 94$

269.4 ✗ [1]

**15** Work out.

$$\frac{7}{12} \times \frac{9}{14}$$

Give your answer as a fraction in its simplest form.

✗ [2]

**19** A rectangle has sides of length 1200 m and 700 m.

Draw the rectangle to scale.
Use a scale of 1 cm represents 200 m.

1200m

700 m

✓
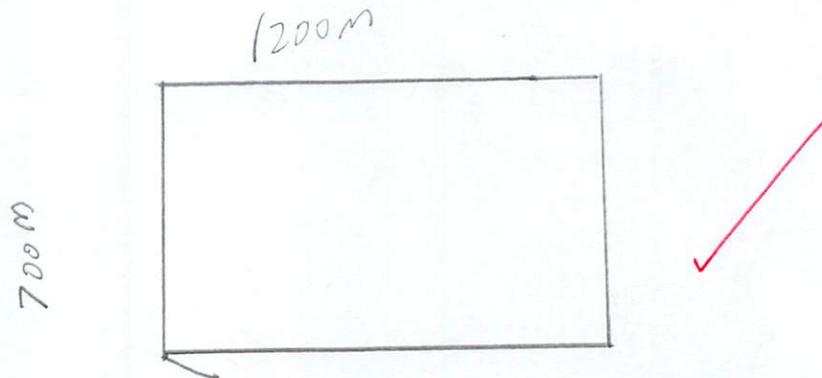
Scale 1 cm = 200 m.

[2]

**20** Complete these calculations.

7.4 - 3.1 =

4.3

$7.4 + \boxed{-4.3} = 3.1$

$9.4 - -5.7 = \boxed{15.1}$

[2]

9.4 - -5.7 =

9.4+5-7 =

15.1

**23** Change the 12-hour clock times into 24-hour clock times.

| 12-hour clock | 24-hour clock |
|---|---|
| 6.15 pm | 18:15 am |
| 9.59 am | 21:59 am |
| 12.01 am | 00:01 am |

*careless mistake.*

0.8 [2]

**26** Find the fraction half-way between $\frac{2}{3}$ and $\frac{5}{6}$

Write your answer as a fraction in its simplest form.

$\frac{4}{6} = 2/3$

$\frac{5}{6} = 5/6$

The fraction in between them is $3\frac{3}{4}$

$\frac{3}{4}$ .................................... [2]

28 Put these calculations in order of size from smallest to largest.
You do **not** need to work out each value.

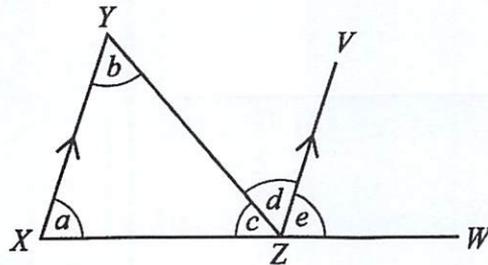$9 \times 0.85$        $9 \div 0.18$        $9 \div 0.5$        $9 \times 0.1$

...9 × 0.1.........    ...9 × 0.85......    ...9 ÷ 0.5......    ...9 ÷ 0.18...
smallest                                            largest

**[1]**

29 The diagram shows triangle *XYZ*.
*XY* is parallel to *ZV*.
*XZW* is a straight line.

NOT TO
SCALE

Jamila proves that the angles of triangle *XYZ* add up to 180°.

Complete her proof.

Angles *a* and *e* are equal because they are ...Corresponding... angles.

Angles *b* and ...d... are equal because they are alternate angles.

Angles *c*, *d* and *e* add up to 180° because ...they are the angles
of a triangle, and interior angles are always 180 ...

So the angles in triangle *XYZ* add up to 180°.

straight line

**[2]**

# Cambridge Lower Secondary Checkpoint

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**INFORMATION**
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7   Work out.

$$(1 + 2.5)^2 - (1 + 2.5^2)$$

$(1 + 2.5)^2 = 12.25$

$(1 + 2.5^2) = 7.25$

$12.25 - 7.25 = 5$

5 _____ [1]

8   Here is a formula.

$$V = a(b - 5)^2$$

Work out the value of $V$ when $a = 4$ and $b = 8$

$8 - 5 = 3$

$4(3)^2 =$

$36$

$V =$ _____ 36 _____ [1]

9   Angelique travels 75 miles.
Jamila travels 115 kilometres.

Show that Angelique has travelled further than Jamila.

2500

2000

1,500

kilometre = 1,000

115,000

115 km = 115,000 m

75 miles = 112,500

115 km = 11

[1]

75 mile = 112,500

1 mile = 1,600 1600m
1 kilometre = 1000m

$115 \times 1000 = 115,000$

$75 \times 1,600 = 120,000$

1  Calculate the square root of 74
   Give your answer correct to 1 decimal place.

   $\sqrt{74} = 8.6023..$ =
   8.6

   8.6 ✓ ........................... [1]

2  Simplify these expressions.

   $f + f + f + f$    ;4f

   4f ✓ .......................

   $2y + 6 - y + 1$

   = 2y(+)1 -3 =      careless
   3y-3               mistake

   3y-3 .......................... ①

   [2]

23 Convert $4\frac{2}{7}$ to a decimal.

   Give your answer correct to 2 decimal places.

   $4(2÷7) = 1.14\ 28...$ =

   1.14

   1.14 ⨯ ......................... [1]

**10** Expand.

$$2a(2b - 3a)$$

$2a(2b - 3a) =$

$2a + 3a - 2b =$

$5a - 2b$

$5a - 2b$ [2]

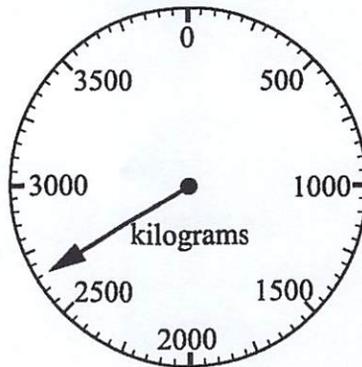**11** Write the missing numbers in the boxes.

| 25 | % of 250 = 75

75% of | 400 | = 300

[2]

**24** The scale shows the mass of a van.



Write down the mass of the van in **tonnes**.

*careless mistake*

2.75 ✗ ............................ tonnes   [1]

**25** Find the *n*th term for this sequence.

3, 8, 13, 18, 23 …

$n = 5$

$+5$

5 ........................ ✗ [2]

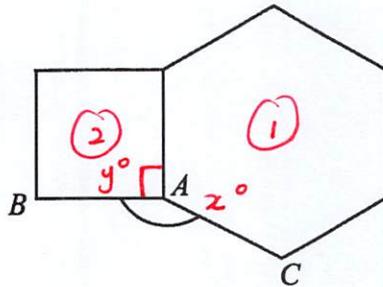**26** Here are some currency exchange rates.

1 US dollar = 7.76 HK dollars

1 US dollar = 1.47 NZ dollars

Work out the value of 1000 HK dollars in NZ dollars.

$7.76 \div 1.47 = 5.27891$

$1000 \div 5.27891 = 189.432$

189.432 ...................................... NZ dollars [2]

**27** A square and a regular hexagon are joined together along one edge.



NOT TO
SCALE

Find angle *BAC*.

BAC = 180

180 .......................................° [2]

① ✱ Formula for interior angle ($x°$)

② ✱ 90° angle in a square ($y°$)

③ 360° − ($x°$ + $y°$) = Your answer.

**28** Mia buys 50 coats at $28 each.
She sells 38 of these coats at $49 each.
She sells the rest of the coats at $40 each.

Find the overall percentage profit Mia has made on these coats.

$$50 \times 28 = 1,400$$
$$38 \times 49 = 1862$$
$$12 \times 40 = 480$$

$$1862 + 480 = 2,342 \checkmark$$
$$2,342 \div 1,400 =$$
$$1.67528.. =$$
$$167.2\%$$

167 ......................... % [3]

$$2342 - 1,400 = 942$$
$$942 \div 1400 =$$
$$67.2\%$$
$$67.2 \%$$

(3)

# Key Stage 3

# English Test

# Reading Paper
# Changing Schools
## Set B

Set B

Changing
Schools

Read this page, but don't open the booklet until your teacher says you can start. Write your name and school in the spaces below.

**First Name** _Adil_

**Last Name** _Halim_

**School** _____

16·5
32

## Instructions

- Before you start to write, you have **15 minutes** to read the Reading Booklet.

- From that point you will have **1 hour** to write your answers.

- Try to answer **all** of the questions.

- There are **13** questions, worth **32 marks**.

- Check through all of your work carefully before the end of the test.

- If you're not sure what to do, ask your teacher.

52%

**CGP**

**Questions 1-4 are about *Harry Potter and the Philosopher's Stone*
(pages 11-12 in the Reading Booklet)**

1.  From the first paragraph, write down why it was difficult for Harry to remember where things were in his new school.

    Hogwarts had over 200 stairs, and almost each of everyone of them being unordinary or super-natural. This made it increibly hard for harry to ad-just and adapt to his new school

    *1 mark* — **i**

2.  a)  In paragraph 2, the writer lists the ways that Peeves is unpleasant. Write down one phrase that shows he is unpleasant.

    "He would drop waste-paper baskets on your head, pelt you with bits of chalk or sneak up behind you invisible, grab your nose and screech "Got your conk!""

    *1 mark* — **1**

    b)  Explain why the list of ways Peeves is unpleasant is an effective way of describing his personality to the reader.

    It gives the reader a quick insight in what Peeves is like without needing Further explanation

    okay accepted.

    *1 mark* — **1**

3.  The writer uses humour in her descriptions of the school. Give one example of humour and explain why it is effective.

    Example from text

    Peeves was worth two (locked) doors and a trick staircase if you were late for class

    Why it is effective

    It helps make the scene feel more realistic and calms the scene too.

    *2 marks* — **0**

**4.** In the whole text, how does the writer create a magical atmosphere for Hogwarts School?

You should comment on:
- the language the writer uses;
- the unusual features of the school building and lessons;
- the descriptions of characters.

The writer describes hogwarts In depth, going over the characters, buildings and just how ~~Professors~~ the school can get.

The language the writer uses is formal ~~mostly~~ Which is mostly needed to help establish the characters and the world-building. The writer comments on many unusual features of the school, such as the ghosts, Headless Nick and Peeves the Poltergiest, who are both ghosts who are polar-opposite, Nick wanting to help students and peeves to annoy them. Which shows just how magical Hogwarts is. The writer also describts characters like Argus and Professor Sprout as Argus being "Even worse than peeves" And Argus being a "Dumpy little witch" Which adds to make the school more uncanny and strange

3
5 marks

3

5. Describe one technique the writer uses to attract the reader's attention in paragraph 1. Explain why it is effective.

It uses direct address to grab the reader's attention and make them want to read more.

direct address

( It uses direct address to make the reader feel included.)

2.

2 marks

6. From Chenice's account, give one impression you get of the school. Support your answer with a quotation.

lot's of

I was impressed with the (school's facilities) and I would be given a tour by Mr Rayner and Thomas. Stating

"I was amazed when I first saw it." While the teachers patted me on the back for.

1

2 marks

7. Complete the table below to show how the way the article is organised makes it more useful to the reader.

| How the article is organised | How this helps the reader |
|---|---|
| General introduction to changing schools | Helps the reader to understand what the students are going to talk about |
| Sections describing different pupils' experiences | Easy to navigate through, helping the reader easily navigate through all their |
| Headline and subheadings | Introduces the article, and informs readers what it is about. |

0

2 marks

4

**8.** What impression does the article give about what it's like to start secondary school?

You should comment on:
- the feelings described by the children;
- the language used in the introduction;
- the headmaster's comment.

The article gives mainly a positive impression of secondary school, starting with the introduction. In the introduction, the article talks to the reader about their time in "Big School". It ends the introduction in a formal way, contrary to the informal language used at the beginning of the introduction. After the introduction ends, It talks about Each of the pupil's personal experience at 'Big School'. Most of the pupils have a positive experience, while the others had a neutral one. Chenice and Alexandra having the most positive experience, whilst Sunday having the least. The principal making everyone feel included by giving them two teachers to give them a tour of the school. His comment proves that he wishes to give all his students a positive first day experience, as most schools "Nowadays" do not.

not necessary

5 marks

*English — Reading Paper, Set B*

2

9.  From paragraphs 1 and 2 what overall impression do you get of the evacuees' experience? Give one quotation to support your answer.

The evacuees food were rationed and billeted, although, the children had a positive experience as they said, "cherry-anne and Lisbeth have happy memories of their schooldays during the war in Wingrave," giving the evacuees the impression of a positive experience.

2 marks

10. How do the logbook extracts suggest that the school is old-fashioned compared to today's schools? Give one example.

The children were caned on the hands when they were late.

1 mark

11. Why do you think the extracts from the logbook are included in the article? Suggest one reason.

It gives the reader a better idea of how the people in wingrave lived during the war.

1 mark

4

**12.** Pick out three phrases from paragraph 3 that show that the school was uncomfortable for the children. Explain the effect of these phrases on the reader.

Phrase 1

" Neither are there enough desks to accommodate the children."

Effect on Reader

It makes the reader feel empathy for the children as they were not given a proper learning experience.

Phrase 2

" The blankets did little to stop the (noise) class from one class disturbing the next one."

Effect on Reader

It makes the reader feel sorry for the children

Phrase 3

Effect on Reader

0.5

3 marks

0.5

**13.** Both *Wingrave School* and *Harry Potter and the Philosopher's Stone* describe characters adapting to unusual conditions at school. However, they are very different types of text.
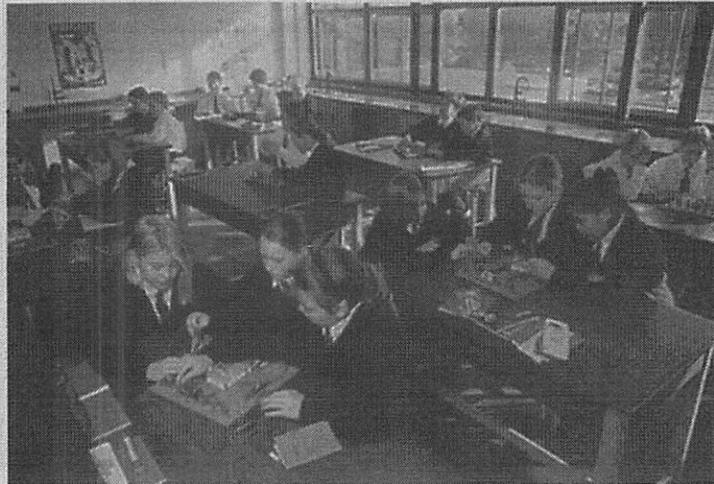
Complete the table below by:
• Circling what you think the purpose of each text is.
• Explaining your choices.

| | **Wingrave School** | **Harry Potter and the Philosopher's Stone** |
|---|---|---|
| **Purpose of the text (circle your answer)** | entertaining<br><br>informing<br><br>persuading | entertaining<br><br>informing<br><br>persuading |
| **Give a reason for your choice** | | |

4 marks

# Changing Schools

# Contents

> *For many people, starting a new school is the first time they've had to adapt to a sudden change.*
> *It can be scary and intimidating but it can also be an exciting opportunity to make new friends and experience new things.*

# Harry Potter and the Philosopher's Stone

There were a hundred and forty-two staircases at Hogwarts: wide, sweeping ones; narrow, rickety ones; some that led somewhere different on a Friday; some with a vanishing step halfway up that you had to remember to jump. Then there were doors that wouldn't open unless you asked politely, or tickled them in exactly the right place, and doors that weren't really doors at all, but solid walls just pretending. It was also very hard to remember where anything was, because it all seemed to move around a lot. The people in the portraits kept going to visit each other and Harry was sure the coats of armour could walk. **1**

The ghosts didn't help, either. It was always a nasty shock when one of them glided suddenly through a door you were trying to open. Nearly Headless Nick was always happy to point new Gryffindors in the right direction, but Peeves the poltergeist was worth two locked doors and a trick staircase if you met him when you were late for class. He would drop waste-paper baskets on your head, pull rugs from under your feet, pelt you with bits of chalk or sneak up behind you, invisible, grab your nose and screech, 'GOT YOUR CONK!' **2**

Even worse than Peeves, if that was possible, was the caretaker, Argus Filch. Harry and Ron managed to get on the wrong side of him on their very first morning. Filch found them trying to force their way through a door which unluckily turned out to be the entrance to the out-of-bounds corridor on the third floor. He wouldn't believe they were lost, was sure they were **3**

trying to break into it on purpose and was threatening to lock them in the dungeons when they were rescued by Professor Quirrell, who was passing.

Filch owned a cat called Mrs Norris, a scrawny, dust-coloured creature with bulging, lamp-like eyes just like Filch's. She patrolled the corridors alone. Break a rule in front of her, put just one toe out of line, and she'd whisk off for Filch, who'd appear, wheezing, two seconds later. Filch knew the secret passageways of the school better than anyone (except perhaps the Weasley twins) and could pop up as suddenly as any of the ghosts. The students all hated him and it was the dearest ambition of many to give Mrs Norris a good kick.

4

And then, once you had managed to find them, there were the lessons themselves. There was a lot more to magic, as Harry quickly found out, than waving your wand and saying a few funny words.

5

They had to study the night skies through their telescopes every Wednesday at midnight and learn the names of different stars and the movements of the planets. Three times a week they went out to the greenhouses behind the castle to study Herbology, with a dumpy little witch called Professor Sprout, where they learnt how to take care of all the strange plants and fungi and found out what they were used for.

6

*The experience of moving from primary to secondary school is shared by almost everyone. In this article, some Year 7 students and their headmaster talk about the first day at secondary school. This article is from the BBC website.*

# Starting 'big' school

September. New school year. New shoes and uniform, new books and pencil case. Leaving cosy primary school behind and entering those big gates with those bigger pupils and a frightening day ahead. Was that you??    1

Do you remember your first day at 'big' school? The rumours about having your head flushed in the toilet, the daunting view of the big building, the other pupils so much bigger than you, the prospect of real homework and strict teachers? Oh yes, it can be such a scary time and it happens to us all.    2

New pupils starting at the Royal Wolverhampton Senior School have sent us their impressions of their first day. See what they have to say.    3

## Alexandra

I woke up about 7.00 in the morning feeling nervous but at the same time excited. I quickly ate my breakfast and rushed to the door and then my mum and dad stopped me and took lots of pictures of me.    4

I could tell they were proud of me. My dad walked me to the bus station but we had to wait about 15 minutes before it came. Soon it arrived and I was waving to my dad and I set off.    5

When I got there we went straight to Chapel and I met a girl called Erin who was really nice. After Chapel we did some games, then after break we had a tour of the school.    6

By then it was time for lunch and we ate. Then we had to find bits of string that were in our house colour. It took a long time but it was great fun. Mr Thomas said at the end to me that I did impress him. After that we went to have tea it was very nice. I really like this school and I can't wait for another day to come.    7

## Chenise

As I walked through the grand double door, I saw many people hanging around the wooden table. There was a crowd of people there, waiting to be welcomed to the start of the Senior School. Finally a member of staff welcomed my mom and I. We were sent to Victoria Hall. After a few minutes, and after all our hugs and kisses, parents/guardians left.    8

Later on we visited Reynolds. It was like the Year 7/Year 8 base. I was amazed when I first saw it. There is a work room, kitchen, common room and the sofa room. I am looking forward to using these facilities. 9

After Chapel we were told which Form we were in. I am now in 7.1 which is Mr Rayner. We then went to our Form room, Room 9. In there we wrote in our diaries the timetable for the year. Then we wrote what subjects the teachers taught. 10

A few minutes later we doubled up (7.1 and 7.2) and Mr Rayner and Mr Thomas gave us a quick tour of the school. 11

After that, it was lunch time. I had a jacket potato with butter and mixed fruits for the drink. 12

Later on we played games. We had to communicate with each other, but not by talking. We had to arrange ourselves in height order and age. 13

**Sunday**

I arrived at school at about eight o'clock this morning. After that I went into the school office and met Ms Tate, she then told me which Competition House I was in and told me to go to Victoria Hall and wait for everybody else to arrive. Year 7 then went up to the Year 7 Common Room. 14

After Ms Tate had told us a few things we all went to Chapel. When the service was over we went back to the Common Room. Mr Rayner then took us (7.1) to either room 6 or room 9. We then wrote down our timetables. Then we had break. 15

After break we went on a tour of the school with Mr Rayner and Mr Thomas, to find our classrooms for Thursday's lessons. We then went to lunch (it was great)! When I came out of lunch I got lost and ended up next to the cricket pitch. I managed to find my way back but I was late for class. My first day was fab!! 16

**Tim Waters, Headmaster**

"The first day at a new school is always daunting, but I'm glad to say that for most pupils it ends up being remembered for all the right reasons. 17

Eighty four new pupils joined Senior School at the Royal this term, an equal mix of day pupils and boarders. 18

Wherever a child arrives from, the emotions are the same, a mix of excitement, anxiety and, if it is a big school, disorientation. 19

Schools these days work very hard to induct pupils, with "taster" days the previous year to help familiarize them and new pupils are teamed up with "buddies" to help. Provided that the ethos of the school is welcoming, it takes very little time for newcomers to fit in and feel at home". 20

*During the Second World War it was considered dangerous to remain in London because of German bombing raids. Lots of children were sent to live with families in the countryside — sometimes with complete strangers. This was called "evacuation". This article describes the experiences of two evacuated children, Cherry-Anne and Lisbeth, as their London school and the local school are combined.*

# Wingrave School

In September 1939, 84 schoolchildren with their teachers were evacuated from Tufnell Park in North London to Wingrave\*. Among them were Cherry-Anne, who was nine years old and Lisbeth, who was just six. Cherry-Anne and Lisbeth's mother accompanied the group as an official assistant to the staff.

**1**

By today's standards, conditions were tough for the young evacuees. The schoolroom was crowded, dark and cold, food and sweets were rationed, and they were initially billeted\*\* with a Wingrave couple. Despite these conditions, Cherry-Anne and Lisbeth have happy memories of their schooldays during the war in Wingrave.

**2**

The arrival of the evacuees in Wingrave more than doubled the size of the village school and inevitably created organisational problems. The evacuees were allocated the main room of the school, but this had to be subdivided into three classrooms by hanging war issue blankets from the ceiling. The blankets did little to stop the noise from one class disturbing the next one, but they did stop the heat from the single stove in the hall reaching the far end. Cherry-Anne was lucky — she was near the stove, but Lisbeth had to wear her outdoor coat all day to keep warm in winter.

**3**

The academic background and abilities of the London evacuees were very different from those of the local Wingrave children, and it was initially decided to teach the two schools separately. This approach did not find favour with the Wingrave headmaster, Mr Stubbs, who made representations to the Education Committee, and achieved integration\*\*\* of the two schools in January 1940.

**4**

\* *Wingrave = a village in Buckinghamshire*
\*\* *billeted = given temporary lodgings*
\*\*\* *integration = joining together*

Extracts from the school logbook illustrate the difficulties of organising school life in the autumn term of 1939.

**Extracts from the logbook:**

September 19th 1939. *School reopened at 9am. The Burghley contingent of teachers declined to combine the two schools and work as one. In order to avoid friction, they were given the main room to themselves. As they are entirely a junior girls school difficulty with regard to text books is being encountered. Neither are there sufficient desks to accommodate the children.*

November 21st 1939. *Eight boys went after the hunters at mid day and did not arrive at school until 2.30pm (one and a quarter hours late). They were marked absent and were each given one stroke with the cane on the hand.*

December 29th 1939. *A letter has been received from the Secretary of State for Education following Mr Blocksidge's visit suggesting reorganisation of the school by amalgamating\* all of the children into three sections — seniors, juniors and infants. I propose to carry out this reorganisation as soon as the teachers' Christmas leave has been worked out.*

© This article is reproduced with the kind permission of Wingrave School

\* amalgamating = joining together



Children waiting to be evacuated at a London railway station during the Second World War.

# Cambridge Lower Secondary Checkpoint

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

SCIENCE                                                                     1113/01

You must answer on the question paper.

No additional materials are needed.

**INSTRUCTIONS**
- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You should show all your working in the booklet.
- You may use a calculator.

72%

23
32

5   The picture shows three different elements and their state at room temperature.
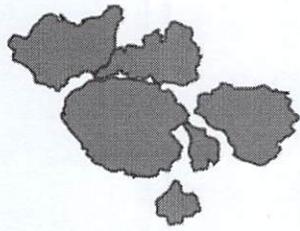


solid iodine          liquid bromine          chlorine gas

(a)  Which **two** of these elements flow easily at room temperature?

liquid bromine and chlorine gas ............................................. [1] ✓

(b)  What is the chemical symbol for chlorine?

Cl ............................................................................ [1] ✓

(c)  Chlorine gas fills the jar.

Explain why a gas fills a jar.

Tick (✓) the box next to the correct explanation.

Forces between the particles push them apart.                  ☐

The particles are free to move.                               ✓

The particles can easily be squashed into a small space.       ☐

The particles increase in size to fill the space.              ☐
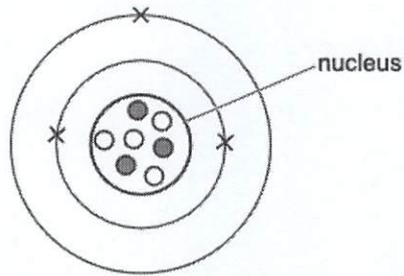
[1] ✓

(d)  Liquid bromine easily evaporates.

Explain what happens to the particles (molecules) when a liquid evaporates.

AS the liquid evaporates, the particles vibrate and move Further away from eachother turning the liquid into a gas

[2] ✓

8   Look at the diagram of the structure of a lithium atom.



nucleus

(a)  There are three electrons in a lithium atom.

(i)  How many protons are there in a lithium atom?

3 .................................................................................................................. [1]

(ii)  How many neutrons are there in a lithium atom?

4 ................................................................................................................. [1]

(b)  A sodium atom contains 11 protons.

Draw the structure of a sodium atom.

[2]

7   Water and minerals move through flowering plants.

(a) Complete the sentences about how water and minerals move through a plant.

Choose parts of a plant from the list.

Each part can be used once, more than once or not at all.

**palisade mesophyll**          **phloem**          **root hair**          **xylem**

Water and minerals enter plants through the _Root hair_ cells.

The water and mineral solution is transported in the stems through

_Xylem_ cells.

The solution reaches the _Palisade mesophyll_ cells in the leaves and

is used for growth.                                                    [3]

(b) Plants need water to make sugar.

Name **two other** things that plants need to make sugar.
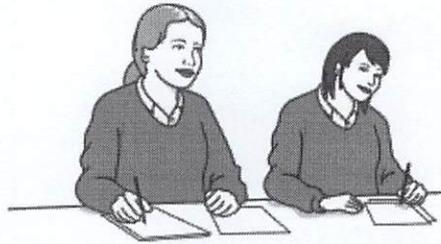
_Carbon dioxide_ and _Water_

[2]   ①

2   Lily is in a lesson just before lunch.

She is hungry and can smell the food cooking in the school kitchen.



(a) We smell food because particles of gas travel from the food.

Which sentence is true about gases?

Tick (✓) the box next to the correct sentence.

| | |
|---|---|
| Forces between the particles are weak. | ✓ |
| The particles are only able to vibrate. | ☐ |
| The particles form a fixed shape. | ☐ |
| The particles have very little energy. | ☐ |

[1]

(b) What word describes how the smell reaches Lily?

Circle the correct answer.

(absorption)          diffusion          (dissolving)          mixing

[1]

(c) The smell from hot food reaches Lily before the smell from cold food.

Explain why.

Use ideas about particles.

The hot food particles are much faster than the cold food particles because they have more energy, therefore vibrating and moving faster to Lily.
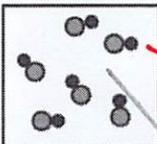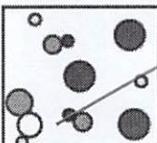
[2]

①

collide more

spread out more.

9  (a)  Atoms are made up of three different particles.

Complete the sentences about the different particles in an atom.

The nucleus of an atom contains _Protons_ and _Neutrons_.

The nucleus is surrounded by particles called _Electrons_

[3]

(b)  The diagram shows part of the Periodic Table.

| | | | H | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Na | | | | | | | | | O | Ne |
| | | transition elements | | | | | | | Cl | |

(i)  What is the chemical symbol for the **smallest** atom?

Choose from **H, O, Ne, Na** or **Cl**.

H

[1]

(ii)  Which chemical symbol shows a **metal**?

Choose from **H, O, Ne, Na** or **Cl**.

Na

[1]

5  The diagrams show the particles in different substances.

Draw a line to match each **diagram** with the **description** of that diagram.

diagram                                      description
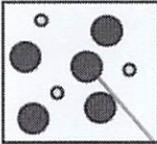


| mixture of compounds |

| mixture of elements |

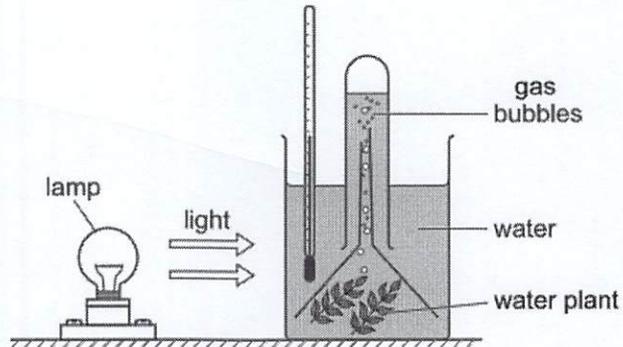| mixture of elements and compounds |

| single compound |

| single element |

[3]

6   Safia and Jamila investigate photosynthesis.

They use water plants.

Here is the apparatus they use.



(a)   In their first experiment they measure the number of gas bubbles made in one minute.

(i)   What is the name of the gas made in photosynthesis?

Circle the correct answer.

carbon dioxide      methane      nitrogen      oxygen      water      [1]

(ii)   What equipment does Safia use to measure one minute?

Timer                    stop watch / stop clock.          [1]

**(b)** Safia and Jamila do two more experiments.

They move the lamp further away from the plant for each experiment.

Here are their results.

| distance between light and water plant in cm | number of gas bubbles in one minute |
|:---:|:---:|
| 10 | 98 |
| 20 | 54 |
| 40 | 26 |

**(i)** Why do they use one minute for each experiment?

So they can keep the experiment fair [1] and get the most accurate results

**(ii)** Complete the sentence describing the pattern of results.

As the distance between the light and the water plant increases, the less light the plant absorbs, making less gas bubbles [1]

**(c) Predict** the results for:

a distance of 30 cm = 40 - 30 gas bubbles ✗ 53-27

a distance of 50 cm = 15 - 5 gas bubbles ✗ 1-25

[1]

**(d)** Circle the correct word or phrase that completes the conclusion.

**increases**

The rate of photosynthesis    **does not change**    as light decreases.

**decreases**

[1]