



Victorian Certificate of Education 2003

General Achievement Test

Thursday 12 June 2003

Reading time: 10.00 am to 10.15 am (15 minutes)

Writing time: 10.15 am to 1.15 pm (3 hours)

QUESTION BOOK

Structure of book

<i>Type of questions</i>	<i>Number of questions to be answered</i>	<i>Suggested times (minutes)</i>	<i>Suggested time allocation</i>
Writing Task 1	1	30	10.15 – 10.45
Writing Task 2	1	30	10.45 – 11.15
Multiple-choice questions	70	120	11.15 – 1.15

- Students are permitted to bring into the examination room: pens, pencils, highlighters, erasers, sharpeners, rulers, and an English and/or bilingual dictionary.
- Students are NOT permitted to bring into the examination room: blank sheets of paper and/or white out liquid/tape.
- No calculator is allowed in this examination.

Materials supplied

- Question book of 40 pages.
- Answer sheet for multiple-choice questions.
- Script book for **both** Writing Task 1 and Writing Task 2.

Instructions

- Write your **student number** on the script book.
- Check that your **name** and **student number** as printed on your answer sheet for multiple-choice questions are correct, **and** sign your name in the space provided to verify this.
- Follow the times suggested for each task.
- You may complete tasks in any order and you may return to any task at any time.
- Do not waste time on one particular multiple-choice question. If you find a question very difficult, return to it later.
- Answer all questions.
- All written responses must be in English.

At the end of the test

- Place the answer sheet for multiple-choice questions inside the front cover of the script book.
- You may keep this question book.

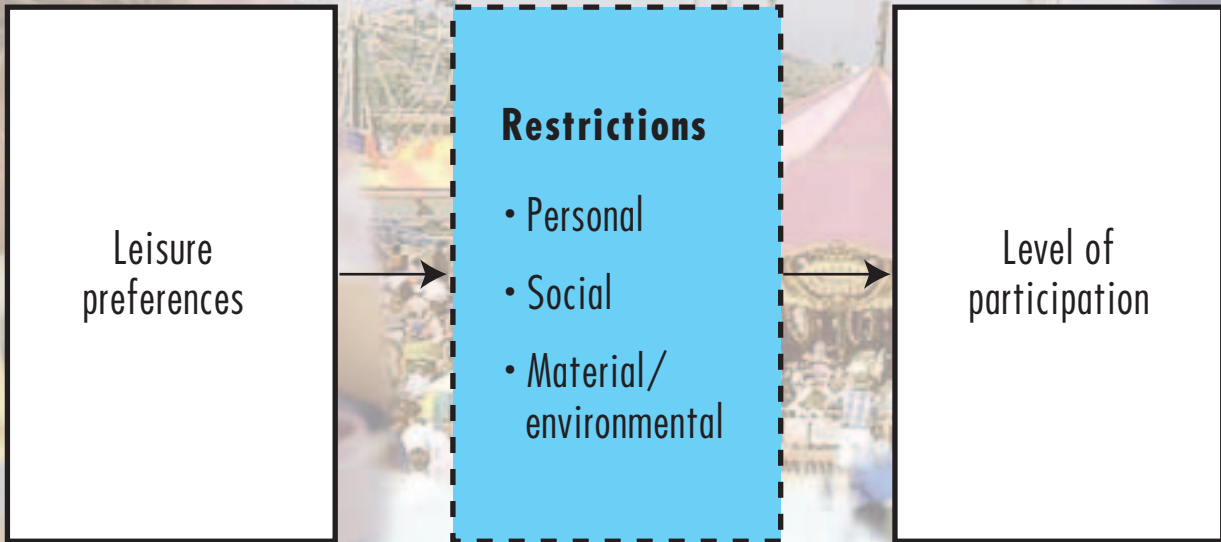
Students are NOT permitted to bring mobile phones and/or any other electronic communication devices into the examination room.

WRITING TASK 1

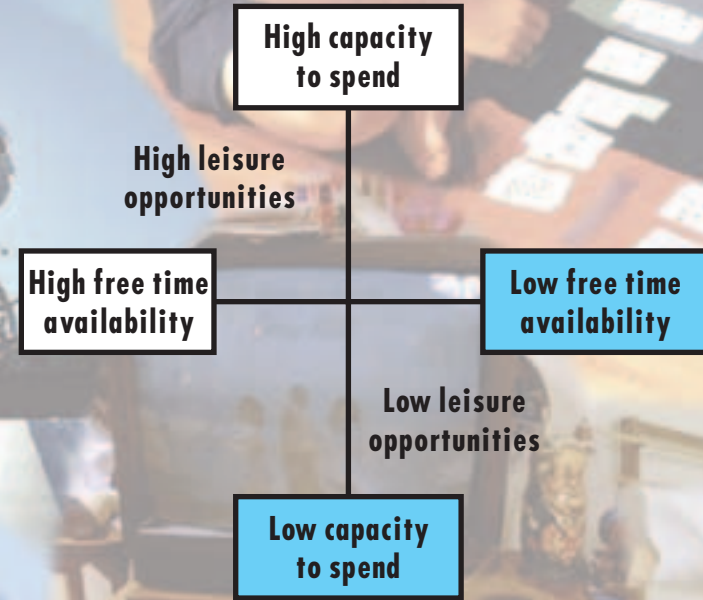
*To be answered in the script book in pen, not pencil.
You are advised to allocate 30 minutes to this task.*

Consider the information on these two pages.
Develop a piece of writing presenting the major ideas in the material.
Your piece will be judged on:

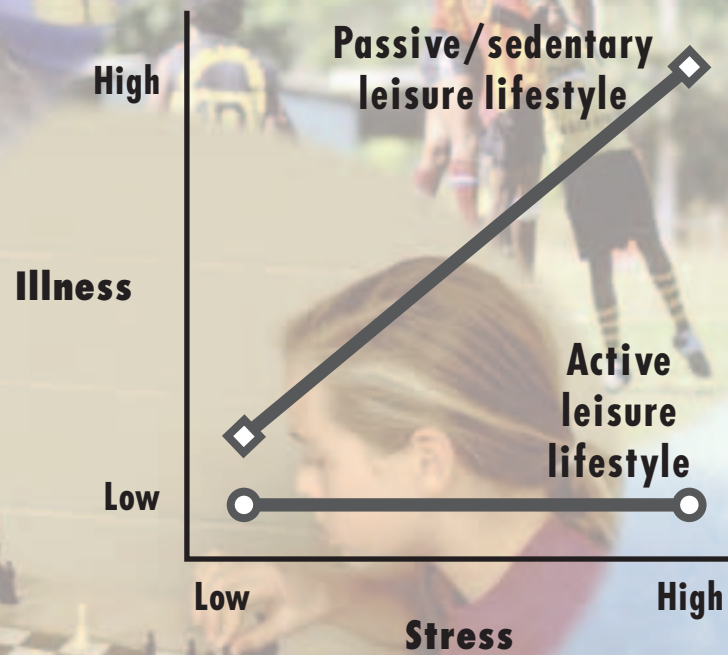
- how well you organise and present your understanding of the material; and
- how clearly you express yourself.



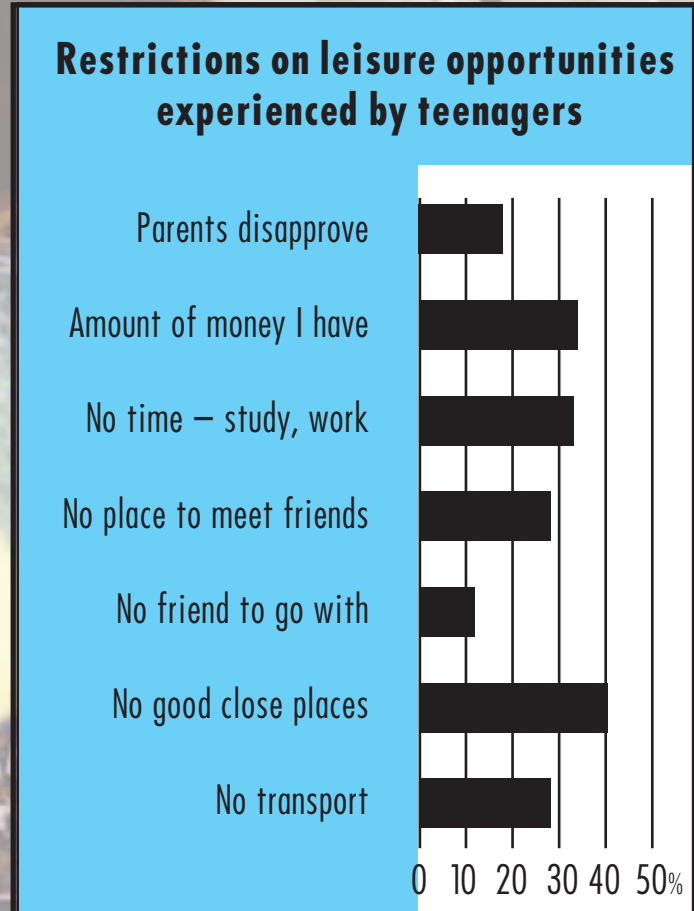
Distribution of leisure opportunities



The benefit of an active leisure lifestyle



Time spent per week on average - person aged 15-24		
	Working	12%
	Housework, childcare, shopping	6%
	Sleep, personal care	45%
	Education	10%
	Voluntary/community	1%
	Social life/ entertainment	10%
	Active leisure	5%
	Passive leisure	11%
TOTAL		100%



WRITING TASK 2*To be answered in the script book in pen, not pencil.**You are advised to allocate 30 minutes to this task.*

Consider the statements below.

Develop a piece of writing presenting your view of **one or more** of the statements.

Your piece of writing will be judged on:

- the quality of what you say about the issue, regardless of the point of view you express; and
- how effectively you express yourself.

Advertising is just visual pollution. Not only is it annoying, it creates false images and promotes crude and simplistic ideas and values.

Advertising does not force anyone to buy anything. It is just a way of keeping us informed about products that can make our lives more comfortable and enjoyable.

Modern advertising has evolved into a creative and sophisticated art form, and is often more entertaining than the programs or publications it helps pay for.

The point is not that advertising deceives, but that consumers are so easily misled.

Advertising promotes the thoughtless and unnecessary consumption of the world's resources, and ultimately leads to constant dissatisfaction with one's life.

Advertising is the price we pay for 'free' or affordable benefits.

MULTIPLE-CHOICE QUESTIONS

*To be answered on the Answer Sheet for
Multiple-Choice Questions.*

You are advised to allocate 2 hours to this task.

Choose the response that is **correct** or that **best answers the question**, and shade the square on the answer sheet for multiple-choice questions according to the instructions on that sheet.

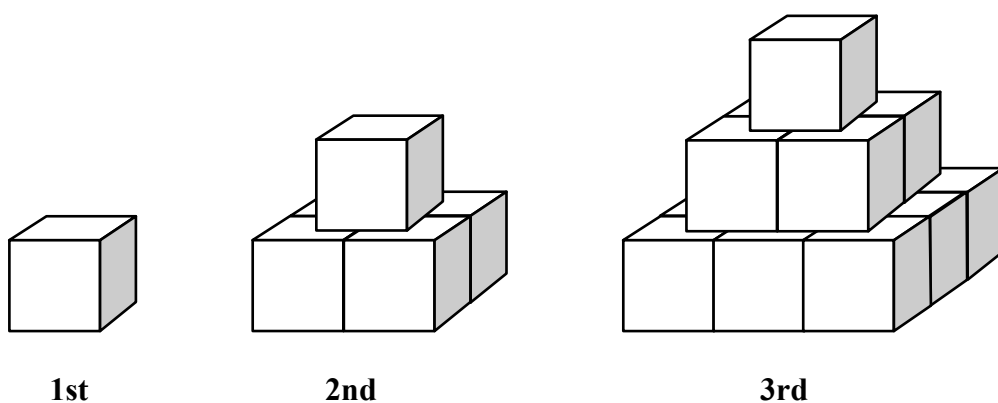
A correct answer is worth 1 mark, an incorrect answer is worth 0 marks. No marks will be given if more than one answer is shown for any question. Marks will **not** be deducted for incorrect answers.

UNIT 4

Question 10

Cubes of equal size can be stacked to produce *step pyramids*. The first three in a series of step pyramids are shown below.

Note that there are fourteen cubes in the third step pyramid (i.e. there are no hidden spaces in the step pyramids in the series).



How many cubes will be added to the fourth step pyramid in the series in order to make the fifth step pyramid?

- A 16
B 25

- C 30
D 36

UNIT 5

Questions 11–16

The following passage has been adapted from an article in The Herald newspaper, published in Melbourne in June 1938.

Every week Mrs Brown has 25 shillings and any extra money she can get from the bone and bottle man, to buy food. With great care and forethought she manages to keep within this amount.

Mrs Brown is very careful with little economies – for instance, she never buys dripping, but suet¹, and renders it. She keeps a stock-pot and never sells the bones until the marrow and last scraps of nourishment have been wrung from them. And, of course, she never sells any fat. 5

Twice a week she goes to the market for meat, eggs, fruit and vegetables and keeps them in a drip-safe². She is quite content to pass by fruit and vegetables which are out of season – not for her either are those handy but expensive tins of pork and beans, those fascinating little snacks, which are not really necessary for the family diet. Instead her meals draw their inspiration from the stock-pot, with its vegetable waters, bacon rinds, cheese parings and whisper of garlic, and an appreciative feeling for salt and cayenne pepper. So she has plenty of liquid rich in mineral salts for soups and gravies and extra money is not needed for tonics or patent medicines or pick-me-ups. 10
15

¹ dripping and suet are forms of animal fat

² drip-safe: a simple means of keeping food cool

Typical meals for Mrs Brown's family

A weekday:

BREAKFAST

porridge, milk and honey
one slice each of bread and butter – after that
bread and dripping
cocoa and tea

LUNCH

scrambled egg sandwiches, jam sandwiches
fruit
tea and sugar

DINNER

tripe, delicately seasoned with nutmeg, garlic,
onions and mashed potatoes
stewed prunes

Sunday:

BREAKFAST (the same)

DINNER

lamb's fry soufflé (white bread, 2 eggs, minced
liver and heart, herbs), potatoes, boiled
cucumber and white sauce
baked unpolished rice custard with sultanas

EVENING MEAL

grated cheese omelette
bread, butter, dripping, jam
cocoa

Question 11

The passage suggests that Mrs Brown's housekeeping methods are

- A unnecessarily severe.
- B tediously uninspiring.
- C admirably disciplined.
- D sensibly labour-saving.

Question 12

The statement that Mrs Brown 'never sells any fat' (line 7) suggests that, in 1938, fat was considered to be

- A useless.
- B unhealthy.
- C nourishing.
- D inexpensive.

Question 13

'One slice each of bread and butter – after that bread and dripping' (weekday breakfast) suggests that

- A the Brown children sometimes go hungry.
- B butter is more expensive than dripping.
- C bread is a luxury in the Brown family.
- D the Brown children do not like butter.

Question 14

The main point of the passage is to

- A describe an example of thriftiness.
- B outline the benefits of a healthy diet.
- C publish menus that are easy to prepare.
- D illustrate the difficulty of surviving on a low wage.

For Question 15 consider the cartoon below, which refers to the practice of selling household bones, rags and bottles. For Question 16 consider all of the material in this unit.



'Any rags or bones today?'
'No, wife's away.'
'Any bottles?'

Hal Gye, 1925

Question 15

The cartoon suggests that when his wife is away this husband

- A spends little time at home.
- B spends a lot of time drinking.
- C accumulates a lot of household rubbish.
- D takes over the management of the household.

Question 16

The material in this unit suggests all of the following about the historical period **except** one. Which one?

- A Men were not expected to cook.
- B People without work were ridiculed.
- C Efficiency and economy were valued.
- D Women were in charge of house-work and cooking.

UNIT 6**Question 17**

People at a restaurant sometimes clink (touch) their glasses together as a sign of celebration. For three people at a table, three clinks are required in total in order that each person clinks glasses with the other two people.

For four people at a table, how many clinks are required in total for each person to clink glasses once with each other person at the table?

- | | | | |
|----------|---|----------|---|
| A | 4 | C | 6 |
| B | 5 | D | 8 |

UNIT 7**Question 18**

Tingles and Tangles are two kinds of sweet. As part of a marketing exercise, combinations of these two sweets are sold together in special packets. In one combination packet, one Tingle and two Tangles are sold together for \$3.20. In another combination packet, one Tangle and three Tingles are sold together for \$4.60.

If there is no discount when the Tingles and Tangles are sold together in a combination packet, how much are Tingles and Tangles when sold separately?

- A** Tingles \$1.20, Tangles \$1.00
- B** Tingles \$1.00, Tangles \$1.20
- C** Tingles \$0.80, Tangles \$1.40
- D** There is insufficient information to determine the answer.

UNIT 8**Question 19**

The number 5 is a square root of 25 because $5 \times 5 = 25$. The symbol for the positive square root of a number is $\sqrt{\quad}$.

If $x + x - \sqrt{x} = 6$, x is

- | | | | |
|----------|---|----------|----|
| A | 2 | C | 9 |
| B | 4 | D | 16 |

Question 20

Which of the following students seems the most popular?

- | | |
|---------------|------------------|
| A Luke | C Lucy |
| B Tom | D Dolores |

Question 21

The sociogram shows that

- | | |
|--|---|
| A Ed is more popular than Fergus. | C Fergus is as popular as Finn. |
| B Finn is more popular than Bill. | D George is as popular as Frank. |

Question 22

Which one of the following groups is the most cohesive and close-knit?

- | | |
|---|--|
| A Luke
Elton
Bernard
Daniel | C June
Jane
Frances
Ivy |
| B Bill
Elton
Finn
Fergus | D Ivy
Jane
Sonya
Frances |

Question 23

The sociogram shows that

- A** choices between the sexes are not mutual.
- B** the most popular in each gender group choose each other.
- C** there are more mutual choices among the boys than the girls.
- D** there are more mutual choices among the girls than the boys.

UNIT 10

Questions 24–26

A companion plant is a plant that is grown together with another plant. For the Vegetables I, II, III, IV and V, Table 1 shows those companion plants that are:

- (a) *good companions* (☼) – result in better growth for the vegetable;
- (b) *bad companions* (☹) – result in worse growth for the vegetable; or
- (c) *neutral companions* (N) – have neither a good nor bad effect on the growth of the vegetable.

Table 1

Companion Plant	Vegetable				
	I	II	III	IV	V
basil	N	N	☹	N	N
bean	☼	☼	☼	N	☼
beetroot	☼	N	N	N	N
cabbage	N	N	N	N	☼
carrot	N	N	☼	N	N
celery	☹	☼	☼	N	N
garlic	☹	N	N	N	N
lettuce	N	N	N	☼	N
nasturtium	N	☹	N	N	N
onion	☼	N	N	☼	N
oregano	☹	☼	N	N	N
parsnip	N	N	N	☹	☹
pea	N	☹	☼	☼	N
potato	☼	☹	☹	N	☹
radish	N	N	☼	☹	N
sage	☼	N	☹	☹	N
strawberry	☹	☹	N	N	N
tomato	☹	N	N	☼	☼

Question 24

Which one of the following would be the best plant to grow between a row of Vegetable I and a row of Vegetable III?

- A basil
- B beans
- C beetroot
- D carrots

Question 25

Table 1 shows that

- A beans are good companions for Vegetables I and IV.
- B celery is a good companion for Vegetables I and III.
- C peas are good companions for Vegetables III and IV.
- D radishes are good companions for Vegetables III and IV.

Question 26

A good companion is assigned a value of + 1, a bad companion a value of – 1, and a neutral companion a value of 0.

For the five vegetables in Table 1 (I, II, III, IV and V), which of the following companion plants has an overall value of 0?

- A oregano
- B beetroot
- C nasturtium
- D strawberry

UNIT 11

Questions 27–30

Cobweb Summer

This dry summer has been a spider's heyday.
Their geometric premises, extended widely,
free from bombardment, hung unbroken.

A prodigal¹ summer, though the gardens dried.
Burdened with so much happiness 5
I knew the web of joy must sometime tear,

These webs of amity² that are your art
still hold, though the small spinner tires in the mending.
Such shapes, such silk, all far too fine for keeping.

The rainy days delayed, we held our breath. 10
Then the sky darkened. Now it comes
and the first drops strike heavy, cold.
In rising wind the web tears from the vine.

Barbara Giles

¹ prodigal: wasteful, extravagant

² amity: friendship

Question 27

In describing the cobwebs, the speaker gives particular emphasis to their

- | | |
|------------------|-----------------------------|
| A strength. | C tenacity and dirtiness. |
| B deceptiveness. | D uniformity and fragility. |

Question 28

In lines 6–9 the speaker associates the cobwebs with

- | | |
|-----------------------------|-----------------------------------|
| A affection and attachment. | C entrapment and exploitation. |
| B permanence and security. | D constant but mindless activity. |

Question 29

The use of 'prodigal' and 'burdened' in lines 4 and 5 suggests that the happiness of summer was

- | | |
|-------------------------|-------------------------|
| A treasured and hidden. | C carefree and relaxed. |
| B almost overwhelming. | D kept within bounds. |

Question 30

The statement 'Now it comes' (line 11) suggests that the speaker is

- | | |
|-----------------------------|----------------------|
| A accepting the inevitable. | C overcome with joy. |
| B filled with impatience. | D full of hope. |

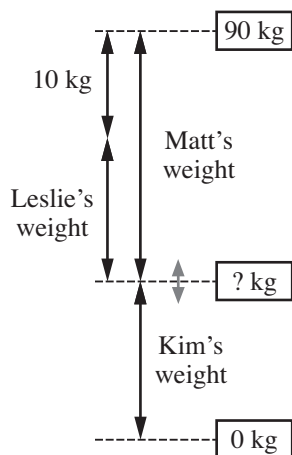
UNIT 12

Question 31

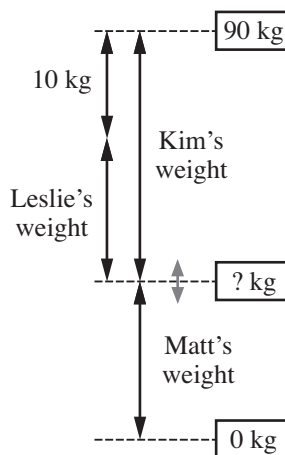
Consider three people from one family – Kim, Leslie and Matt. Together, Kim and Matt weigh 90 kg. Together, Leslie and Matt weigh 80 kg.

Which one of the following best represents the weight relationships between Kim, Leslie and Matt?

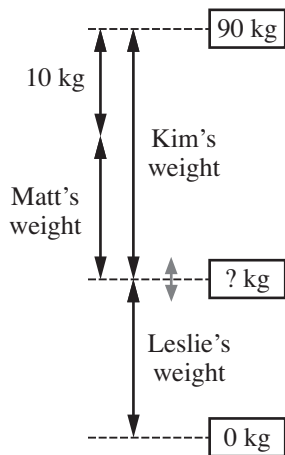
A



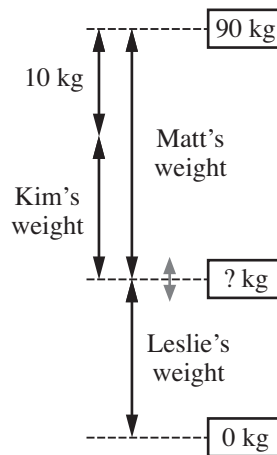
C



B



D



UNIT 13

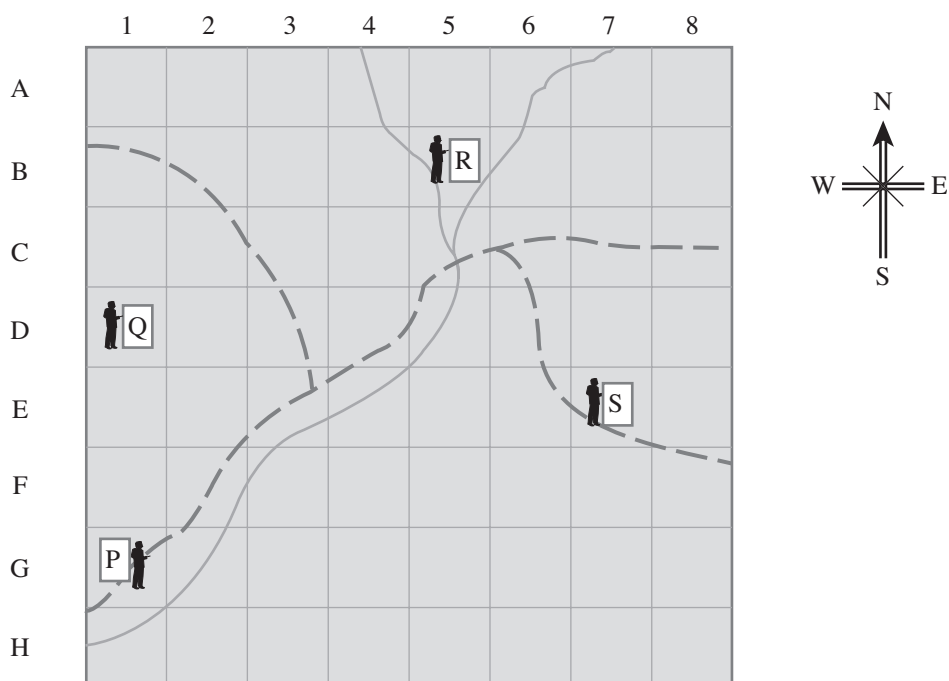
Questions 32–35

Germaine is lost in the area shown by the map below. The dashed lines represent roads and the solid lines represent streams.

Four rangers are sent out to find her.

Germaine has a two-way radio. The rangers have devices that can detect the direction of Germaine's radio signal but not her distance from them.

- Each small square on the map represents an area 0.5 km by 0.5 km.
- Assume that each ranger is exactly in the centre of a square.
- Assume that Germaine is exactly in the centre of a square.



Question 32

Suppose Germaine is exactly southwest of Ranger R and exactly southeast of Ranger Q.

In which square is she located?

- A D5
- B E2
- C F3
- D There is not enough information provided to answer.

Question 33

How far is Ranger Q from Ranger P?

- A 3 km
- B 2 km
- C 1.5 km
- D 1 km

Question 34

If Germaine is exactly south of one ranger and exactly west of another, in how many squares of the map might she be located?

- A one
- B two
- C three
- D four

Question 35

If Germaine is exactly northeast of one ranger and exactly northwest of another, in how many squares of the map might she be located?

- A one
- B two
- C three
- D four

UNIT 14**Questions 36–38**

A company makes a fruit-flavoured *cordial concentrate* that contains 40% fruit juice.

To make a *cordial drink*, an amount of cordial concentrate is poured into a glass and then four times as much water is added.

Question 36

Marina wants to make enough cordial drink to fill her 500 mL drink bottle.

What amount of cordial concentrate should Marina pour into her drink bottle before she adds the water?

- | | |
|-----------------|-----------------|
| A 125 mL | C 100 mL |
| B 120 mL | D 75 mL |

Question 37

The percentage of fruit juice in a glass of cordial drink is

- | | |
|--------------|---------------|
| A 5%. | C 10%. |
| B 8%. | D 12%. |

Question 38

Con wants to make enough cordial drink to fill a 1200 mL drink bottle.

After the cordial concentrate has been put into the bottle, how much water needs to be added?

- | | |
|-----------------|------------------|
| A 240 mL | C 960 mL |
| B 800 mL | D 1000 mL |

UNIT 15

Questions 39–41

Steve saw the following advertisement for light bulbs. The two kinds of bulb provide the same level of lighting.

Long-Life Fluorescent Light Bulbs — \$25.00 each

Regular Incandescent Light Bulbs — \$3.00 each

He wants to put a new light into his garage and wishes to compare the total cost of using a long-life fluorescent light bulb (LLB) with the total cost of using a regular incandescent light bulb (RLB).

When he rings the shop, he gets the following additional information:

- An LLB lasts 8000 hours. It costs \$3.00 for electricity for 1000 hours of use.
- An RLB lasts 1000 hours. It costs \$15.00 for electricity for 1000 hours of use.

Note that *total cost* is the *purchase cost* plus *cost of electricity*.

Question 39

What is the total cost of using RLBs for 5000 hours of lighting?

- | | |
|-----------|-----------|
| A \$28 | C \$75 |
| B \$40 | D \$90 |

Question 40

For a period of 8000 hours, compared with the total cost of an LLB, the total cost of RLBs is

- | | |
|------------------|-----------------|
| A \$144 more. | C \$79 more. |
| B \$95 more. | D \$49 more. |

Question 41

When is the total cost of using an LLB equal to the total cost of using RLBs?

- A at a time between 750 and 1250 hours
- B at a time between 1500 and 2000 hours
- C at a time between 2500 and 3000 hours
- D in none of the above situations

UNIT 16

Questions 42–45

The following passage is from a short story entitled ‘The Wind Blows’, written in the early part of the 20th century. Matilda is going to her piano lesson.

‘Matilda, Matilda. Come back im-me-diatly! What on earth have you got on your head? It looks like a tea cosy. And why have you got that mane of hair on your forehead?’

‘I can’t come back, Mother. I’ll be late for my lesson.’

‘Come back immediately!’

She won’t. She won’t. She hates Mother. She runs down the road.

In waves, in clouds, in big round whirls the dust comes stinging, and with it little bits of straw and chaff and manure. There is a loud roaring sound from the trees in the gardens, and standing at the bottom of the road outside Mr Bullen’s gate she can hear the sea sob: ‘Ah! . . . Ah . . . Ah-h!’ But Mr Bullen’s drawing room is as quiet as a cave. The windows are closed, the blinds half-pulled, and she is not late. The-girl-before-her has just started playing MacDowell’s ‘To an Iceberg’. Mr Bullen looks over at her and half smiles.

‘Sit down,’ he says. ‘Sit over there in the sofa corner, little lady.’

Question 42

At the beginning of the passage, Matilda’s mood is

- | | |
|--------------------------|-----------------------------|
| A morose, like the sea. | C niggling, like the dust. |
| B cold, like an iceberg. | D impetuous, like the wind. |

Question 43

One plausible interpretation of the role of the sea in this story is that it provides a

- A centre of frenzy additional to the whirling wind.
- B reinforcement to the comments shouted by Matilda’s mother.
- C strong contrast to the piece played by ‘the-girl-before’ Matilda.
- D transition between the atmosphere created by the wind and Mr Bullen’s room.

Question 44

Mr Bullen’s attitude towards Matilda suggests that he

- | | |
|---------------------------------------|----------------------------|
| A is more respectful than her mother. | C wants to intimidate her. |
| B is unpredictable, like the wind. | D finds her puzzling. |

Question 45

For Matilda, music lessons are a form of

- | | |
|-----------|---------------|
| A ordeal. | C drudgery. |
| B refuge. | D repentance. |

UNIT 17

Questions 46–47

Figure 1 shows the traffic flow rate along a freeway for some of the years from 1976 to 1993. The traffic flow rate is the average number of cars that pass a given point on the freeway in either direction each day of a calendar year.

A 'line of best fit' has been drawn through the points on the graph.

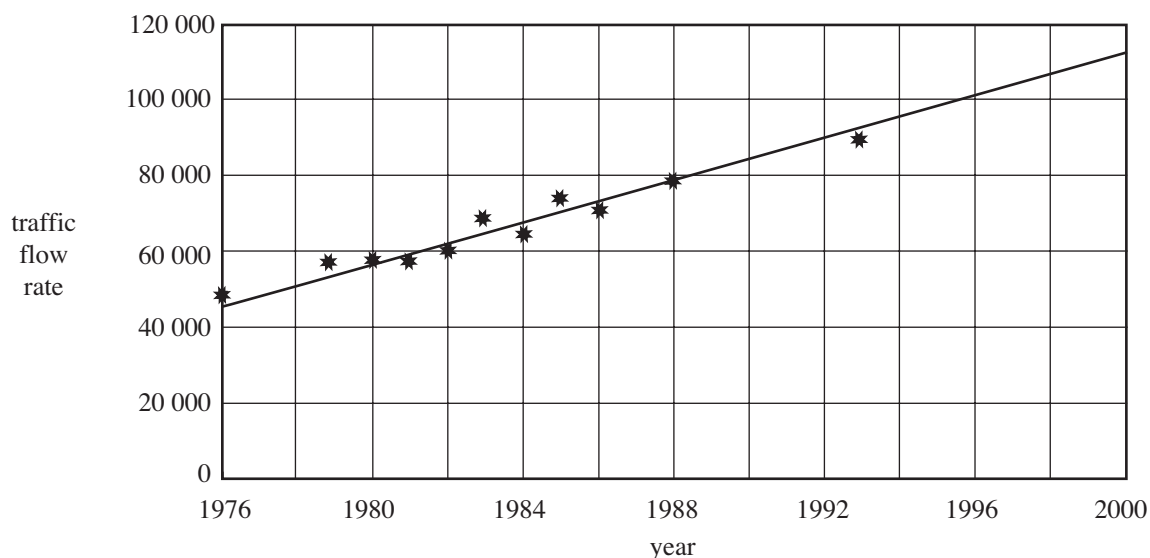


Figure 1

Note: In this unit, 'average' refers to 'mean'.

Question 46

The freeway was built in 1960.

According to the line of best fit, which one of the following is the best estimate of the traffic flow rate in 1966?

- | | |
|----------|----------|
| A 25 000 | C 35 000 |
| B 30 000 | D 40 000 |

Question 47

Which one of the following changes would be **least** likely to affect the line of best fit in the future?

- A More people use public transport.
- B More people use computers to work from home.
- C More people share cars to travel to and from work.
- D More flexible work arrangements allow people to travel to work at different times of the day.

UNIT 18

Question 48

'I want to be what I was when I wanted to be what I am now.'

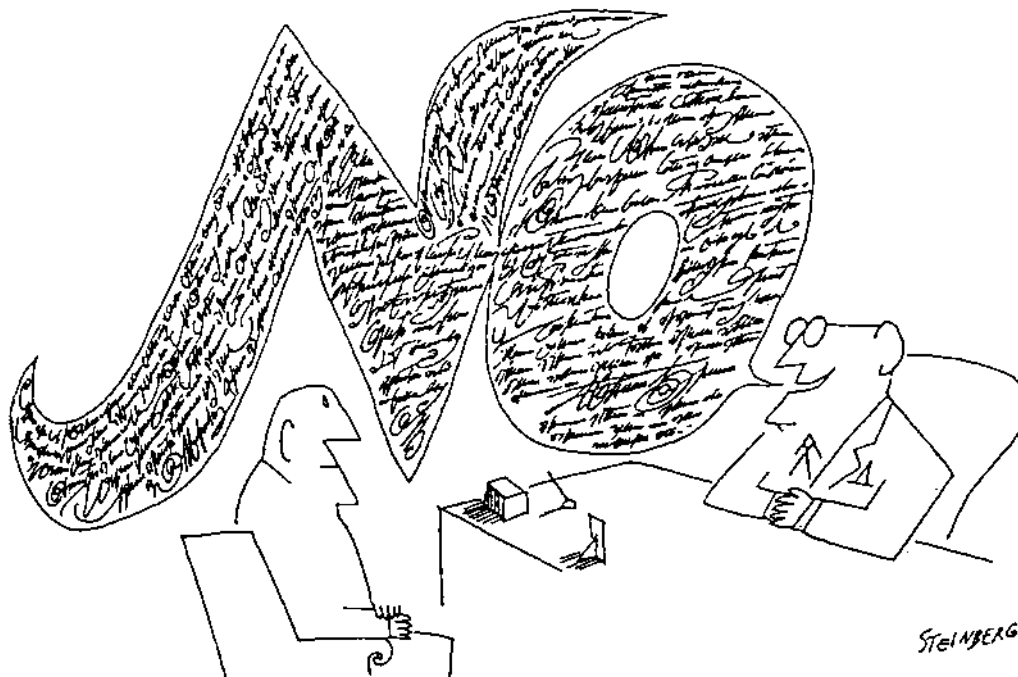
London Graffiti

This statement expresses

- A longing for the past.
- B acceptance of one's destiny.
- C excitement about the future.
- D satisfaction with the present.

UNIT 19

Question 49



Which of the following best describes the response of the man behind the desk?

The language is

- A blunt but the meaning is obscure.
- B mild but the manner is aggressive.
- C elaborate but the meaning is plain.
- D provocative but the manner is conciliatory.

UNIT 20

Question 50–52

A railway line is being planned to connect Garden City (X) and Silver City (Y) as illustrated in Figure 1. The shaded area is mountainous and unsuitable for laying train track. The rest of the area is flat and suitable for laying train track.

Each square in the grid represents a $10 \text{ km} \times 10 \text{ km}$ area.

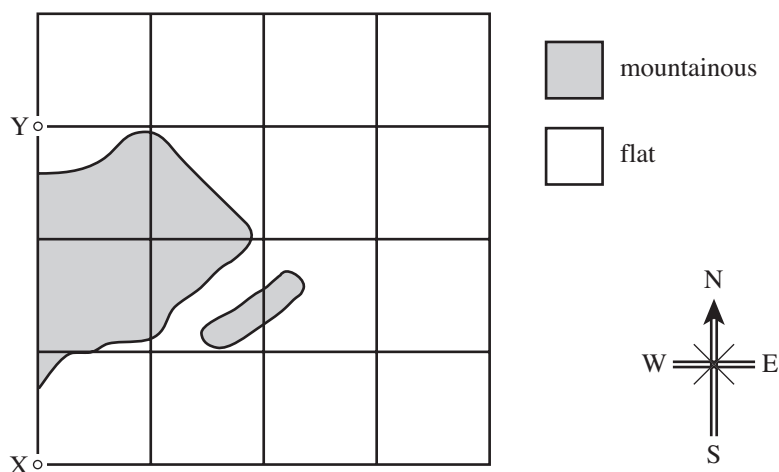


Figure 1

Question 50

Of the following, the best estimate of the area that is covered by mountains is

- | | |
|-------------------------|--------------------------|
| A 30 square kilometres. | C 300 square kilometres. |
| B 50 square kilometres. | D 500 square kilometres. |

Question 51

Given that X and Y are 4.5 cm apart on the map, the scale of this map is

- | | |
|------------------|-------------------|
| A 1.5 mm : 1 km. | C 150 mm : 1 km. |
| B 15 mm : 1 km. | D 1500 mm : 1 km. |

Question 52

Suppose straight sections of track were to be laid on the flat area to connect X and Y.

Of the following, the best estimate of the minimum length of train track that could be laid to connect the two cities is

- | | |
|----------|----------|
| A 35 km. | C 75 km. |
| B 55 km. | D 95 km. |

UNIT 21

Questions 53–57

Slices of meat were bought from shops in five supermarket chains and analysed. The results in Table 1 indicate the number of shops in each chain for which Quality or Safety of the slices is ‘borderline’ or ‘unacceptable’.

Quality: This refers to the total number of bacteria of all types per gram of meat.

‘Borderline’ is from 1 000 000 to 10 000 000 bacteria per gram.

‘Unacceptable’ is more than 10 000 000 bacteria per gram.

Safety: This refers to the number of certain types of bacteria per gram of meat.

‘Borderline’ is 10 to 70 *E. coli* bacteria per gram or 100 to 1000 *Staphylococcus* bacteria per gram.

‘Unacceptable’ is greater than 70 *E. coli* bacteria per gram or greater than 1000 *Staphylococcus* bacteria per gram.

Table 1

Supermarket chain	Number of shops in chain tested	Quality (number of shops)		Safety (number of shops)	
		borderline	unacceptable	borderline	unacceptable
1	36	2	0	1	0
2	36	13	11	0	0
3	73	15	4	5	1
4	36	3	1	0	1
5	6	0	5	0	0

Question 53

On the basis of both Quality and Safety, which chain is best?

- A Chain 1
- B Chain 2
- C Chain 3
- D Chain 4

Question 54

How many of the five supermarket chains had no shops with meat of unacceptable Quality and also no shops with meat of unacceptable Safety?

- A one
- B two
- C three
- D four

Question 55

Which one of the following statements is best supported by the table?

- A The chain with the most shops with borderline Quality had the most shops with unacceptable Quality.
- B The chain with the most shops with borderline Quality had the most shops with borderline Safety.
- C The chain with the most shops with unacceptable Quality had the most shops with borderline Safety.
- D The chain with the most shops with unacceptable Quality had the most shops with unacceptable Safety.

Question 56

Which one of the following is the fraction of Chain 2's shops that had borderline or unacceptable Quality?

- | | |
|-----------------|-----------------|
| A $\frac{1}{3}$ | C $\frac{2}{3}$ |
| B $\frac{1}{2}$ | D $\frac{3}{4}$ |

Question 57

A slice of meat has a total of 90 000 bacteria per gram of which 1% are *Staphylococcus* bacteria and another 1% are *E. coli* bacteria.

For this slice, there is

- A no problem with either Quality or Safety.
- B no problem with Quality but Safety is borderline.
- C no problem with Quality but Safety is unacceptable.
- D borderline Quality and borderline Safety.

UNIT 22**Question 58**

'Discovery consists of seeing what everybody has seen and thinking what nobody has thought.'

Albert von Szent-Gyorgyi
Hungarian Biochemist

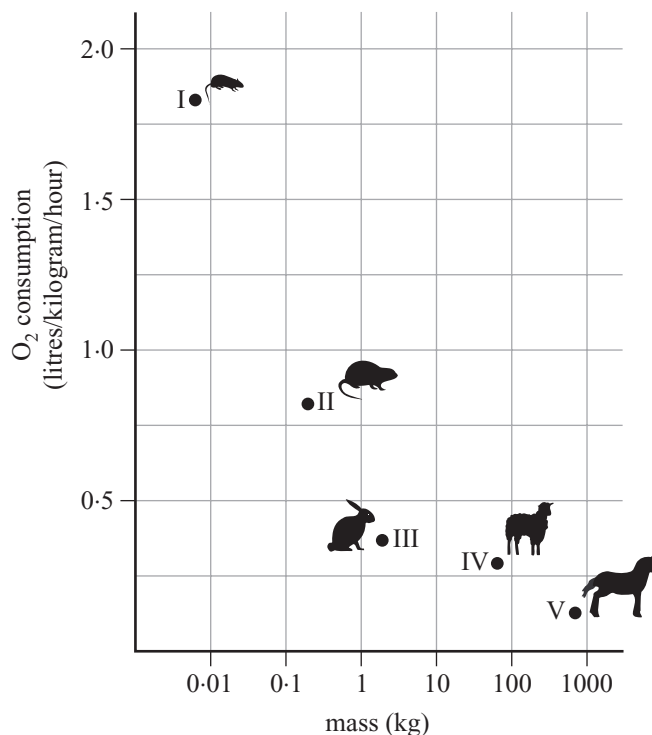
This quotation suggests that discoveries

- A depend on insight rather than novelty.
- B are rarely as original as they are thought to be.
- C are rarely as significant as they are thought to be.
- D depend on common sense rather than intelligence.

UNIT 23

Questions 59–61

The following graph shows the relationship between mass and rate of oxygen (O_2) consumption (in litres per kilogram per hour) for some animals when resting.



Question 59

According to the graph, which animal has the greatest oxygen consumption in litres per kilogram per hour?

- | | |
|--------------------------------------|---------------------------------------|
| <p>A I</p> <p>B II</p> | <p>C III</p> <p>D V</p> |
|--------------------------------------|---------------------------------------|

Question 60

Which one of the following statements is most strongly supported by the graph?

In general, per kilogram of body weight, smaller animals

- A** have smaller lungs compared to larger animals.
- B** have larger lungs compared to larger animals.
- C** require more oxygen compared to larger animals.
- D** require less oxygen compared to larger animals.

Question 61

Which one of the following is the best estimate of the amount of oxygen animal IV uses in an hour?

- | | |
|--|---|
| <p>A 5 litres</p> <p>B 25 litres</p> | <p>C 100 litres</p> <p>D 125 litres</p> |
|--|---|

UNIT 11**Questions 23 – 26**

In this unit, a *palindrome* is a number that is the same whether it is read from left to right or right to left. For example, the number **1438341** is a palindrome but the number **13481314** is not.

For any number, if the sum of its odd-numbered digits (1st + 3rd + 5th, etc.) equals the sum of its even-numbered digits (2nd + 4th + 6th, etc.), it is divisible by 11. This is called the *odd-even rule*. For example, the number 12067 is divisible by 11 because $1 + 0 + 7 = 2 + 6$.

Question 23

Consider the following three numbers: **135797531**, **1357913579** and **1357997531**.

Which of the three numbers is a palindrome?

- A All three numbers are palindromes.
- B The first two numbers are palindromes and the third one is not.
- C The last two numbers are palindromes and the first one is not.
- D The first and last numbers are palindromes and the middle one is not.

Question 24

According to the odd-even rule, which one of the following numbers is divisible by 11?

- A **1257352**
- B **2584053**
- C **3695241**
- D **5193286**

Question 25

According to the odd-even rule, which one of the following palindromes is divisible by 11?

- A **173282371**
- B **398565893**
- C **446676644**
- D **504818405**

Question 26

Which one of the following statements is correct?

- A All numbers that are palindromes are divisible by 11.
- B All palindromes that have an even number of digits are divisible by 11.
- C Only palindromes that have an odd number of digits are divisible by 11.
- D Only some palindromes that have an even number of digits are divisible by 11.

UNIT 12

Question 27

Two doors in a shop (shown in Figure 1) open outwards, or away from the viewer (solid arrows). Because of the way the cut-out sections of the doors overlap, Door II has to open first.

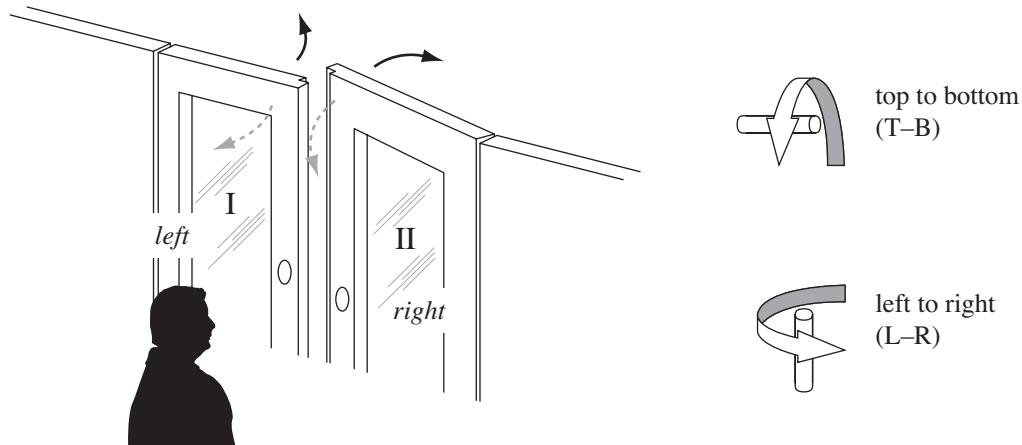


Figure 1

The owner of the shop wants the doors to open inwards, towards the viewer (dashed arrows), and is considering how to change them, but still use the same doors. Two possible changes are to:

- (i) turn each door around a horizontal axis so that the top goes to the bottom (T-B); or
- (ii) turn each door around a vertical axis, so that the left side of each door goes to the right (L-R) — this requires that Door I will become the right door and Door II will become the left door.

Suppose that the owner wants the doors to open inwards (dashed arrows), with Door II still opening first and to the viewer's right.

Which of the following possible changes will produce this result?

- A T-B only
- B L-R only
- C T-B and L-R together
- D neither T-B nor L-R

UNIT 13

Questions 28 – 30

In the Night

Out of my window late at night I gape
 And see the stars but do not watch them really,
 And hear the trains but do not listen clearly;
 Inside my mind I turn about to keep
 Myself awake, yet am not there entirely. 5
 Something of me is out in the dark landscape.

How much am I then what I think, how much what I feel?
 How much the eye that seems to keep stars straight?
 Do I control what I can contemplate
 Or is it my vision that's amenable?¹ 10
 I turn in my mind, my mind is a room whose wall
 I can see the top of but never completely scale.

All that I love is like the night, outside,
 Good to be gazed at, looking as if it could
 With a simple gesture be brought inside my head 15
 Or in my heart. But my thoughts about it divide
 Me from my object. Now deep in my bed
 I turn and the world turns on the other side.

Elizabeth Jennings

¹ amenable: easily commanded or told what to do.

Question 28

Which of the following phrases best describes the poem as a whole?

- A an attempt to remain calm
- B a vivid treatment of the misery of sleeplessness
- C a growing fear that the world is without meaning
- D an attempt to understand the self in relation to the world

Question 29

The poem suggests that the speaker is

- A afraid of going mad.
- B worried about a personal problem.
- C grappling with an unanswerable question.
- D on the verge of a life-changing realisation.

Question 30

The speaker's regret is that

- A her emotions have been blunted.
- B the world will continue on without her.
- C she feels detached from what is dear to her.
- D she will never know if she has been forgiven.

UNIT 14

Questions 31 – 34

The following passage is from a book on the development of products used in the modern world. It outlines the introduction of elevators in the United States.

The elevator, or lift, is one of those inventions whose ‘ripple effect’¹ is often overlooked. Just think of the practicality of any building over eight or ten stories without an elevator. Then imagine a modern city without buildings over ten stories! Along with structural steel and reinforced concrete, the elevator was essential to the development of the modern skyscraper and thus to the common form of the modern urban centre.

5

The elevator’s practical impact was almost matched by its symbolic impact. The 1880s were years of immense urban growth, and the influx of newcomers to the cities included middle-class career people as well as factory workers. With property values skyrocketing in the cities, the middle-class families could not afford single family homes. Apartment building owners promoted apartment living with advertisements of ‘high-tech’ amenities: hot and cold running water, telephone systems, central gas for cooking and lighting, fully equipped bathrooms and elevators.

10

Moreover, with all of these modern conveniences, apartment living captured the middle-class imagination as the embodiment of a new organisation of domestic duties. Buildings came with centralised heating, ventilating and plumbing systems; some had kitchens in the basement which would prepare food for individual apartment dwellers; some even had a centralised vacuum system with nozzles in each room connected to a pump in the basement.

15

The elevator was even extolled as a contributor to democracy. In an elevator-equipped building, it made little difference which floor one lived on; every floor was equally accessible. By contrast, in Europe, wealthy families were generally found on the middle floors where they did not have to climb many flights. Poorer families were usually confined to the basement or the upper floors.

20

¹ ripple effect: the effect of spreading out like ripples on a pond

Question 31

What does the passage say about the introduction of elevators in buildings?

- A Its effects were more symbolic than practical.
- B It had consequences outside its original purpose.
- C It increased the divisions between the social classes.
- D It brought about changes that were dramatic but short-lived.

Question 32

According to the passage, the elevator was seen as a contributor to democracy.

To which of the following possible characteristics of democratic society does this refer?

- A abolition of social class
- B equality in the eyes of the law
- C universal access to decent housing
- D absence of segregation according to wealth

Question 33

What does the last paragraph imply about conditions in Europe in the 1880s, compared with the United States?

- A Lifts remained rare.
- B Wealth was less evenly distributed.
- C People were not interested in democracy.
- D There were more restrictions on wealthy people.

Question 34

The passage suggests that the lift contributed to democracy because poorer families were no longer confined to certain floors (lines 19–23).

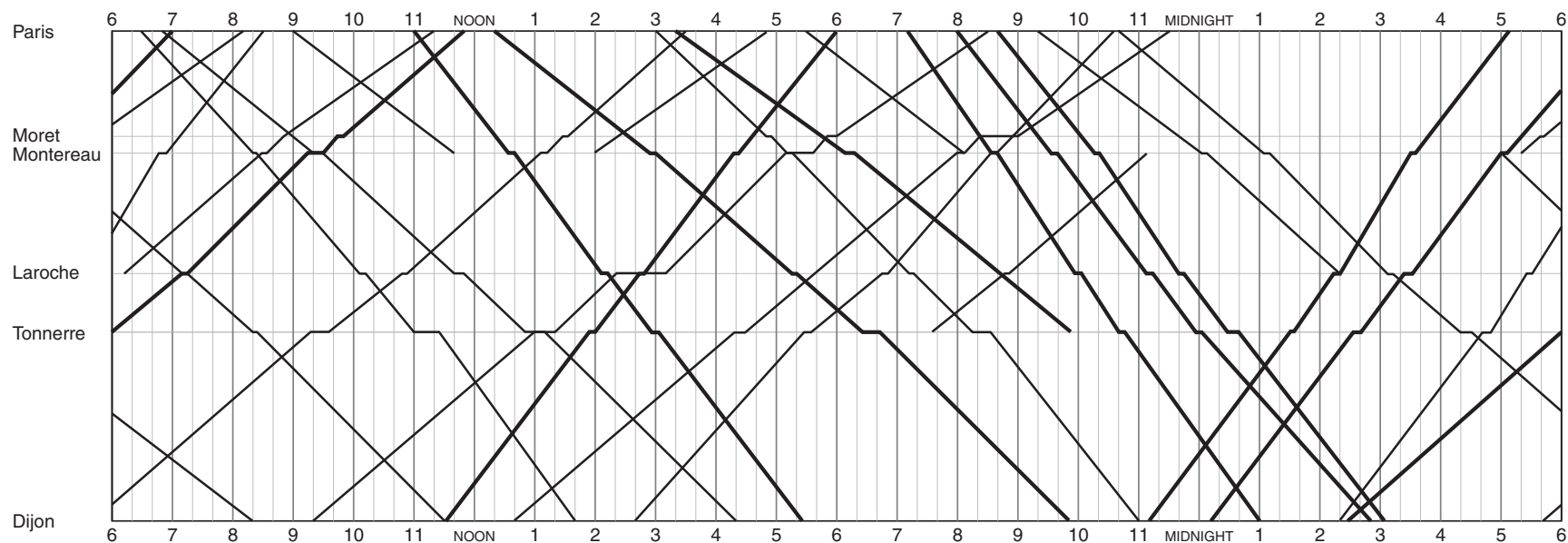
Which one of the following comments offers the strongest argument against this idea?

- A Not every building was necessarily equipped with a lift.
- B Not every poorer family would have preferred to live on the middle floors.
- C The quality of housing and social segregation were not necessarily important issues for the people of the 1880s.
- D Location of families within the building need not have had much effect on the choices or social interactions of poorer families.

UNIT 15

Questions 35 – 38

The timetable below shows the schedule for trains on the Paris to Dijon line in the 1880s. The time scale is shown along the top and bottom of the timetable, and the distance between vertical lines represents 20 minutes. Stations are shown on the vertical axis, spaced approximately in proportion to the actual distance between the places they represent. Each diagonal line represents one train.



Question 35

How many trains were scheduled to leave Dijon for Paris between 9 p.m. and 1 a.m.?

- | | | | |
|----------|---|----------|---|
| A | 1 | C | 3 |
| B | 2 | D | 4 |

Question 36

The longest time between departures from Dijon is about

- | | | | |
|----------|------------|----------|------------|
| A | 4 ½ hours. | C | 7 hours. |
| B | 6 hours. | D | 8 ½ hours. |

Question 37

The latest night train leaving Paris would finish its journey at

- | | | | |
|----------|-----------|----------|-----------|
| A | 6 a.m. | C | 2.40 p.m. |
| B | 8.20 a.m. | D | 4.20 p.m. |

Question 38

Faster trains are represented by lines that are

- | | | | |
|----------|----------|----------|-------------|
| A | thicker. | C | steeper. |
| B | thinner. | D | less steep. |

UNIT 16

Questions 39 – 42

Following reports of stomach problems linked to eating fish sold (incorrectly) as *rudderfish*, an investigation was made using fillets* of the suspect fish. Genuine rudderfish does not cause a stomach reaction.

The oil content of the suspect fillets was investigated in a search for the cause of the reaction. Some fish contain unusual oils that can be indigestible, and might cause a reaction. Figure 1 shows oil profiles for equal-sized pieces of five different fish — the suspect fish, *rudderfish*, *escolar*, *orange roughy* and *Atlantic salmon*. Each column in an oil profile of a fish represents a different oil component. The observed oil components were wax ester (WE), triglyceride (T), cholesterol (C), polar oil (PO), fatty acid (FA) and an oil (X) whose name was not known at the time of analysis.

* For this unit, a fish fillet is a piece of fish from which skin and bones have been removed.

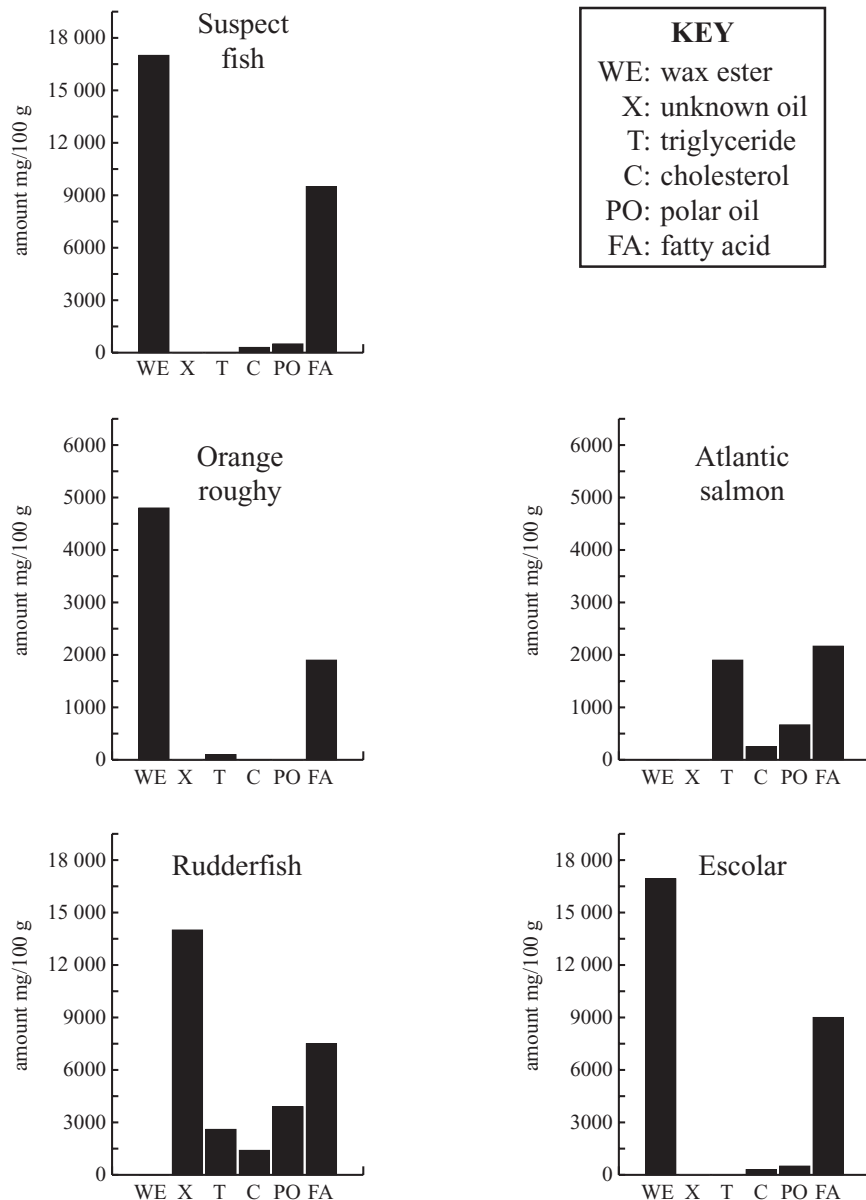


Figure 1: Oil profiles of ocean fish

Question 39

According to the information in Figure 1, escolar and rudderfish both contain

- A C, PO and FA.
- B T, FA and PO.
- C X, T and FA.
- D WE, FA and T.

Question 40

The suspect fish is most likely to be

- A Atlantic salmon.
- B rudderfish.
- C escolar.
- D a fish with an oil profile different from A, B or C.

Question 41

If the suspect fish caused the reaction, which one of the following best accounts for this observation?

- A Orange roughy contains WE.
- B Atlantic salmon does not contain X or WE.
- C Neither orange roughy nor escolar contains X.
- D Escolar contains a very high amount of WE per 100 g.

Question 42

In an experiment, rats and human volunteers were fed bread soaked in one or more of the oils.

If the mass of the bread is the same as the fillets of fish, which one of the following is likely to be most useful in confirming that the suspect fish could have caused the reaction?

- A Feeding rats bread soaked in WE at a concentration of 20 000 mg/100 g.
- B Feeding rats bread soaked in a mixture of the six oils each at a concentration of 5000 mg/100 g.
- C Feeding volunteers bread soaked in FA at a concentration of 5000 mg/100 g.
- D Feeding volunteers bread soaked in WE at a concentration of 20 000 mg/100 g.

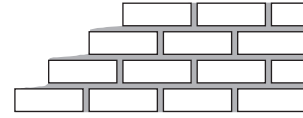
UNIT 17

Questions 43 and 44

Mortar is a mixture of sand, cement and lime. It is used to bind bricks together when making a wall.

A general-purpose mortar mix consists of 6 parts sand to 1 part cement to 1 part lime (by volume). Water is added to the ingredients, and thorough mixing is carried out.

The amount of mortar ingredients needed to make a wall can be estimated as follows:



- **Amount of Sand:** $\frac{\text{number of bricks} \times 0.5}{1000}$ cubic metres of sand
- **Amount of Cement:** $\frac{\text{sand quantity (cubic metres)} \times 40}{6}$ bags of cement
- **Amount of Lime:** $\frac{\text{sand quantity (cubic metres)} \times 25}{6}$ bags of lime

Question 43

A wall requires 1 cubic metre of sand for its mortar.

Given that whole bags must be provided, how many bags of cement will be needed?

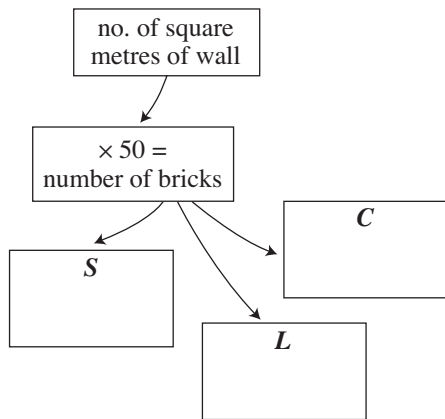
- A six
- B seven
- C eight
- D more than eight

Question 44

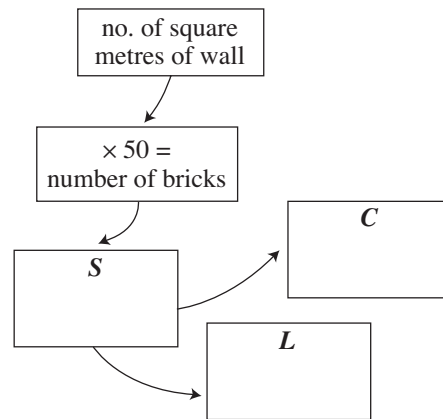
Bob the builder tries to make a flow chart for an apprentice to show the relationships that apply when calculating the various quantities of mortar ingredients from the number of square metres of wall (where one square metre requires 50 bricks).

Which one of these flow charts best represents the relationships when S is the amount of sand in cubic metres, L is the number of bags of lime and C is the number of bags of cement?

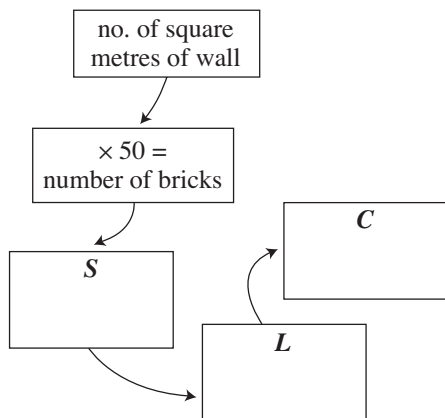
A



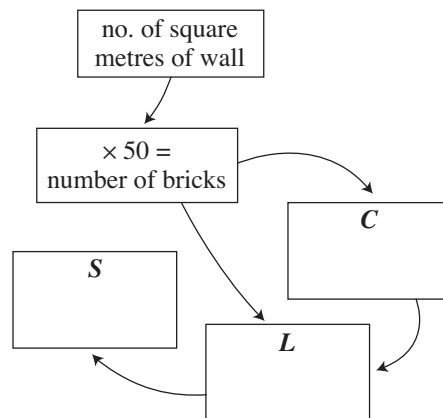
C



B



D



UNIT 18**Questions 45 – 47**

The following is an anecdote recounted in a biography of Lord Melbourne (1779–1848).

Lord John Russell described to a friend how at a party he had left the Duchess of Inverness to talk to the Duchess of Sutherland, because she was sitting farther from the fire which he found too hot.

‘I hope you told the Duchess of Inverness why you left her,’ said the friend.

‘No,’ said Lord John Russell after a pause. ‘But I did tell the Duchess of Sutherland.’

Question 45

Lord John Russell’s revelation to the Duchess of Sutherland is best described as

- A honest but foolish.
- B witty and charming.
- C courteous but insincere.
- D formal and conventional.

Question 46

Lord John Russell’s actions would most likely have

- A flattered both Duchesses.
- B flattered the Duchess of Inverness and offended the Duchess of Sutherland.
- C offended both Duchesses.
- D offended the Duchess of Inverness and flattered the Duchess of Sutherland.

Question 47

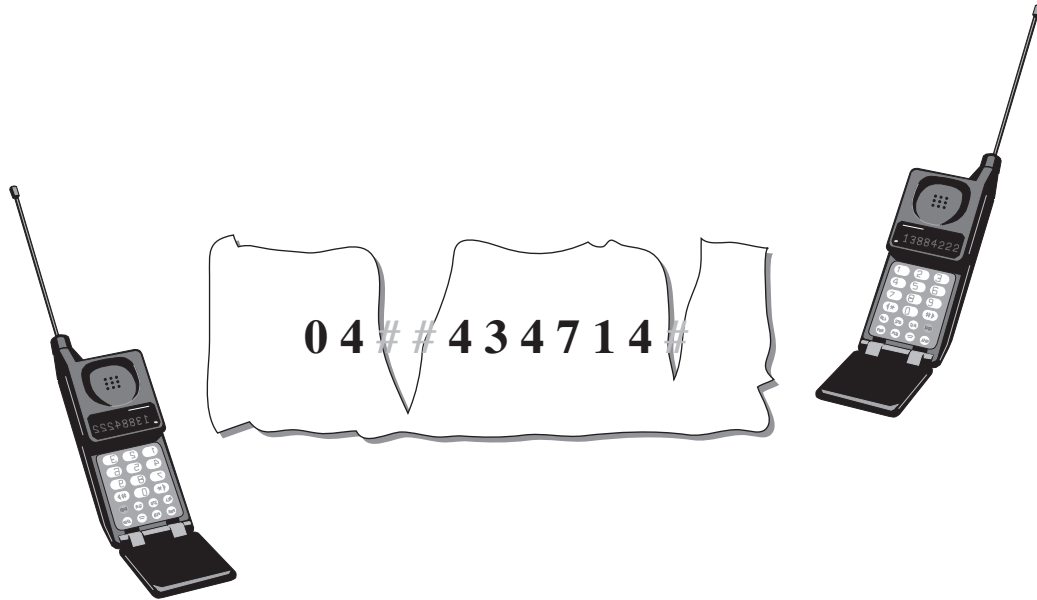
In offering his final comment to his friend, Lord John Russell would have sounded

- A defiant.
- B guarded.
- C untroubled.
- D embarrassed.

UNIT 19

Questions 48 and 49

Phoebe is given Ben's eleven-digit mobile phone number, but when she looks later she cannot read the third, fourth and last digits because the paper is torn, as indicated here:



Question 48

Phoebe's friend Rosa thinks that Ben's number starts with 0417 and ends in an odd digit.

If this is correct, how many different 11-digit phone numbers would Phoebe have to try to be certain of ringing Ben's number?

- A 4
- B 5
- C 9
- D 10

Question 49

Phoebe thinks that Ben's phone number starts with either 0417 or 0419 but cannot remember the last digit.

If this is correct, how many different 11-digit phone numbers would Phoebe have to try to be certain of ringing Ben's number?

- A 20
- B 18
- C 10
- D 9

UNIT 20

Questions 50 – 54

Figure 1 gives an estimate of the size of the workforce required to build a pyramid that is 150 metres high and has a square base with 300 metre long sides (similar to the Great Pyramid of Giza built for the Egyptian Pharaoh Khufu about 2500 BC). In the figure, the number of workers needed for each 20 metres of building height is given.

For convenience, the building of the first 20 metres is referred to as Stage 1, the building of the next 20 metres is referred to as Stage 2, and so on.

In the figure, the construction is divided into two sets of tasks:

- 1 *Quarrying* (cutting) the blocks and *other tasks*.
- 2 *Hauling* the blocks (horizontally) from the quarry and *lifting* them (vertically) into place on the growing pyramid.

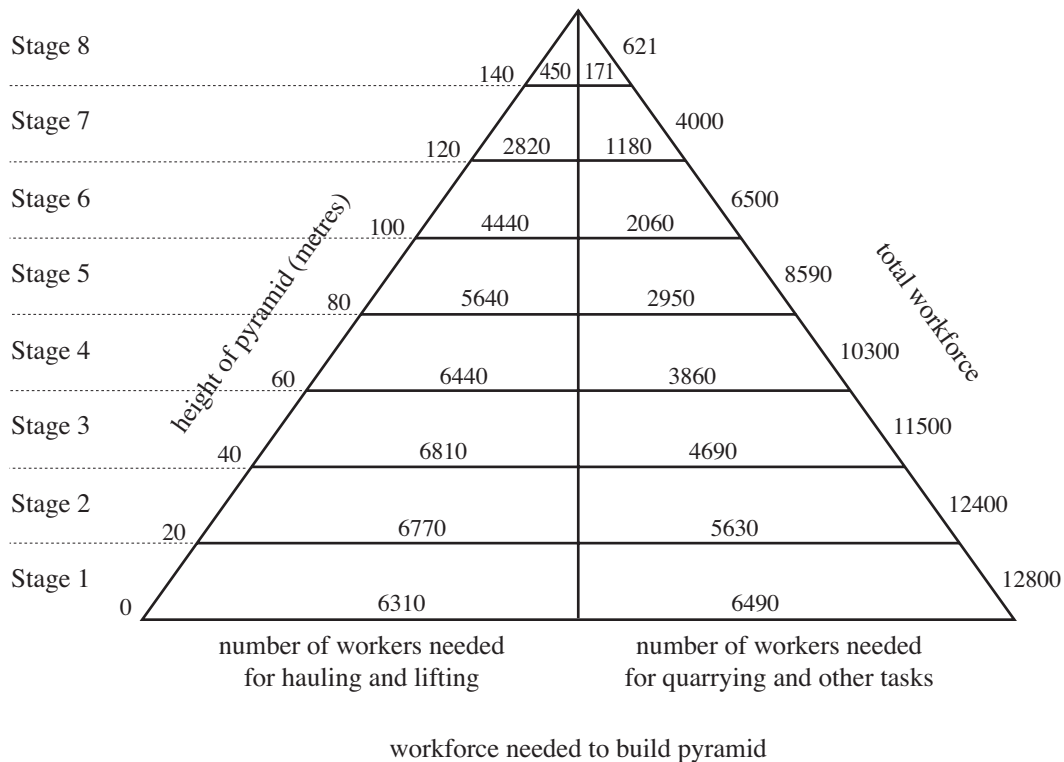


Figure 1

Note:

- Figure 1 is not drawn to scale;
- the pyramid has a square base and a square cross-section at each stage;
- the length of a side of the base of the pyramid is 300 metres and its height is 150 metres.

Question 50

From stage to stage, as the pyramid gets higher from the start to finish, there is always

- A a decrease in the number of people needed for hauling and lifting.
- B an increase in the number of people needed for hauling and lifting.
- C a decrease in the number of people needed for quarrying and other tasks.
- D an increase in the number of people needed for quarrying and other tasks.

Question 51

How many people were needed for hauling and lifting in the stage when the pyramid was increased in height from 40 to 60 metres?

- A 12400
- B 11500
- C 6810
- D 6770

Question 52

Compared with the number of people needed for quarrying and other tasks for Stage 1, the number needed for quarrying and other tasks for Stage 5 was closest to

- A one fifth.
- B one quarter.
- C one third.
- D one half.

Question 53

Of the following, the greatest difference between the number of people needed for hauling and lifting and the number of people needed for quarrying and other tasks occurs in

- A Stage 4.
- B Stage 5.
- C Stage 6.
- D Stage 8.

Question 54

For which stage is the value of the fraction below greatest?

$$\frac{\text{number of people needed for hauling and lifting}}{\text{number of people needed for quarrying and other tasks}}$$

- A Stage 1
- B Stage 2
- C Stage 5
- D Stage 8

UNIT 21

Questions 55 – 60

A telephone company, *Phonewise*, offers three different mobile phone plans to customers.

- *Premium* plan customers pay a rental of \$10 per month plus 20 cents per call;
- *Timewise* plan customers pay a rental of \$20 per month plus 15 cents per call; and
- *Business* plan customers pay a rental of \$30 per month plus 10 cents per call.

Abby draws some graphs, including Figure 1, to help her work out the cost for various plans.

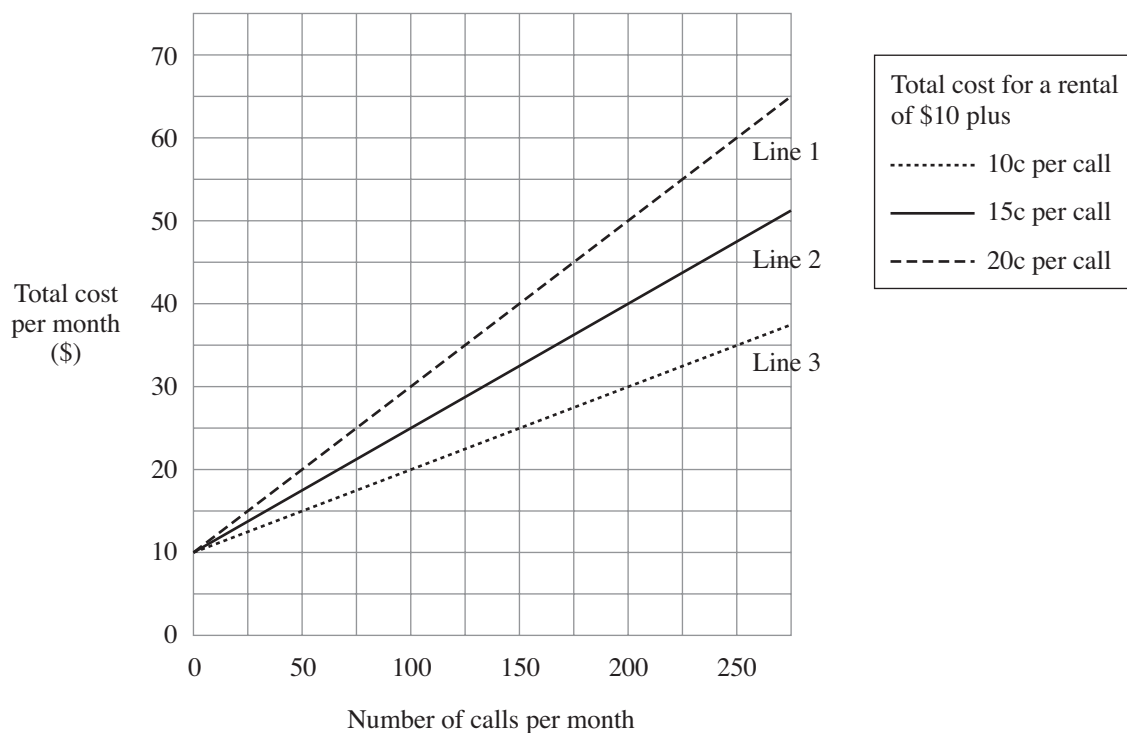


Figure 1

Note:

- Total cost equals the rental cost plus the cost of the calls.

Question 55

The total cost per month for Premium plan customers who make 100 calls is

- | | |
|---------|---------|
| A \$10. | C \$25. |
| B \$20. | D \$30. |

Question 56

Which line in Figure 1 represents the Business plan?

- A Line 1
- B Line 2
- C Line 3
- D None of these three lines represents the Business plan.

Question 57 refers to the following additional information:

Abby draws the graphs (I, II, III and IV) shown in Figure 2. The graphs in Figure 2 are drawn in proportion to Figure 1 and have the same axes.

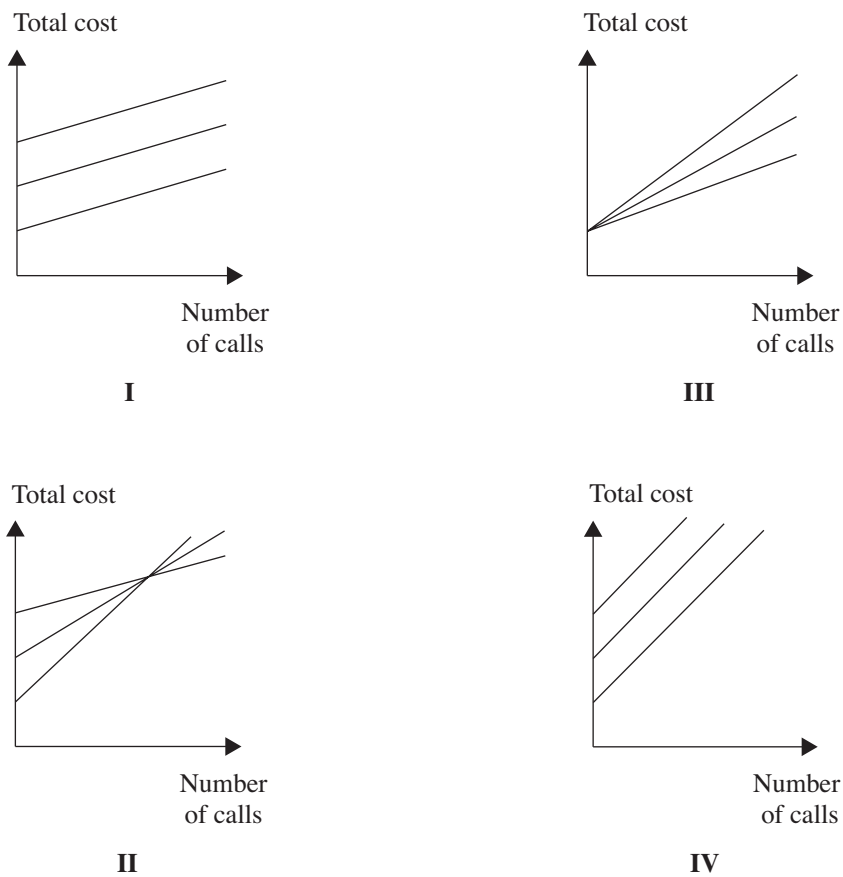


Figure 2

Question 57

Which graph best represents the total cost per month for three different rental costs at a charge of 10 cents a call?

- | | |
|------|-------|
| A I | C III |
| B II | D IV |

Questions 58 and 59 refer to the following additional information:

Abby considers further the Phonewise plans.

Question 58

Phonewise decide to set up spreadsheets on their web site that will allow customers to calculate the cost for each plan. They use T for the total cost per month in dollars and n for the number of calls.

A mathematical formula that could be used to calculate the total cost per month in dollars for the Premium plan is

A $T = 0.20n + 10$

C $T = 10n + 30$

B $T = 5n + 10$

D $T = 20n + 10$

Question 59

Premium, Timewise and Business plans would all result in the same total monthly cost for customers

- A** with 150 calls per month.
- B** with 200 calls per month.
- C** with 250 calls per month.
- D** in none of the above situations.

Question 60 refers to the following additional information:

A second telephone company, *Connect*, has recently been formed. They offer the *Superconnect* plan. Superconnect customers pay a monthly rental of \$20 plus 10 cents per call.

Question 60

One customer thought about changing from Timewise to Superconnect but decided not to do this because the Phonewise company had been very reliable.

After 6 months at 200 calls per month, how much would the customer have saved if she had changed?

A \$ 0

C \$30

B \$10

D \$60

UNIT 22

Questions 61 and 62

A shop that sells canned foods to customers (who will store the cans in different conditions) uses the following table (Table 1) to advise them. The table provides information about the percentage of vitamin activity that remains in some canned foods under different conditions of temperature and different storage times. The table gives information for vitamin C and another vitamin, thiamine.

Table 1

Storage time	Temperature °C	Percentage of vitamin activity remaining in canned food					
		Peas		Orange juice		Tomatoes	
		Vitamin C	Thiamine	Vitamin C	Thiamine	Vitamin C	Thiamine
12 months	10	93	92	97	100	95	94
	18	91	87	92	98	94	93
	27	86	74	77	89	82	82
24 months	10	91	90	95	100	89	91
	18	89	85	80	89	87	87
	27	81	70	50	83	70	70

Question 61

According to the table, in which one of the following situations is the smallest percentage of thiamine activity lost from the canned foods?

- A** tomatoes kept at 27 °C for 12 months **C** peas kept at 27 °C for 12 months
B orange juice kept at 27 °C for 24 months **D** peas kept at 18 °C for 24 months

Question 62

According to the table, in which one of the following situations is the greatest percentage of vitamin activity lost from the canned foods?

- A** thiamine in peas kept at 27 °C for 12 months
B thiamine in tomatoes kept at 18 °C for 24 months
C vitamin C in orange juice kept at 27 °C for 12 months
D vitamin C in orange juice kept at 18 °C for 24 months

UNIT 23**Questions 63 – 67**

Each of the questions in this unit contains a statement relating to Etruscan civilisation. You need to evaluate each statement according to the following key, **using only the information provided in the map on the opposite page.**

Key:

Choose

A if the map provides evidence only in support of the statement

B if the map provides evidence only against the statement

C if the map provides neither evidence in support of nor against the statement

D if the map provides both evidence in support of and against the statement

Note:

- the term ‘map’ refers to both the drawing and accompanying text;
- Punic/Carthaginian, Greeks, Corsica and Phoenician all refer to neighbouring lands or peoples.

Question 63

The Etruscans could read and write.

Question 64

Etruscan power was always centred on Clusium (*middle section of the map*).

Question 65

The Etruscans were militarily strong.

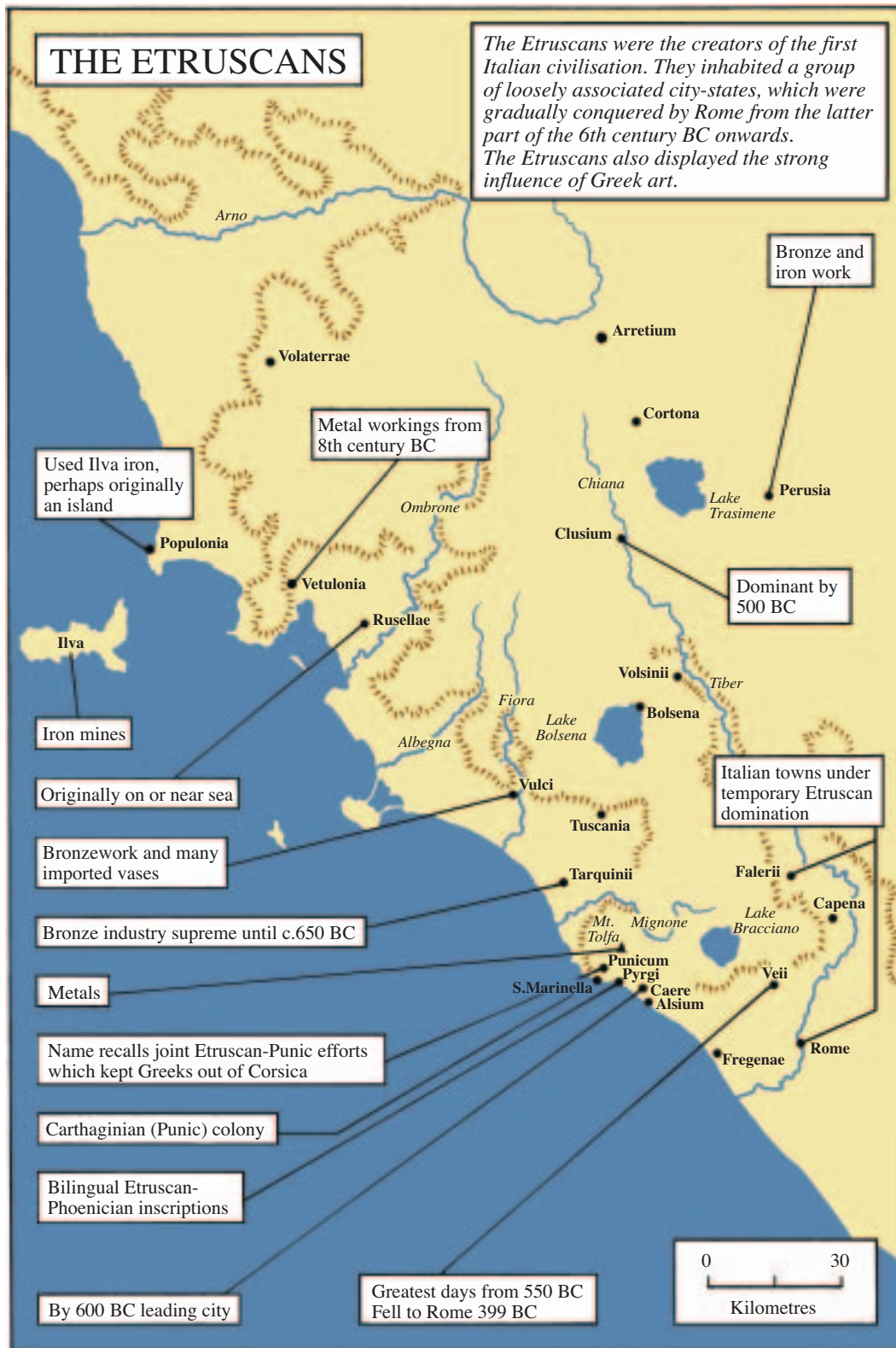
Question 66

Etruscan civilisation was more peaceful than Roman civilisation.

Question 67

The Italian coastline has remained unchanged over time.

The map below outlines certain aspects of Etruscan civilisation. Etruscan civilisation flourished and was at its height in central Italy during the period 800–600 BC.



UNIT 24

Questions 68 – 70

The questions in this unit are based on the painting, 'Art Students', on the opposite page, and the short passage below.

One contemporary critic described *Art Students* painted by E. Phillips Fox in 1895 as a work that lacked 'composition'. Another contemporary critic described the piece as 'in its unconventional way, very cleverly composed'.

Question 68

A critic might see *Art Students* as seeming to be 'cleverly composed' because it

- A focuses attention to the left.
- B focuses attention to the right.
- C suggests action and interaction.
- D has a realism that does not seem posed.

Question 69

Art Students is best described as being

- A both a scene and portraits.
- B portraits rather than a scene.
- C a scene rather than portraits.
- D neither a scene nor portraits.

Question 70 is based on the painting and the following additional comments.

The critic Robert Hughes described *Art Students* as 'the first major impressionist work painted in Australia'. He stated that 'its ordinary subject, stained smocks, and the dirty studio, especially affronted Melbourne taste in 1895'. Hughes described the paintwork of *Art Students* as austere, the tonality as low-keyed and sober, and the construction as beautiful.

Question 70

Robert Hughes suggests that *Art Students* 'affronted Melbourne taste in 1895' because it

- A was an everyday scene.
- B lacked Australian content.
- C presented women as artists.
- D was concerned with art rather than life.



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END OF QUESTION BOOK