

UNIT 10

Questions 29 – 33

A bank operates a number of automatic teller machines (ATMs). The current model, the **Mark 2**:

- is stocked with \$20 and \$50 notes only, so can only dispense (i.e. provide) the requested amounts that are combinations of these values. The \$50 notes and \$20 notes are kept in separate bins;
- dispenses the **minimum** number of notes to fulfil a request.

Question 29

Which one of the following amounts can be dispensed by the **Mark 2**?

- | | |
|---|---|
| <p>A \$10</p> <p>B \$30</p> | <p>C \$60</p> <p>D All of the above amounts can be dispensed.</p> |
|---|---|

Question 30

At one of the ATMs, the two bins containing the notes have accidentally been swapped, so now the ATM dispenses \$50 notes instead of \$20 notes, and \$20 notes instead of \$50 notes.

For which one of the following requested amounts will the difference between the amount requested and the amount dispensed be greatest?

- | | |
|---|---|
| <p>A \$60</p> <p>B \$70</p> | <p>C \$80</p> <p>D \$90</p> |
|---|---|

Questions 31 – 33 refer to the following additional information:

The diagram opposite shows the computer program rules used to control an earlier-model ATM, the **Mark 1**.

- RA (requested amount) is the amount the customer wants to draw out of the ATM.
- On the diagram, points P, I, II, III, IV, V and VI are reference points.

Question 31

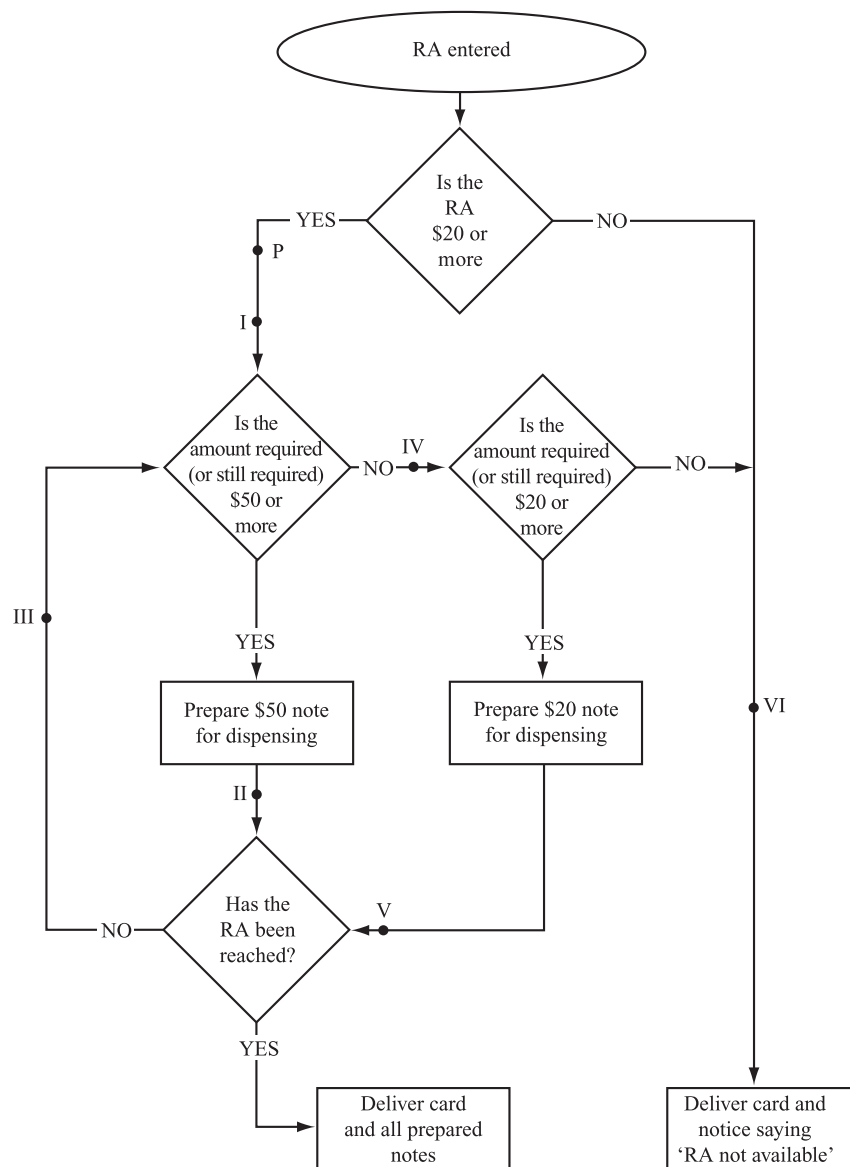
Of the following amounts, which one will be dispensed by the **Mark 2** ATM, but **not** the **Mark 1** ATM?

- | | |
|--|---|
| <p>A \$80</p> <p>B \$100</p> | <p>C \$120</p> <p>D \$150</p> |
|--|---|

Question 32

If a customer requests \$60 from a **Mark 1** ATM, the program will pass through point P and then points

- | | |
|---|---|
| <p>A I, II, III and VI only.</p> <p>B I, II and III only.</p> | <p>C I, IV, and V only.</p> <p>D I, II, III, IV and VI only</p> |
|---|---|

Mark 1 model**Question 33**

Suppose that a **Mark 1** ATM correctly dispenses \$50 and \$100 but does not dispense \$70.

A fault at which one of the following points in its program is the most likely cause of this problem?

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

UNIT 11

Questions 34 – 36

Unlike most other countries, Australia has a system of compulsory voting. This system has been challenged as undemocratic by some commentators who claim that people should not have to vote unless they want to. This argument is plausible but it is reasonable to point out that democracy is not the same as not having to do things ‘unless you want to’. There are many things we might not want to do (like pay certain taxes) but these things might be, democratically, required of us by our fellow citizens through parliament. 5

A critic of compulsory voting might offer a second argument about consequences. This argument would contend that forcing people to vote contaminates the political process with input from the ignorant or uninterested. Such elitist critics would also contend that there are some informed and responsible citizens who decide that there is no one they want to vote for and hence they should not be compelled to do so. 10

Defenders of compulsory voting point out that the system does not compel people to vote, rather it compels them (with the threat of a fine) to attend a polling centre when there is an election. They need not vote. These advocates of compulsory voting argue that compelling people to go to a polling centre during an election is intended to counteract the natural laziness of some who will find any excuse not to vote. It does not compel to vote those who conscientiously object to all of the candidates. This argument has been described as a mere word game, but it is not so if we believe that voting is not only a right it is also a responsibility of a citizen. Because it is a responsibility of citizens it is reasonable to require people to demonstrate that they do not vote for a reason other than laziness. These supporters of compulsory voting would point to the fact that less than half the eligible voters vote in many countries, and that this degrades the system more than the trivial requirement that citizens vote. 15

20

25

Question 34

The writer suggests that those who are reluctant to vote are predominantly

- | | |
|-------------|------------------|
| A lazy. | C ill-informed. |
| B ignorant. | D conscientious. |

Question 35

As part of the argument the writer distinguishes

- A the ignorant from the elitists.
 B compulsory from optional voting.
 C voting from attending a polling centre.
 D what people want from what they do not want.

Question 36

The writer sees the argument about conscientious objectors as

- | | |
|---------------|--------------------------|
| A trivial. | C a mere word game. |
| B convincing. | D more than a word game. |

UNIT 12

Questions 37 – 40

The figure illustrates the pieces from which a complete round ball can be formed when all of the edges are joined. The ball consists of pentagon (e.g. P) and hexagon (e.g. Q) pieces only. The piece at position X is not shown.

Double lines are painted on the ball to form a pattern of larger pentagons. These painted pentagons stretch across several pieces, but are only shown on the right half of the diagram.

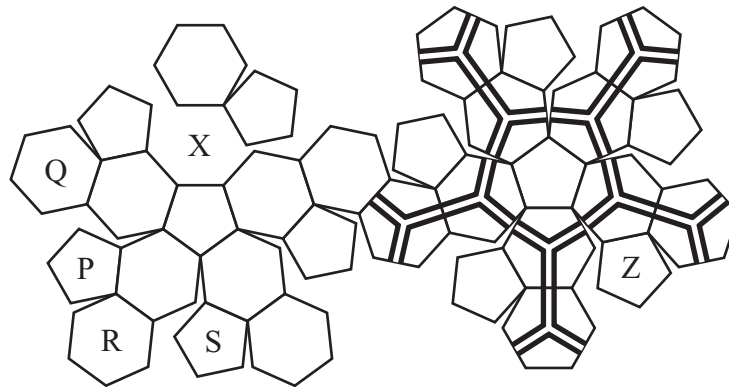


Figure 1

Question 37

How many pentagon pieces are there in the complete ball?

- | | |
|----------------------------|----------------------------|
| A 10
B 12 | C 20
D 24 |
|----------------------------|----------------------------|

Question 38

Which one of the following pieces joins with piece Z in the complete ball?

- | | |
|--------------------------|--------------------------|
| A P
B Q | C R
D S |
|--------------------------|--------------------------|

Question 39

How many hexagon pieces are there in the complete ball?

- | | |
|----------------------------|----------------------------|
| A 10
B 12 | C 20
D 24 |
|----------------------------|----------------------------|

Question 40

To how many pentagon pieces is each hexagon piece connected when the ball is formed?

- | | |
|---------------------------------|-------------------------------|
| A three
B four | C five
D six |
|---------------------------------|-------------------------------|

UNIT 13

Questions 41 – 44

The following poem is set in the northern hemisphere, where students return to school in September after the summer break.

Quieter Than Snow

I went to school a day too soon
And couldn't understand
Why silence hung in the yard like sheets
Nothing to flap or spin, no creaks
Or shocks of voices, only air. 5

And the car park empty of teachers' cars
Only the first September leaves
Dropping like paper. No racks of bikes
No kicking legs, no fights,
No voices, laughter, anything. 10

Yet the door was open. My feet
Sucked down the corridor. My reflection
Walked with me past the hall.
My classroom smelt of nothing. And the silence
Rolled like thunder in my ears. 15

At every desk a still child stared at me
Teachers walked through walls and back again
Cupboard doors swung open, and out crept
More silent children, and still more.
They tiptoed around me 20
Touched me with cold hands
And opened their mouths with laughter that was

Quieter than snow.

Berlie Doherty

Question 41

The poem as a whole suggests the poet is

- A excited.
- B unnerved.
- C indifferent.
- D overwhelmed.

Question 42

In describing her visit to the school, the poet gives particular emphasis to

- A her own forgetfulness.
- B the reversal of her expectations.
- C her sense of relief at finding the school deserted.
- D the reinforcement of her negative views of school.

Question 43

Which sensory feature does the poet most emphasise?

- A sight
- B smell
- C touch
- D sound

Question 44

The poet sees herself as

- A a wary intruder in the school.
- B a welcomed visitor to the school.
- C a suspicious stranger in the school.
- D the rightful proprietor of the school.

UNIT 14

Questions 45 – 50

Soils provide the chemical elements necessary for plant growth. The availability of these elements to the plant is related to the pH of a soil as shown in Figure 1. The wider the white bar for an element at a particular pH, the greater its availability.

- A pH of 7.0 is neutral. A pH below 7.0 is acidic. A pH above 7.0 is alkaline.

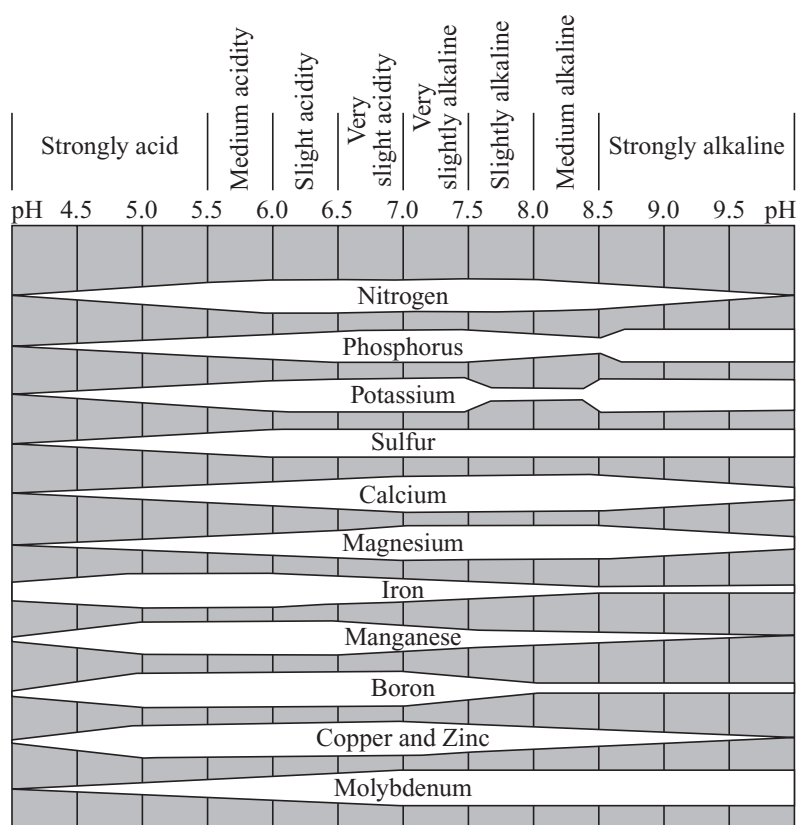


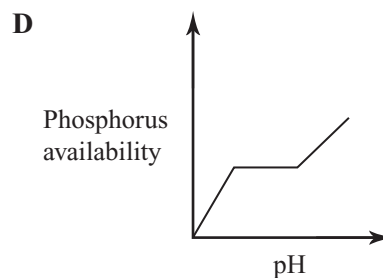
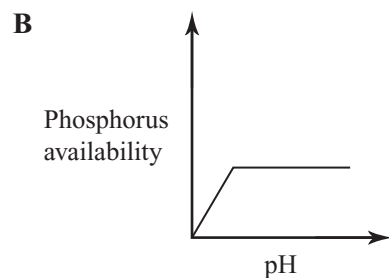
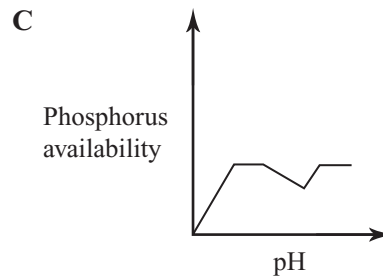
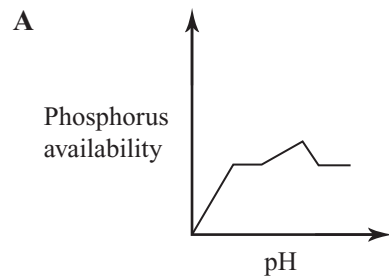
Figure 1

Question 45

Of the following, which pH maximises the availability of magnesium and sulfur but minimises the availability of potassium?

A 4.5**C** 8.0**B** 6.0**D** 9.0**Question 46**

Which of the following best represents the relationship between pH and the availability of phosphorus?



Questions 47 – 50 refer to the following additional information:

It is possible to determine the elements that are not readily available in soils by the condition of plant leaves, as indicated in Table 1.

Assume:

- plants grow best in soils with maximum availability of the element;
- if there is not the maximum availability of an element, symptoms of deficiencies occur;
- adding lime to soil increases pH;
- adding ammonium sulfate to soil decreases pH.

Table 1

Element not available	Colour of leaves	Appearance of leaves
Symptoms appearing first in OLDEST leaves		
Nitrogen	General yellowing	
Magnesium	Patchy yellowing	
Potassium	Scorched margins	Spots surrounded by pale zones
Phosphorus	Yellow	
Molybdenum		Mottling
Symptoms appearing first in YOUNGEST leaves		
Calcium	Black	
Sulfur	Yellow	Small leaves; some pigmentation
Iron		Interveinal yellowing
Copper	Dark blue-green	Curling; death of tips
Zinc	Yellow	Small leaves; some mottling
Boron	Yellow margins	Distorted
Symptoms appearing first in either YOUNGEST or OLDEST leaves		
Manganese		Interveinal yellowing; veins pale green

Question 47

Of the following, a soil of medium acidity (pH 5.5 – 6.0) is most likely to be first indicated by

- A mottling of oldest leaves.
- B distortion of youngest leaves.
- C death of the tips of youngest leaves.
- D interveinal yellowing in youngest leaves.

Question 48

The oldest leaves of a plant are a patchy yellow, the youngest leaves rather small with some pigmentation, and both the youngest and oldest leaves show interveinal yellowing.

Of the following, the pH of the soil is most likely to be

- | | |
|----------|----------|
| A 4.75 . | C 6.75 . |
| B 5.75 . | D 7.75 . |

Question 49

A plant shows interveinal yellowing in some leaves.

Of the following, which nutrient is most likely **not** readily available in the soil?

- A iron only
- B manganese only
- C either iron or manganese, or both
- D it could be one of at least six elements

Question 50

A crop of corn is found to have small, yellow leaves with only some pigmentation.

In order to improve the corn it would be best to add

- A ammonium sulfate.
- B manganese.
- C zinc.
- D lime.

UNIT 15

Questions 51 – 55

The following passage and Figure 1 are from a newspaper television guide. They refer to a television series that began in 1990. Its creator is Dick Wolf.

Passage 1

In *Law and Order* Wolf concocted the perfect TV concept, a series in which every episode is blissfully self-contained and the focus on the story is so steadfast that actors can be shuffled in and out without breaking stride. What is rare about *Law and Order*'s actor shuffle is the show's dogged devotion to putting the story front and centre. Actors rotate in and out, filling the same six regular parts established in the show's first episode.

It has managed to be a show that fans of pulpy crime stories could appreciate, and that devotees of literate, smartly acted drama could embrace. In hindsight, it all makes perfect sense, that a drama about cops and lawyers with an easily changeable cast — so self-contained that any episode could be watched whenever — would be the perfect formula to feed the ever-hungry TV beast.



Figure 1

Question 51

Both Passage 1 and Figure 1 suggest that the characters in the *Law and Order* series are best described as

- A uninteresting.
- B stereotypical.
- C unpredictable.
- D individualistic.

Question 52

Both Passage 1 and Figure 1 suggest that, in the *Law and Order* series, the

- A characters and actors are more important than plot.
- B actors have a higher status than the characters they play.
- C characters have a higher status than the actors who play them.
- D characters and the actors who play them have the same status.

Question 53

Passage 1 suggests that the popularity of the *Law and Order* television series is partly due to its

- A rotating actors.
- B unusual themes.
- C weekly timeslot.
- D appeal to a broad audience.

Question 54

In Passage 1, the phrase ‘ever hungry TV beast’ (line 11) refers to the

- A all-consuming nature of television.
- B demands of television programming.
- C impact of television on family values.
- D television viewers’ consumption of unsuitable programs.

Question 55

According to Figure 1, the character who controls the direction the plot takes is the

- A ‘sardonic, seen-it-all detective’.
- B ‘elected Manhattan District Attorney’.
- C ‘brash, articulate, single-minded prosecutor’.
- D ‘clear-eyed, fair-minded lieutenant, captain or detective sergeant’.

UNIT 16**Questions 56 – 58**

The manager of a medical clinic is drawing up a duty roster. The clinic is open each week day (Monday to Friday) for two sessions (morning and afternoon), and for morning sessions on weekends (Saturday and Sunday). It is staffed by five doctors — Paul, Wanda, Neel, Doran and Effat. The doctors' availability for duty is shown below. At any given time, there must be three doctors on duty. No doctor can work more than ten sessions per week.

- On weekdays, Paul is available in the morning only.
- Wanda is **not** available on Mondays or Thursdays, or in the mornings of the remaining days.
- Neel is available at any time.
- Doran is **not** available on Wednesdays and Saturdays.
- Effat is **not** available on Monday, Wednesday, Friday or Sunday.

Question 56

It is **not** possible to roster Paul together with

- A Neel.
- B Effat.
- C Doran.
- D Wanda.

Question 57

For which one of the following sessions is it **not** possible to staff the clinic at the required level?

- A Monday morning
- B Wednesday morning
- C Friday afternoon
- D All these sessions can be staffed.

Question 58

The clinic manager considers hiring another doctor.

If this doctor covered just the sessions that could not be covered by the current staff, how many sessions would this doctor need to cover?

- A one
- B two
- C three
- D None, as all sessions can be staffed already.

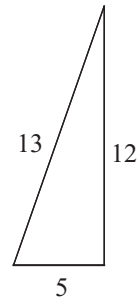
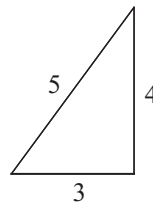
UNIT 17

Questions 59 – 61

A *Pythagorean triple* is a set of three whole numbers that gives the lengths of the sides of a right-angled triangle.

Two well-known examples are shown here.

The longest side, opposite the right-angle, is called the *hypotenuse*.



One method of generating a Pythagorean triple is:

Step I: Choose any odd whole number except 1.

Step II: Square this number.

Step III: Find two consecutive whole numbers that add together to give the value obtained in Step II.

The results from Steps I and III form a Pythagorean triple.

For example, starting with 3 at Step I gives 9 for Step II, and 4 and 5 for Step III. So, [3,4,5] is the resulting Pythagorean triple.

Question 59

Which one of the following is **not** a Pythagorean triple that could be generated by this method?

- A [7,24,25]
- B [9,40,41]
- C [11,60,61]
- D [13,82,83]

Question 60

According to the method described, the length of the hypotenuse of a triangle with a side 15 cm long chosen at Step I

- A would be 112 cm.
- B would be 113 cm.
- C would be 225 cm.
- D cannot be determined by the method.

Question 61

For a Pythagorean triple produced by this method, the whole number chosen in Step I

- A will always be the shortest side.
- B can be either the hypotenuse or shortest side.
- C can be either the shortest or middle-length side.
- D can be any one of the three sides.

UNIT 18

Questions 62 and 63

Figure 1 shows a specific day in the life of two adults, Andrew and Belinda. The large cylinder contains the movements of the two adults between different locations. It also contains two smaller cylinders, one for the house and one for work.

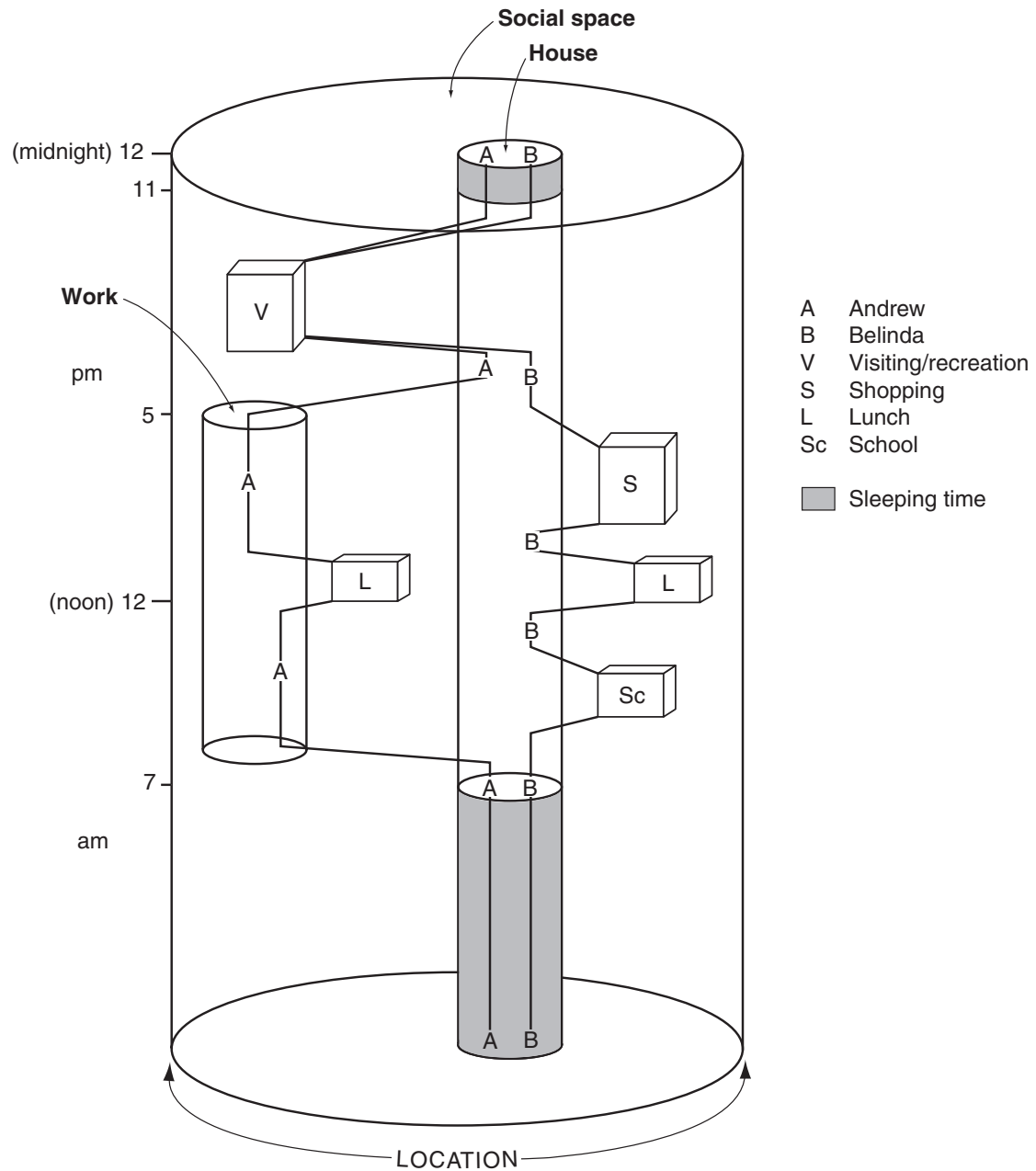


Figure 1

Question 62

Which of the following is **NOT** true?

The figure allows the relative distance between

- A** the house and where Belinda shops to be measured.
- B** the house and where Andrew works to be measured.
- C** where Belinda shops and Belinda lunches to be measured.
- D** where Andrew goes visiting and the house to be measured.

Question 63

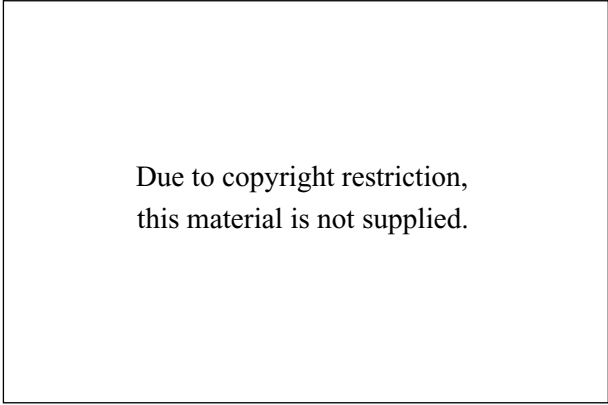
Andrew's place of work is

- A** closer to home than the school is.
- B** further from home than the school is.
- C** about the same distance from home as the school is.
- D** at a distance from home that cannot be compared to the school.

UNIT 19

Question 64

Cartoon by Barney Tobey, cartoon about an art gallery, www.cartoonbank.com



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this material is not supplied.

The cartoon ridicules the

- A** fundamental importance of art.
- B** predictability of children's taste in art.
- C** snobbery associated with art appreciation.
- D** relationship between art galleries and children.

UNIT 20**Questions 65 – 67**

The Mohs scale indicates the relative hardness of minerals. The harder a mineral, the higher its number on the scale. If mineral A can be scratched by mineral B, then mineral B is the harder mineral, and is ranked higher on the scale.

The softest reference mineral is talc (which cannot scratch any other reference mineral) at a value of 1, and the hardest is diamond (which can scratch any other reference mineral) at a value of 10. The other eight reference minerals on the scale are given whole number values from 2 to 9. Other minerals have values between those given to the reference minerals.

All of the minerals named in the following questions are reference minerals, and so all have different whole number values on the scale.

- Apatite scratches both fluorite and gypsum, but not orthoclase or topaz. Topaz scratches fluorite and orthoclase.

Question 65

A possible order of these five reference minerals on the Mohs scale, in order of increasing hardness, is

- A topaz, orthoclase, apatite, gypsum, fluorite.
- B apatite, fluorite, gypsum, orthoclase, topaz.
- C fluorite, gypsum, apatite, orthoclase, topaz.
- D gypsum, fluorite, apatite, topaz, orthoclase.

Questions 66 and 67 refer to the following additional information:

A new mineral is discovered. It scratches quartz, apatite, calcite and topaz, but not corundum.

Question 66

The newly discovered mineral's value on the Mohs scale would be between

- A 3 and 4.
- B 4 and 5.
- C 6 and 7.
- D 8 and 9.

Question 67

Which of the following is the best conclusion on the basis of the information provided?

- A Quartz is harder than topaz.
- B Fluorite's value on the Mohs scale is less than 6.
- C Gypsum's value on the Mohs scale is greater than 2.
- D Aside from diamond, corundum cannot be scratched by any mineral.

Painting of Nancy Cunard (also known as Mrs Fairbairn) by Alvaro Guevara,
National Gallery of Victoria.

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UNIT 21

Questions 68 – 70

Questions 68 – 70 refer to Passages 1 and 2 below and the painting on the facing page.

Passage 1

A 1919 newspaper commented:

It is the fashion to go to an unflattering portrait painter. Mr Alvaro Guevara is the latest lion of the brush, and some of his portraits must give a shock to his fair sitters. He is a ‘modernist’, and his ideas of perspective are such that the dear ladies always seem to be sliding down the floor.

Passage 2

An entry from a 2003 catalogue by the National Gallery of Victoria described the work:

Mrs Fairbairn captures brilliantly the strong yet fragile personality of the obsessively thin Nancy Cunard, whom Guevara described as ‘like a green stick caterpillar who survives by nibbling a dandelion’s leaf’. It is a perfect example of Guevara’s style — what the critic P.G. Konody, writing in the Observer in 1926, called ‘those ultra-modern tendencies which ... led him to defiance of perspective and to other departures from the normal.’

Question 68

The writer of Passage 1 sees the portrait of Nancy Cunard as

- A trendy.
- B classical.
- C out of date.
- D progressive.

Question 69

The writer of Passage 1 describes Nancy Cunard as ‘sliding down the floor’ because

- A she is weak and thin.
- B she is relaxed and elegant.
- C the painting lacks light and shade.
- D the painting lacks depth and perspective.

Question 70

The writer of Passage 2 seems to

- A admire the painting.
- B be amused by the painting.
- C be objective about the painting.
- D disapprove of modernist paintings.

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ACKNOWLEDGMENTS: Control Publications, for the extract adapted from ‘Climate Change and Disease’, *Australasian Science*, August 1999; Larry S. Bourne (ed.) and Oxford University Press, for the *Daily Prism* diagram; CSIRO, for the extract adapted from ‘Soils: An outline of their properties and management’, *Discovering Soils 1*, CSIRO, Melbourne, 1977; John Ditchburn and www.inkcinct.com.au, for the cartoon about music; Berlie Doherty and Oxford University Press, for the poem, *Quieter than Snow*, 1999; Sue Monk Kidd and Headline Book Publishing, for the extract from *The Secret Life of Bees*, 2002; Brian Lowry and www.theage.com.au/articles/2004/04/21/1082530226248.html?from=storyhs, for article about Law & Order; The National Gallery of Victoria, for the reproduction of the painting, *Mrs Fairbairn*, by Alvaro Guevara; S. Selinger, for the extract adapted from *Chemistry in the Marketplace*, Harcourt Brace Jovanovich Group, Australia, 4th ed., 1988; Barney Tobey and www.cartoonbank.com, for the cartoon about an art gallery; www.uta.fi/FAST/US7/PAPS/urbanl.html, for *Urban Legends* article.

END OF QUESTION BOOK