

## BioMedical Admissions Test

4500/11

Wednesday 5<sup>th</sup> November 2014

One hour

\* 5 9 5 8 2 6 9 1 9 4 \*

### SECTION 1                      Aptitude and Skills

#### Instructions to Candidates

**Please read this page carefully, but do not open the question paper until you are told that you may do so.**

A separate answer sheet is provided for this section. Please check you have one. You also require a soft pencil and an eraser.

Please complete the answer sheet with your:

- BMAT candidate number
- centre number
- date of birth
- name

Speed as well as accuracy is important in this section. **Work quickly, or you may not finish the paper.** There are no penalties for incorrect responses, only points for correct answers, so you should attempt all 35 questions. All questions are worth one mark.

Answer on the sheet provided. Most questions ask you to show your choice between options by shading a circle. If questions ask you to write in words or numbers, be sure to write clearly in the spaces provided. If you make a mistake, erase thoroughly and try again.

Any rough work should be done on this question paper.

Calculators are NOT permitted.

**Please wait to be told you may begin before turning this page.**

*This paper consists of 27 printed pages and 5 blank pages.*

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- 1 The table below shows 'audience numbers' and 'time per visit' for a number of popular social networking sites. A comparison of figures for the month of February is shown for two consecutive years.

Site	February 2008		February 2007	
	Audience (000's)	Time per visit (hr:min:sec)	Audience (000's)	Time per visit (hr:min:sec)
<b>myspace.com</b>	55 419	2:12:19	53 362	2:00:24
<b>Facebook</b>	20 043	1:06:43	9 923	1:04:54
<b>LinkedIn</b>	7 392	0:10:31	1 990	0:05:10
<b>Flixster</b>	2 619	0:07:38	1 591	0:12:28
<b>Reunion.com</b>	4 323	0:04:34	4 348	0:04:49
<b>Meetup.com</b>	1 940	0:12:16	1 215	0:07:07
<b>Last.fm</b>	1 938	0:06:43	1 508	0:02:24
<b>myYearbook</b>	1 738	0:07:02	2 368	0:09:04

How many sites had an increase in both 'audience numbers' and 'time per visit' from 2007 to 2008?

- A 1  
 B 2  
 C 3  
 D 5  
 E 6
- 2 There is a tendency to think that carnivores, given their precarious place at the top of the food chain, are the most at risk from extinction. Yet over the course of history it is likely that the opposite has been the case. Herbivores are often more specialist – evolved to suit a particular environment, to eat a particular plant. Carnivores, on the other hand, have tended to retain a more general set of attributes: teeth that could cut as well as chew; physical agility and acute senses, making them less vulnerable to changes in environment. After all, meat remains meat through even the most dramatic of environmental upheavals; whereas grassland might be converted to forest – with serious consequences for the herbivores that are grazing specialists.

Which one of the following best expresses the conclusion of the above argument?

- A Herbivores are more threatened by environmental changes than carnivores.  
 B It is natural to think that carnivores are more at risk of extinction than herbivores.  
 C Herbivores are more at risk of extinction than carnivores.  
 D Carnivores are better at adapting to changes in environment than herbivores.  
 E Carnivores' success is mostly down to their having more general adaptations than herbivores.

- 3** A password to open the safe in a hotel room uses an array of five names in a particular order selected from the names of the members of the owner's family. They are:

Rick, Betty, Oscar, Gavin, Yasmin, Graham and Bertha.

In any password a name can only be used once and no two names with the same starting letter are allowed.

Jeremy is trying to remember the password he set and tries:

Betty Rick Oscar Gavin Yasmin

The safe doesn't open because whilst the second, fourth and fifth names are correct, the first and third names are wrong.

Which of these could be the correct combination to open the safe?

- |          |        |      |        |       |        |
|----------|--------|------|--------|-------|--------|
| <b>A</b> | Bertha | Rick | Oscar  | Gavin | Yasmin |
| <b>B</b> | Bertha | Rick | Graham | Gavin | Yasmin |
| <b>C</b> | Betty  | Rick | Bertha | Gavin | Yasmin |
| <b>D</b> | Oscar  | Rick | Graham | Gavin | Yasmin |
| <b>E</b> | Oscar  | Rick | Bertha | Gavin | Yasmin |
- 4** Since the late 1990s wolves have been seen in the Haute-France region of the Alps. This places them once again in conflict with the shepherds who farm this region. Due to the protected status of the European wolf, French farmers are awarded a compensation payment for the loss of any of their sheep to a wolf. This payment amounts to considerably more than the livestock value of the animal. In addition to this, it is very difficult to distinguish between evidence of a wolf attack and dog attack. France has a population of 8 million dogs; 8 000 of these are estimated to be wild compared to only 200 wolves.

Which one of the following is a conclusion that can be drawn from the above passage?

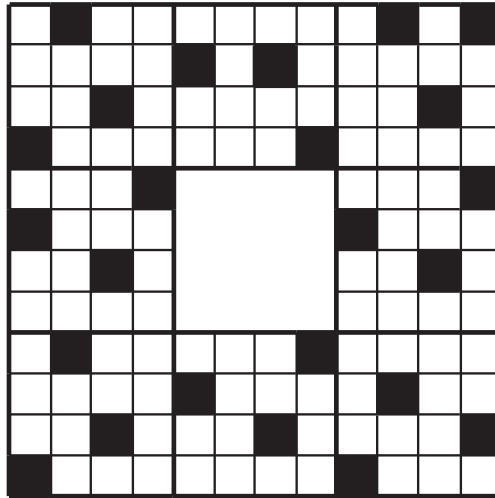
- |          |   |
|----------|---|
| <b>A</b> | The problem of wolves attacking sheep in the French Alps has been exaggerated.          |
| <b>B</b> | Any claim that a sheep has been attacked by a wolf should be treated with caution.      |
| <b>C</b> | The protected status of the European wolf is unpopular in the French farming community. |
| <b>D</b> | The wolf's reputation for killing sheep is undeserved.                                  |

- 5 This is part of a tiled floor in my house, surrounding a space where I have removed a broken tile.

Each tile has a pattern of sixteen smaller squares, three of which are black. On each tile, one of the black squares is a corner square, one is an edge square and one is an inner square. No two black squares touch, either edge to edge or corner to corner.

Although I laid the tiles to produce an apparently random pattern, I made sure that no two black squares touched anywhere, either edge to edge or corner to corner.

Which one of the eight different tiles that are available must I use to replace the broken one? (Tiles may be rotated.)



A		B	
C		D	
E		F	
G		H	

- 6** Perfect pitch – the ability to identify any note of music without inferring it from a reference note – is usually found to be a characteristic only of people who were taught music before the age of 6. So teaching music to children under the age of 6 should become a priority in primary schools. This could mean that in the future the majority of the population would have perfect pitch.

Which one of the following describes a flaw in the above argument?

- A** It assumes that adults could acquire perfect pitch if they were taught music.
- B** It ignores the possibility that other factors may be necessary for acquiring perfect pitch.
- C** It assumes that having perfect pitch is necessary for success as a musician.
- D** It ignores the possibility that children under the age of 6 may not enjoy learning music.

- 7 When I buy my favourite brand of coffee from the supermarket I normally have a choice of three jar sizes, as follows:

small - 100 g

medium - 200 g

large - 400 g

At present, all three jars contain 25% extra for the normal price and, in addition, customers who buy a large jar get a small jar free.

For customers who buy a large jar of coffee, what is the total extra percentage of coffee for the normal price of the large jar?

- A**  $33\frac{1}{3}\%$
- B** 36%
- C**  $46\frac{2}{3}\%$
- D** 50%
- E**  $56\frac{1}{4}\%$
- F**  $87\frac{1}{2}\%$

**Questions 8 – 11 refer to the following information:**

1 A new research study shows that general anaesthesia increases the risk of developing dementia in later life by 35%, regardless of lifestyle. Research from France being presented at a conference of anaesthetists identifies postoperative cognitive dysfunction (POCD), a common delirium-like complication of major surgery in older people, as a likely cause of dementia that develops some years later.

2 The study examined the health of 9 294 people aged 65 or over in three French cities from 1999 in order to assess the risk of dementia and decline in cognitive function linked to vascular risk factors. Participants were checked two, four, seven and 10 years later. Each time the 7 008 patients originally without dementia were asked if they had had either a general or local anaesthetic since the last check-up. After two years, 2 309 (33%) had undergone one in that time, of which 1 333 (19%) were general and 948 (14%) local. In total 632 participants developed dementia over the eight-year follow-up period.

3 The statistical model used in the study suggests that if a smoker has undergone general anaesthesia then they have a 27% likelihood of developing dementia in later life, compared to a 19% likelihood for a non-smoker. These results further support previous research findings about the effects of smoking on health.

4 A summary of the findings, which are being unveiled at the annual meeting of the European Society of Anaesthesiology, states: "After adjustment, participants with at least one general anaesthesia over the follow-up had a 35% increased risk of developing a dementia compared with participants without anaesthesia." That risk is for general anaesthesia, not all anaesthesia, they stressed.

5 Dr Sztark, one of the authors of the study, said that "[t]hese results are in favour of an increased risk for dementia several years after general anaesthesia." Health professionals should, he said, be aware of the possibility of POCD when deciding how to manage elderly patients who are being fully anaesthetised.

6 Dementia organisations responded cautiously. Dr Eric Karran, director of research at Alzheimer's Research UK, said: "This is early data and given the complexity of the findings we need to await the full peer-reviewed publication before fully interpreting the results. Research into the impact of anaesthetics on dementia is challenging because it can be very difficult to tease out cause and effect. Dementia is caused by several brain diseases, many of which arise from a complex mix of genetic and environmental factors."

7 Dr Doug Brown, director of research at the Alzheimer's Society, said: "The early results from this study support the view that anaesthesia may increase risk of developing dementia but questions still remain about why this is the case and whether other factors could also have a role to play."

Adapted from an article by Denis Campbell, *The Guardian*, Friday 31 May 2013



8 If the cohort is typical of the population aged 65 or over, what are the chances of someone without dementia developing it during the eight-year follow-up period?

- A 7%
- B 9%
- C 11%
- D 19%
- E 35%

9 In the second to last paragraph Dr Karran says it can be "very difficult to tease out cause and effect".

Which one of the following could be an alternative explanation of the finding that anaesthesia increases the risk of dementia?

- A More patients in the study were free from dementia than had dementia.
- B The study cohort had a higher proportion of dementia patients than the population as a whole.
- C Other conditions or lifestyles which lead to the need for anaesthesia could also increase the risk of dementia.
- D Postoperative cognitive dysfunction does not always lead to the development of dementia.

10 Which one of the following additional pieces of information, if true, strengthens the case for general anaesthesia increasing the risk of dementia?

- A For those who had had a local anaesthetic, there was no statistical evidence for an increased risk of dementia.
- B Those who had had a general anaesthetic for a mechanical problem (e.g. hip replacement) showed a lower rate of dementia than those who had had anaesthesia for medical conditions (e.g. cancer).
- C Having a general anaesthetic has also been shown to weaken the immune system.
- D The cohort studied was carefully selected to represent a typical demographic group with an average range of pre-existing medical conditions.

- 11 If a smoker who is typical of the cohort in this study does not undergo general anaesthetic, what is the probability that they will develop dementia in later life?
- A 9%
  - B 12%
  - C 14%
  - D 18%
  - E 20%
-

- 12 One of the games at a charity fund raising event was 'Guess How Many Jelly Beans are in the Jar'. Prizes were awarded according to how close the guesses were to the exact number. The results of the game are shown below in the table.

Position	Guess	Winner
1st	125	Jessie
2nd	140	Saul
3rd	142	Imran
4th	121	Marie
5th	120	Hank

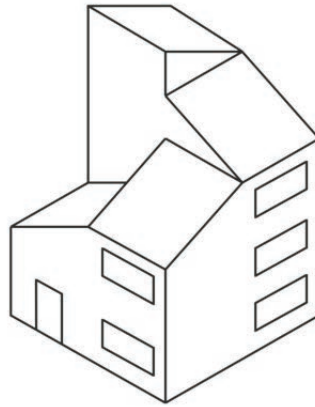
How many jelly beans were in the jar?

- A 129
- B 130
- C 131
- D 132
- E 133
- 13 Recorded crime figures – the figures which police authorities produce – have always been a poor way to identify crime trends. They are really a measure of police activity and priorities. A big operation to tackle knife crime, for instance, may uncover and record many more offences involving knives: it does not mean knife crime is rising. Added to that, there is an inbuilt temptation for police officers to 'adjust' their crime figures when targets need to be met. As with all recorded activity or performance data, there is always a risk of inaccuracy, confusion and fraud. A much more reliable measure of crime is the Crime Survey of England and Wales which produces figures by asking people if they have been victims of crime.

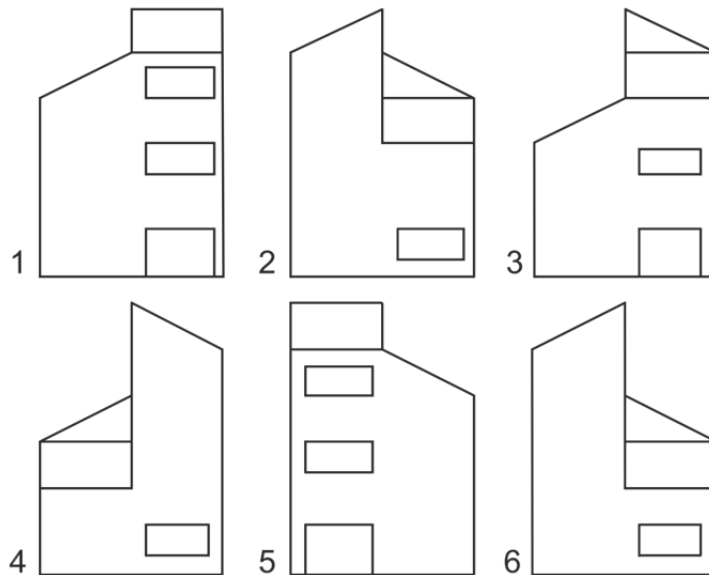
Which one of the following is a conclusion that can be drawn from the above passage?

- A The police regularly prioritise the tackling of crimes which help them meet their targets.
- B The police care more about meeting targets than they do about tackling crime.
- C Much less crime takes place than police figures tend to indicate.
- D Victims of crime fear retaliation from criminals if they report them to the police.
- E To find out whether crime levels are increasing we should survey people's experience of crime.

14 The drawing below shows a pictorial view of a model for a house.



Which two of the drawings below show possible side views of the model?



- A 1 and 2
- B 2 and 3
- C 3 and 4
- D 4 and 5
- E 5 and 6
- F 6 and 1

- 15** Plans to share the medical records held by doctors, on a national database, have had to be shelved as a result of public pressure. Yet the public's hostility to this proposal is misguided. Of course people's medical records are personal matters, which they might not want divulged. And yet, while it is in everyone's interests to maintain a degree of privacy, for their own peace of mind, it is also in their interests for medical science to find new treatments for ill-health. If the data were allowed to be shared, medical researchers would have access to an enormous pool of data, which could advance their understanding of illnesses and how they are caused.

Which one of the following is an assumption underlying the above argument?

- A** Possible benefits that would come from improvements in medical science outweigh concerns about personal privacy.
- B** The medical records will not be made anonymous.
- C** The hostility shown by some members of the public is representative of the general mood.
- D** People have a tendency to be overly anxious when it comes to online privacy.
- 16** Ben designs booklets for companies to use for their marketing. The price that he charges is based on the number of pages in the booklet and whether the booklets are black and white or colour. His prices are summarised in the following table:

Number of pages	Black and White	Colour
4	\$50	\$80
8	\$90	\$150
16	\$160	\$250

Ben also offers a printing service. Printing 100 booklets in black and white costs \$20 and printing 100 booklets in colour costs \$30.

An 8-page booklet is required. How much more would it cost for the booklet to be designed and 500 copies made if it is in colour rather than black and white?

- A** \$50
- B** \$60
- C** \$80
- D** \$110
- E** \$140

- 17 We are all becoming used to warnings of a shortage of science, technology, engineering and mathematics (STEM) recruits. In a world increasingly dominated by careers that involve these fields, organisations and politicians repeatedly state that we really must train more of these people to secure our prosperity. But STEM training is not the only answer: anecdotal evidence shows that the STEM employees who do best are those most skilled in thinking and communicating. Instead of looking to produce scientists or engineers, we should focus on turning out agile minds. The ability to process, synthesise and communicate information efficiently is the premium skill of the future.

Which one of the following best expresses the flaw in the argument above?

- A It assumes that being agile-minded cannot be taught.
- B It ignores the fact that STEM courses are growing in popularity.
- C It fails to use comparative data from other countries.
- D It assumes that agile minds are equally effective with or without STEM training.
- E It ignores the views of STEM employers.

**18** The draw for the quarter-finals of the Staveland Cup took place last night.

Eight balls, numbered from 1 to 8, were drawn, one by one, from a bag. The numbers represented the teams involved, as follows:

- |   |            |
|---|------------|
| 1 | Clefs      |
| 2 | Crotchets  |
| 3 | Flats      |
| 4 | Keys       |
| 5 | Minims     |
| 6 | Quavers    |
| 7 | Semibreves |
| 8 | Sharps     |

The first two teams drawn out of the bag will play each other, as will the third and the fourth, the fifth and the sixth, and the last two.

Although the balls were drawn out at random, they alternated between even and odd numbers, and there was always a difference of at least 3 between one ball and the next.

The first number drawn was 6 (Quavers) and the last number drawn was 5 (Minims).

Which teams will the Quavers and the Minims play in the quarter-finals of the Staveland Cup?

- A** The Quavers will play the Clefs and the Minims will play the Crotchets.
- B** The Quavers will play the Clefs and the Minims will play the Sharps.
- C** The Quavers will play the Flats and the Minims will play the Crotchets.
- D** The Quavers will play the Flats and the Minims will play the Sharps.

**Questions 19 – 21 refer to the following information:**

The information below relates to offences dealt with by courts in England and Wales during 2010.

**Table 1: Sentencing rates by region (2010)**

<i>Geographic region</i>	<i>Actual population of region (millions)</i>	<i>Percentage of the population sentenced</i>
North East	2.6	0.88%
Yorkshire	5.0	0.64%
North West	6.8	0.62%
West Midlands	5.3	0.57%
London	7.4	0.55%
Wales	3.0	0.5%
South West	5.0	0.5%
South East	8.1	0.47%

**Table 2: Occurrence of offences by type (2010)**

<i>Offence type</i>	<i>Percentage of total recorded offences</i>
Arson	0.4%
Breach of Bail	1.9%
Breach of Conditional Discharge	0.6%
Breach of Statutory Order	6.0%
Criminal Damage	13.9%
Death or Injury by Reckless Driving	0.04%
Domestic Burglary	2.4%
Drugs Offences	4.8%
Fraud and Forgery	0.8%
Motoring Offences	9.4%
Non Domestic Burglary	1.8%
Other	2.7%
Public Order	8.6%
Racially Aggravated Offences	1.0%
Robbery	2.4%
Sexual Offences	0.8%
Theft and Handling	19.7%
Vehicle Theft	3.0%
Violence against a Person	19.4%



- 19 Which of the following is a safe inference to draw from the above data?
- 1 London has the highest crime rate in the country.
  - 2 The number of sentences handed down in Yorkshire was more than twice that of Wales.
  - 3 In the North West more than 6 out of every 1 000 population have been sentenced in 2010.
- A 1 only
- B 2 only
- C 3 only
- D 1 and 2 only
- E 1 and 3 only
- F 2 and 3 only
- G 1, 2 and 3
- H None of the statements
- 
- 20 Which one of the following is the best estimate of the ratio of sentences to population in London?
- A 55 for every 1 000 inhabitants
  - B 1 for every 155 inhabitants
  - C 1 for every 182 inhabitants
  - D 18.2 for every 10 000 inhabitants
  - E 1 for every 1 818 inhabitants

- 21** Table 1 shows that there were 25 000 sentences handed down in the South West region in 2010. Table 2 shows that 0.4% of recorded offences were arson attacks, revealing that in the South West exactly 100 arson sentences were given for arson in that year.

Which of the following assumptions, if any, are required for this argument?

- 1** The number of recorded arson attacks in the South West is proportionate to the total number of such attacks across all regions.
  - 2** The number of recorded offences in each region is the same as the number of sentences in that region.
- A** 1 but not 2
- B** 2 but not 1
- C** Both 1 and 2
- D** Neither 1 nor 2
-

- 22** There have been various proposals over the years for a system of decimal time.

Under one system the day would remain the same length of time as it is at present, but would be the basic unit of time, divided into 10 decadays each made up of 100 millidays. Clocks would show the time in decadays and millidays instead of hours and minutes. Midday would be 0:00 and midnight would, therefore, be 5:00.

If this system were ever to be introduced and a new-style digital clock was compared with an old-style digital clock, what would the old clock read when the new clock showed 1:75?

- A** 14:52
  - B** 15:02
  - C** 16:12
  - D** 16:20
  - E** 16:40
- 23** Memory loss and growing mental incapacity used to be seen as inevitable consequences of ageing. Now we talk of dementia as an illness that could possibly be cured or prevented. The incidence of new cases of dementia is falling. A survey in the UK in 1994 revealed roughly 650 000 cases of dementia. With a subsequent increase in the average age at death, a survey in 2013 should have found nearly 900 000 cases, but in fact the total was less than 700 000. Why should this be so? Over the same period rates of heart disease have fallen, and in general the health of the blood vessels of the elderly has improved. Given that brain function requires the supply of oxygen to the brain from blood vessels, the improvement in the health of blood vessels ...

Which one of the following most logically completes the above argument?

- A** must be the explanation as to why people are living longer.
- B** and the fall in new cases of dementia must both be due to some other factor.
- C** is the cause of the reduction in the incidence of new cases of dementia.
- D** could be a contributory factor in the reduction of the incidence of new cases of dementia.

- 24** Four friends need to stay in a hotel for one night after a concert. They are working out what it is going to cost them. The prices per room are as follows:

Single: £40,     Double: £65,     Family: £90 (This is up to a max of 3 adults)

Special offers:

10% discount for four rooms in a single booking

5% discount for three rooms in a single booking

One of them has a voucher for £10 which can be used once for a booking of a double room.

What is the cheapest option?

- A**     Four single rooms
- B**     Two double rooms
- C**     One double and two single rooms
- D**     One single and a family room

- 25** Next time you feel the flu coming on, you should think twice before reaching for painkillers because they could do more harm than good by increasing the transmission of flu. Obviously painkillers can make you feel better by reducing muscle pains and headaches, but they also lower fever. Fever is thought to be an antiviral weapon, because many viruses find it hard to replicate at temperatures higher than the normal human body temperature. Some studies have shown that lowering fever can prolong viral infections and increase the amount of the virus that can be passed on to others.

Which one of the following, if true, strengthens the above argument?

- A** Overuse of painkillers can reduce their effectiveness in curing headaches.
- B** Taking painkillers increases the likelihood that flu sufferers will return to work while still infectious.
- C** The studies of the effect of lowering fever were carried out on animals, not humans.
- D** The most effective defence against flu is an annual anti-flu injection.
- E** People are more likely to take an accidental overdose of painkillers when they have a virus.

- 26** Most people remember a PIN because it has only four digits and it is used regularly, but few know their bank account number.

I have no trouble remembering my eight-digit account number, however, because squaring each of the four digits of my debit card PIN in turn produces it.

All the digits of my account number are different, and there is no zero in it. Which other digit does it not contain?

- A** 2
- B** 3
- C** 5
- D** 7
- E** 8

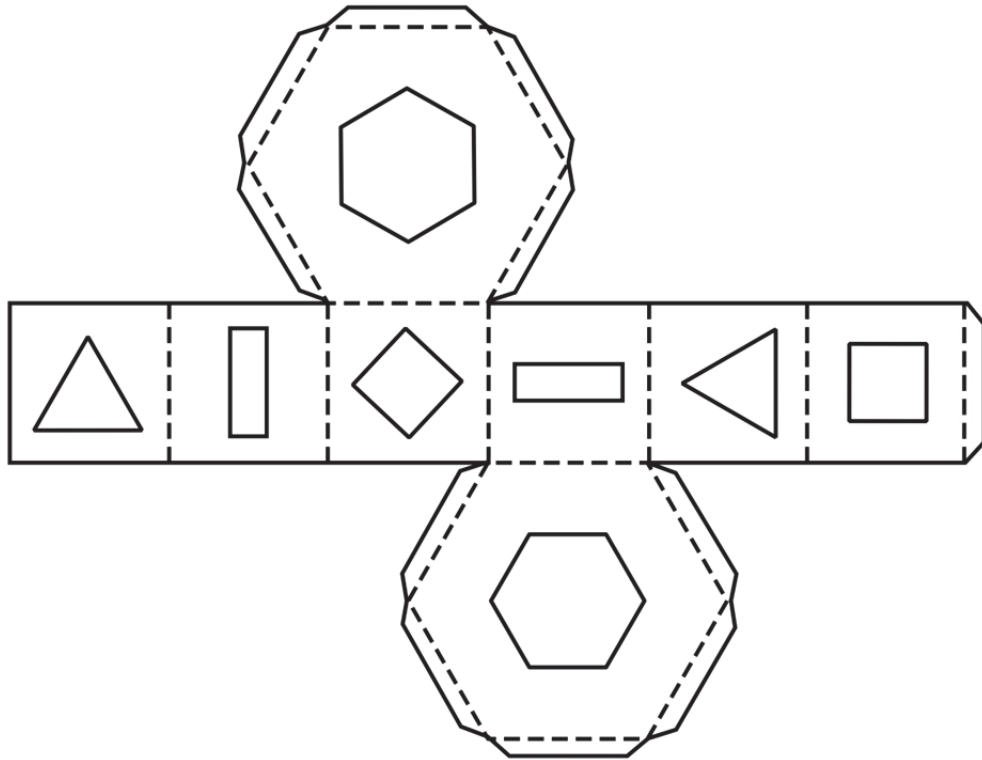
- 27** Drivers of motor vehicles are not the only threat to the safety of pedestrians. Official road casualty statistics for 2012 show that, per billion kilometres travelled, cyclists seriously injured 21 pedestrians, compared with 24 pedestrians seriously injured by vehicle drivers. Cyclists who ride on the pavement are regarded as a problem by pedestrians, but statistics show that most collisions between pedestrians and cyclists occur when pedestrians step into the road without seeing a cyclist. Analysis of road casualty data shows that cyclists killed 23 pedestrians in the decade to 2012 and seriously injured 585.

Assuming that 2012 is a representative year, which of the following conclusions can be drawn from the above passage?



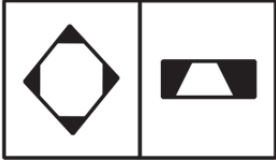
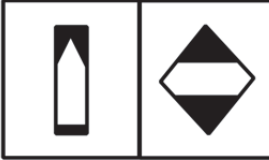
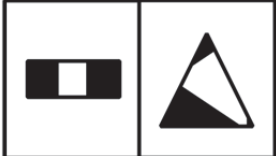
- 1** A pedestrian is almost as likely to be seriously injured by a cyclist as by a motor vehicle driver.
- 2** As a proportion of distance travelled, the risk of a cyclist causing serious injury to pedestrians is almost as great as the risk posed by vehicle drivers.
- 3** Pedestrians are less likely to be seriously injured by a cyclist when walking on a pavement than when stepping into the road.

- A** 1 only
- B** 2 only
- C** 3 only
- D** 1 and 2 only
- E** 2 and 3 only
- F** 1, 2 and 3

- 28 The drawing below shows the outer surface of the net of a hexagonal package with geometric shaped windows in each side. The inner surface is painted black.



Which one of the drawings could represent a correct side view of the assembled package?

- A 
- B 
- C 
- D 
- E 

- 29** Half a million pregnant women are troubled by morning sickness each year in the UK, but this phenomenon is still not fully understood. One theory is that changing levels of hormones act on the brain to heighten an evolutionary adaptive response that helps prevent women from consuming substances that may be harmful. Although less important in the developed world, in the past this would have helped to protect a foetus during the first three months of pregnancy when it is at the most vulnerable stage of development. If the mother eats less, and sticks to simple foods, she is less likely to accidentally ingest something dangerous.

Which of the following would strengthen the theory presented in the above argument?

- 1** Morning sickness symptoms normally decline after the third month of pregnancy.
  - 2** Pregnant women sometimes have strange food cravings.
  - 3** Women with morning sickness tend to eat less and opt for very simple and bland food.
- A** 1 only
- B** 2 only
- C** 3 only
- D** 1 and 2 only
- E** 1 and 3 only
- F** 2 and 3 only
- G** 1, 2 and 3



- 30 There are three stations on a single-track railway. The middle station of Laydon has two platforms and two separate tracks, each capable of taking any size train using the track.



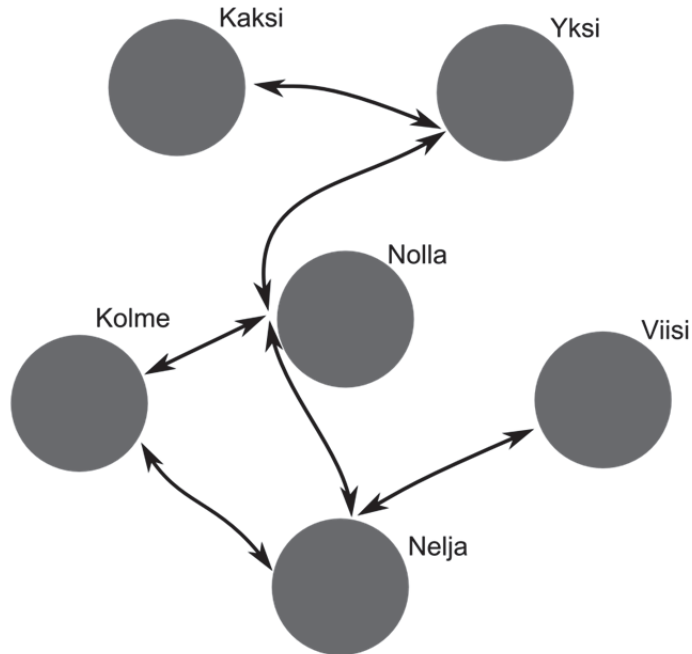
The Express leaves Singebourne station at 12:00 noon and travels at an average speed of 60 mph between stations. The Post train leaves Snelling station at 12:00 noon and travels at an average of 30 mph between stations. Each train remains at Laydon station for at least 5 minutes.

What is the earliest time of arrival for the Express at Snelling station?

- A 12:25 pm
- B 12:30 pm
- C 12:40 pm
- D 12:45 pm
- E 12:50 pm

**Questions 31 – 35 refer to the following information:**

The diagram below represents all the ferry routes between the islands in the Kuusi group.



Each ferry runs a shuttle service between two islands. The journeys between the main central island (Nolla) and each of the outer islands take 30 minutes in either direction and all journeys between two of the outer islands take 45 minutes.

All journeys on each route and in both directions start at 6 am and no journey starts at or after 9 pm:

Start times for routes between Nolla and the outer islands: 6:00 6:45 7:30 8:15 9:00  
etc. repeating every 3 hours

Start times for routes between the outer islands: 6:00 7:00 8:00 9:00 etc.

It takes between 5 and 10 minutes to walk between ferry docking points on all the islands.

- 31** What is the smallest number of individual trips needed to visit all the islands, starting and finishing at Nolla?
- A** 5
  - B** 6
  - C** 9
  - D** 10
  - E** 11
  - F** 14
- 32** What is the longest time one might be on Nelja if arriving from Nolla, then leaving by the next available ferry that same day to Viisi?
- A** 15 minutes
  - B** 30 minutes
  - C** 45 minutes
  - D** 1 hour
  - E** 1 hour 15 minutes
- 33** What is the longest time it could take from Kaksi to Nelja by the most direct route, assuming the next available ferry that same day is always taken?
- A** 2 hours 15 minutes
  - B** 2 hours 30 minutes
  - C** 2 hours 45 minutes
  - D** 3 hours 00 minutes
  - E** 3 hours 15 minutes

- 34** Which of the following statements is/are true about journeys from Kolme to Yksi, assuming the next available ferry that same day from Nolla is always taken?
- 1** Journeys from Kolme to Yksi never take less than 1 hour 15 minutes.
  - 2** Journeys from Kolme to Yksi never take longer than 2 hours.
- A** 1 only
- B** 2 only
- C** Both 1 and 2
- D** Neither 1 nor 2
- 
- 35** Mikko commutes from Yksi to Nelja each morning starting on the 7:30 am ferry. One day when he arrives at the Yksi terminal, he finds that the Nolla – Nelja ferry is not running. How much later than normal will he arrive at work?
- A** 45 minutes
  - B** 1 hour
  - C** 1 hour 15 minutes
  - D** 1 hour 30 minutes
  - E** 2 hours
- 

**END OF TEST**

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