
MedEntry
UMAT Practice Exam
www.MedEntry.edu.au

MESSAGE TO STUDENTS

Dear Future Medical Professional,

The UMAT (Undergraduate Medical and Health Professions Admission Test) is a three hour test and is one of three criteria (UMAT, high school score and performance at an interview) used by most universities in selecting students into high demand health related careers such as medicine and dentistry. Performing well in the UMAT is critical for students wishing to enter medicine or other health science courses.

There are three types of questions in the UMAT:

- *Logical reasoning and problem solving*. Some questions test your logical and critical thinking skills. Other questions test your ability to solve problems and interpret data. Overall, this type of question is designed to test how fast you can interpret information and your ability to think in various ways.

- *Understanding people*. You will be given various passages or scenarios describing people and interactions between people. You will need to empathise (put yourself in another person's shoes), and understand what they might be thinking or feeling. You may also be asked to explain why a person feels/behaves the way they do.

- *Non-verbal reasoning*. Questions involve finding patterns and trends in a sequence or block of pictures. This type of question tests your ability to think non-verbally.

To assist your preparation for the UMAT, MedEntry has produced a Half-Length UMAT Practice Exam with fully worked solutions. There are a total of 67 questions in this exam, and you should aim to complete it in 90 minutes. You should also give yourself an additional 5 minutes of reading time at the start of the exam. You can complete the questions in any order you wish.

You can download and print this exam and use it to practice anytime, anywhere! Share it with your friends and set them a competitive challenge!

This exam has questions similar to what you can expect in MedEntry's packages. MedEntry is the internationally trusted UMAT educational institution with unparalleled success and satisfaction rates. We are the UMAT Australia test specialists, and our reputation is based on results. Every year, MedEntry gets more students into the course of their choice than all the other UMAT courses combined. Over 95% of our UMAT students come through word-of-mouth referrals.

MedEntry is the only UMAT preparation institution with an extensive and unparalleled bank of questions, resources and course techniques developed for UMAT over a period of over thirty years. We have over 10,000 questions, over 1,000 pages of preparation materials, thousands of forum discussions on UMAT course and more, accessible via our state of the art Learning Management System (included in all of our packages).

MedEntry UMAT Prep has become synonymous with UMAT success and is the only UMAT Course run by Doctors and Academics. MedEntry is the only UMAT Course recommended by teachers, university academics, medical students, doctors and other health professionals.

For further information on the best way to prepare for the UMAT visit our website at www.medentry.edu.au.

We hope you enjoy this exam!

MEDENTRY UMAT PRACTICE EXAM WITH WORKED SOLUTIONS

Table of Contents

EXAM QUESTIONS

Question 1

Rumpkins are always Bumpkins, Lumpkins are sometimes Crumpkins, and Crumpkins are either Bumpkins or Dumpkins. Based on this information, which of the following statements is/are true?

I. A Bumpkin cannot be a Lumpkin
II. A Dumpkin is always a Crumpkin
III. A Lumpkin can be a Rumpkin
IV. A Rumpkin can be a Dumpkin

A) I, II and III only
B) II and IV only
C) III and IV only
D) III only

Questions 2 – 5

In the following excerpt from a novel, Bernard recounts to the narrator an incident some years ago on his honeymoon with his wife, June. Bernard, an insect enthusiast, spots a dragonfly, which sparks an argument between the couple.

Amazingly I managed to trap it [the dragonfly] in my cupped hands, then I ran back along the platform to where June was and got her to take it in her hands while I dug into my bag for my travelling kit. I opened it and took out the killing bottle and asked June to bring the creature over to me. She still had her hands cupped, like this, but she was looking at me with an odd expression, a kind of horror. She said, "What are you going to do?" And I said, "I want to take it home." She didn't come closer. She said "You mean you're going to kill it." "Of course I am," I said. "It's a beauty." She went cold and logical at this point. "It's beautiful, therefore you want to kill it." Now June, as you

know, grew up near the countryside and never showed much compunction about killing mice, rats, cockroaches, wasps—anything that got in her way, really. It was jolly hot and this was not the moment to start an ethical discussion about the rights of insects. So I said, "June, do just bring it over here." Perhaps I spoke too roughly. She took half a step away from me, and I could see she was on the point of setting it free. I said, "June, you know how much it means to me. If you let it go, I'll never forgive you." She was struggling with herself. I repeated what I had said, and then she came towards me, extremely sullen, transferred the dragonfly to my hands, and watched me put it in the killing bottle and store it away. She was silent as I put my stuff back in the case, and then, perhaps because she was blaming herself for not setting it free, she flew into an almighty rage.

Question 2

'Now June, as you know, grew up near the countryside and never showed much compunction about killing mice, rats, cockroaches, wasps—anything that got in her way, really.' Which of the following best describes the tone of Bernard's statement?

A) Injured
B) Disdainful
C) Mocking
D) Impatient

Question 3

When June relents and hands the dragonfly to Bernard, June's reaction to Bernard is best described as

A) Disdainful
B) Grudging
C) Furious
D) Disappointed

Question 4

What is the next thing Bernard is likely to do following June's outburst at the end of the passage?

A) Respond indignantly and adamantly claim that June is being unreasonable.
B) Apologise in order to placate her without changing his opinion or letting go of the dragonfly.
C) Release the dragonfly to demonstrate that he has been moved by June's arguments.
D) Launch into a furious shouting match with June.

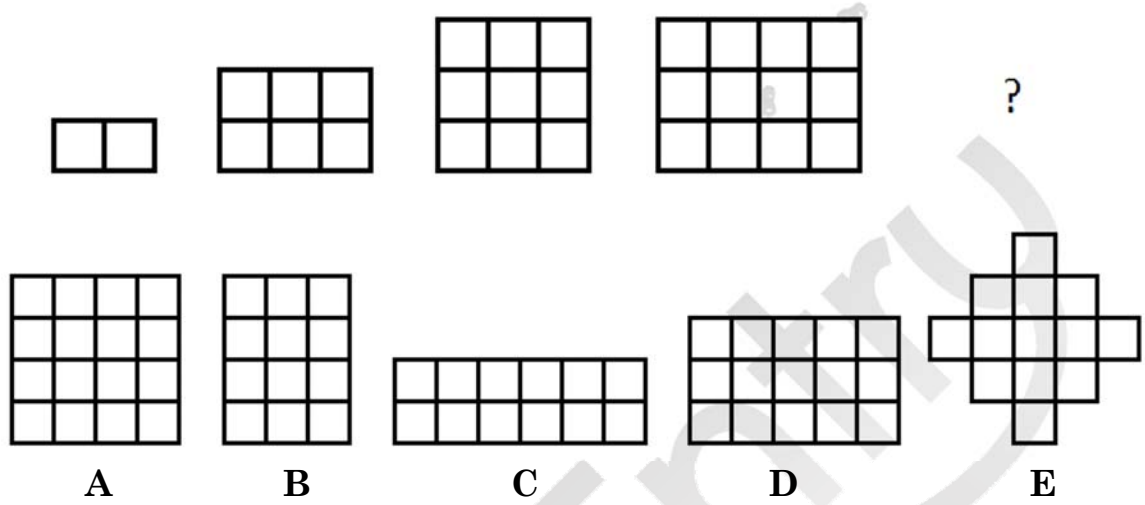
Question 5

What could Bernard have done differently in order to avoid a furious argument?

A) Referred to June's double standards in accusing him of cruelty.
B) Politely asked June to not impose her opinions on his own.
C) Invited June to discuss her thoughts instead of dismissing her opinion.
D) Suggested that they were both exhausted and should continue any ethical debate when they were less riled.

Question 6

Select the alternative that most logically and simply continues the series.



Questions 7 and 8

The following is a conversation between Sam and his stepfather, Mark. Sam's mother had passed away a few months before.

Sam: Mark?

Mark: What is it now? Can't you see I'm trying to watch the game?

Sam: I was just wondering if you might want to come to the movies later? There's this new film out that Mum would have loved and I thought maybe we could –

Mark (cutting Sam off): I already came to one of things last week; don't you have some friends your own age to go with?

Sam: I just thought it might be fun to do something together, you know, as a family.

Mark: We do plenty together, and besides, I've got work to do later.

Sam: Oh ok, sorry Mark. It's just that when Mum was around, the three of us always used to go to the movies on Sundays.

Mark: For God's sake Sam! Don't you get it? There is no more "us," no more "family," and that's the last I want to hear of it.

Question 7

What is the source of Sam's eagerness to see a movie with his stepfather?

A) Sam is excited about seeing the movie and has nobody else to go with.
B) Sam is trying to use the movie as a way to strengthen his distant relationship with his stepfather.
C) Sam wants to retain the memory of his mother and the sense of family that he felt when she was alive.
D) The grief over his mother's passing is leading Sam to seek an emotional replacement in his stepfather.

Question 8

What is Mark feeling that is most influencing his resistance toward taking Sam to the movie?

A) Mark simply does not want to miss the end of "the game."
B) Mark is uninterested in maintaining a relationship with Sam, especially now that Sam's mother has passed away.
C) Mark is frustrated by the amount of time and attention that Sam expects of him.
D) Mark is still too pained by his wife's death to celebrate her memory and view himself and Sam as a real family.

Questions 9 and 10 refer to the following stimulus.

Teachers from Bentley High School are concerned that students show many signs of tiredness and lack of concentration during the school day, and have blamed the introduction of TV, Facebook and MySpace as the fundamental cause.

A team of researchers, led by Dr Roy Peters, came in to assess the claim of the teachers by conducting a professional study. Dr Peters compiled 80 students at random from Year 9 of the school, and he formed four groups. Group 1 consisted of 20 students who were banned from watching TV for a month. Group 2 consisted of 20 students banned from accessing Facebook for a month. Group 3 consisted of 20 students banned from accessing MySpace for a month. Finally, Group 4 consisted of 20 students banned from watching TV, and banned from accessing Facebook and MySpace.

Prior to starting, all students were required to rank, on a scale of 1-10, how 'awake' they felt during class, with 1 being 'least awake' and 10 being 'most awake'. After one month of being subject to these conditions, students again made judgment using the same scale.

The following results were compiled:

	Average rank before study	Average rank after study
Group 1	4.5	6.7
Group 2	3.2	3.4
Group 3	4.6	8.8
Group 4	7.7	7.9

Question 9

Which of the following conclusions can be made from the results above?

A) Watching TV has no effect on how awake or alert students are during school.
B) The effect of abstaining from all three media sources together is inconclusive.
C) MySpace is more addictive and time-consuming than TV or Facebook.
D) None of the above.

Question 10 refers to the following additional information.

The teachers received the results of this study, and declared that MySpace shall be banned for all students of the school because it will keep students more awake during school.

Question 10

Which of the following, if true, most seriously weakens the teachers' conclusion?

A) Group 3 consisted of students who used MySpace at high levels before the study.
B) MySpace is a fundamental source of learning and knowledge.
C) Group 3 was subjected to intense exercise the morning before they submitted their initial, pre-study ranking.
D) The participants of the trial spent more time using the two media sources they were still permitted to use.

Question 11

RESULTS OF A BOW AND ARROW CONTEST	
Number of shots	Number of people
1	5
2	6
3	7
4	8
5	4

In an archery contest, each person shot a bow and arrow at a target until the person missed the target. The table shows the results for 30 people who entered the contest. For example, 8 people hit the target on their first 3 tries and missed on their 4th shot. Based on information in the table, which of the following must be true?

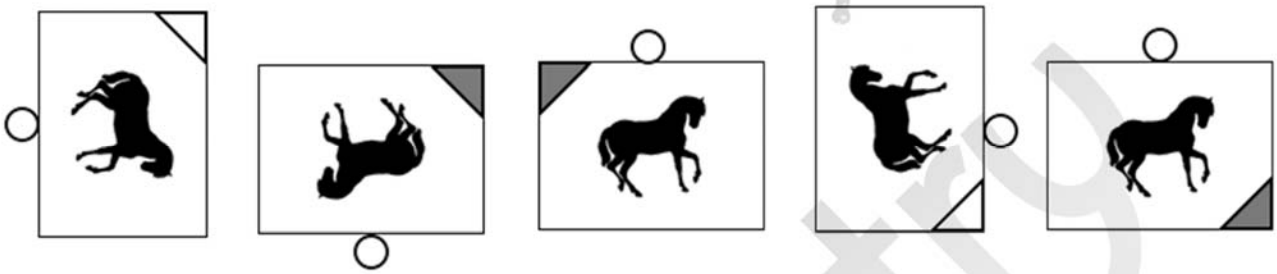
I. More than half the people hit the target on their first shot.
II. For all of the shots attempted, more hit the target than missed it.
III. No one hit the target 5 times.

A) III only
B) I and III only
C) II and III only
D) I, II, and III

Question 12

The five figures can be rearranged to form a logical sequence.

Select the alternative that would most logically and simply be in the **middle** of the sequence.

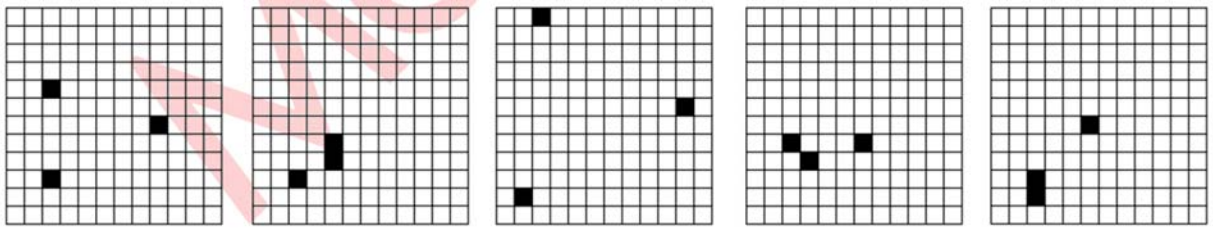


A **B** **C** **D** **E**

Question 13

The five figures can be rearranged to form a logical sequence.

Select the alternative that would most logically and simply be in the **middle** of the sequence.



A **B** **C** **D** **E**

Questions 14 and 15

The following is a conversation between a doctor and a new mother.

'Everything is normal,' the doctor was saying. 'Just lie back and relax.' His voice was miles away in the distance and he seemed to be shouting at her. 'You have a son.'

'What?'

'You have a fine son. You understand that, don't you? A fine son. Did you hear him crying?'

'Is he all right, Doctor?'

'Of course he is all right,'

'Please let me see him.'

'You'll see him in a moment.'

'You are certain he is all right?'

'I am quite certain.'

'Is he still crying?'

'Try to rest. There is nothing to worry about.'

'Why has he stopped crying, Doctor? What happened?'

'Don't excite yourself, please. Everything is normal.'

'I want to see him. Please let me see him.'

'Dear lady,' the doctor said, patting her hand. 'You have a fine strong healthy child. Don't you believe me when I tell you that?'

'What is the woman over there doing to him?'

'Your baby is being made to look pretty for you,' the doctor said. 'We are giving him a little wash, that is all. You must spare us a moment or two for that.'

'You swear he is all right?'

'I swear it. Now lie back and relax. Close your eyes. Go on, close your eyes. That's right. That's better. Good girl...'

'I have prayed and prayed that he will live, Doctor.'

'Of course he will live. What are you talking about?'

'The others didn't.'

'What?'

'None of my other ones lived, Doctor.'

Question 14

Consider the following part of the passage:

'Is he all right, Doctor?'
'Of course he is all right,'
'Please let me see him.'
'You'll see him in a moment.'
'You are certain he is all right?'
'I am quite certain.'

The respective tones of the mother and doctor in this part of their conversation could best be described as

	Mother	*Doctor*
A)	Upset	Soothing
B)	Fearful	Blunt
C)	Hysterical	Reassuring
D)	Anxious	confident

Question 15

Consider the following part of the passage:

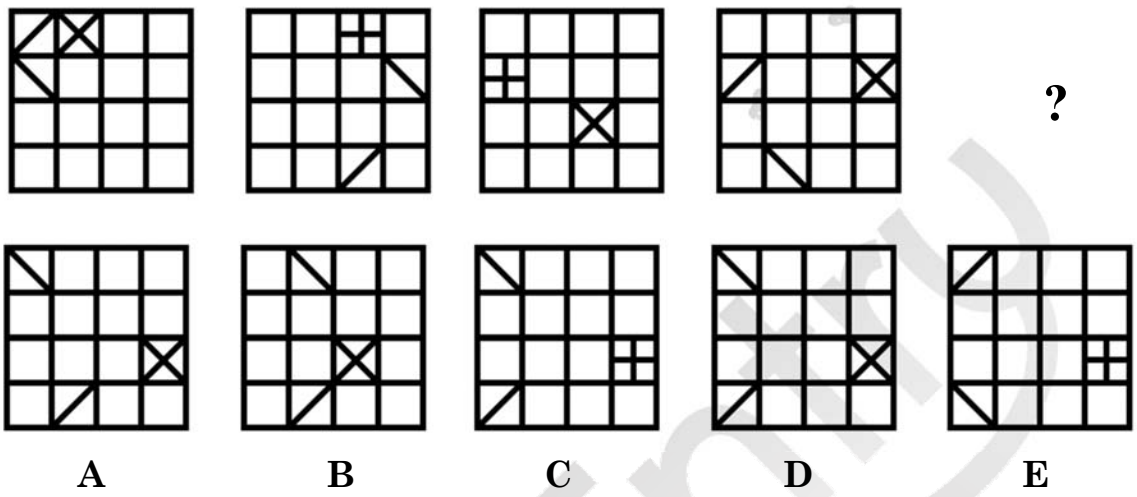
'Dear lady,' the doctor said, patting her hand. 'You have a fine strong healthy child. Don't you believe me when I tell you that?'

Which of the following emotional responses would the doctor expect from the mother after this point in the conversation?

A) Incredulity
B) Acceptance
C) Agreement
D) Disbelief

Question 16

Select the alternative that most logically and simply continues the series.



Questions 17 – 19

The following is an interaction between Peter and his local GP. Peter has been feeling unwell for the past few months.

1. Dr. Stevens: In again, Peter? Let me guess; stomach aches, headaches, nausea. We've run all the tests we can and they haven't shown anything. If we can't pinpoint the cause, there may not be a cause at all.

2. Peter: Hang on! I know you must have patients who complain about everything, but I'm not one of them! You have no idea what it's like. I have been feeling awful lately, I can't even go to work most days.

3. Dr. Stevens: But Peter, you hate your work…could it be that you're anxious to go, and that gives you all these symptoms?

4. Peter: Well, I suppose but…

5. Dr. Stevens: I'll tell you what. I'll book you in for an appointment with Dr. Marks. He's an excellent psychiatrist; I'm sure he'll find your problem.

6. Peter: I'm not sure he'll be able to help.

7. Dr. Stevens: It's worth a try. Nice to see you again Peter!

Question 17

In the comment, "Hang on! I know you must have patients who complain about everything, but I'm not one of them!" which of the following best describes Peter's tone of voice?

A) Apologetic
B) Surprised
C) Indignant
D) Embarrassed

Question 18

Dr. Stevens refers Peter to a psychiatrist in comment 5 because

A) He is confident that anxiety is the source of Peter's symptoms.
B) He feels that Dr. Marks could deal with Peter's problem better than he can.
C) He is attempting to investigate every possible cause of Peter's symptoms.
D) He wishes to defer Peter to another practitioner.

Question 19

Which of the following best describes how Peter would feel after his appointment with Dr. Stevens?

A) Grudgingly happy that his symptoms are being further investigated.
B) Offended by how he was treated by Dr. Stevens.
C) Doubtful of Dr. Marks' ability to diagnose any of his anxiety.
D) All of the above.

Questions 20 – 22

The following three questions refer to a new code established by the military.

A new code has been established in the military to assist in secret communication. The code's rules are:

- If the letter is a consonant, the letter must be changed to the letter that comes 9 letters after it (e.g. B is changed to K)
- If the letter is a vowel, the letter must be changed to the letter that comes 9 letters before it (e.g. A is changed to R)
- Once Z is reached, one must continue to the start of the alphabet; and vice versa when going backwards from A.

Note: The original 'word' does not have to be a word of the English language.

Example: An original word **HIJ** would be converted to **QZS**.

A captain receives a code from an ally: **VFC**

Question 20

Which of the following is a possible original word?

A) EZT
B) EOC
C) MOT
D) EVT

Question 21

Another captain receives a code: **YZAR**

What is the number of possibilities that the original word could have been?

A) 1
B) 2
C) 3
D) 4

Question 22

A new recruit is being taught this code by his captain. As practice, the captain gives the recruit four practice words to turn into code words. When the captain checks over the recruit's final code words, he notices that exactly one of the codes is incorrect.

Below are the four code words the recruit produced. Which one must be the incorrect code?

A) UZRV
B) BALL
C) QNAB
D) VLHK

Questions 23 – 26

The following extract is from a novel. Tom has recently moved in with his aunt, Georgie.

Tom's at her bedroom door the next morning, a look of worry on his face. Georgie winces. She's supposed to be the adult around here and instead, this poor kid's looking after her.

'I'm okay, Tom, I promise,' she says, shuffling out of bed.

But he's shaking his head. 'Georgie, I'm sorry.'

She grabs her dressing gown, which doesn't even reach her sides these days.

'I got so stressed yesterday and freaked out and…' he's saying.

She stops and places her hands on his shoulders. 'Calm down. It's fine. I'm fine. I'm going to have a shower now and then eat breakfast. And then I'll do the grocery shopping and tonight I'll cook properly. I promise.'

It takes a lot of energy to speak, but she doesn't want him to see that.

'I rang Nanni Grace and Bill yesterday because I was worried about you,' he says.

She nods. She wants to get that look off Tom's face. 'I'll ring them today and tell them I'm okay, Tommy, I promise.'

He's pointing outside and then down. Tom was always a pointer. Pointed at his food as a substitute for words.

She hears barking.

'They're downstairs, Georgie. And they brought the dogs. And big suitcases.'

Oh my God.

She's out of the bedroom door in a moment. 'Mummy!' she calls out from the top of the stairs. The cavaliers respond to the sound of her voice and she clutches the banister as they come bounding up the stairs.

And there she is. Amazing Grace. A grief-ravaged face, but the beauty and style is still there. No unruly hair for Grace Mackee. She's all sleek bob cut and lipstick.

'Bill. Get the dogs off Georgie!'

Question 23

Georgie's state of mind at the beginning of the extract could best be described as

A) Frenzied
B) Resigned
C) Concerned
D) Apologetic

Question 24

What is the purpose of Tom's statement, 'I got so stressed yesterday and freaked out and…'?

A) He wishes to reassure Georgie that he has the situation under control.
B) He is explaining why his grandparents are downstairs.
C) He views Georgie as a substitute mother-figure and is releasing his anxieties.
D) He is apologizing for a previous misdemeanour.

Question 25

Georgie's manner toward Grace seems to be

A) Cool
B) Cowed
C) Distant
D) Strained

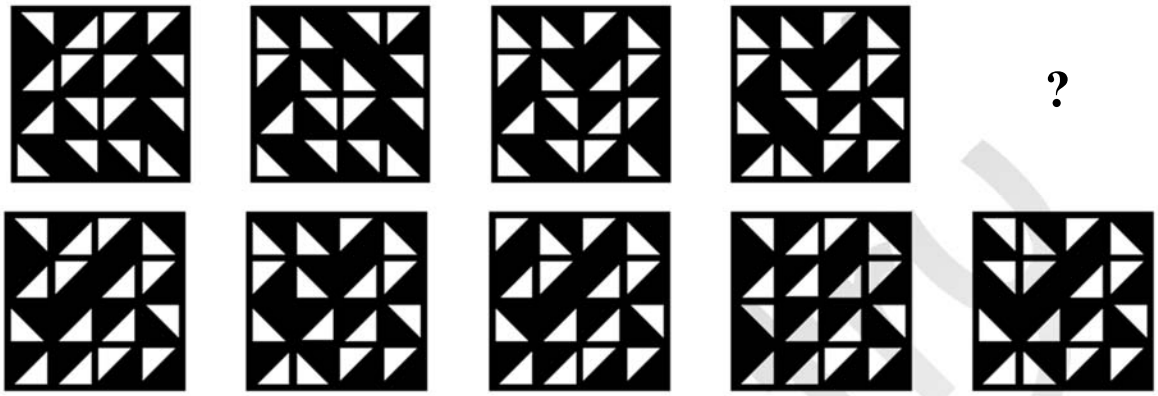
Question 26

The author describes Grace with the line 'She's all sleek bob cut and lipstick,' to communicate that Grace

A) Has excellent fashion sense.
B) Is always well-groomed regardless of the situation.
C) Values composure.
D) Believes appearances are more important than reality.

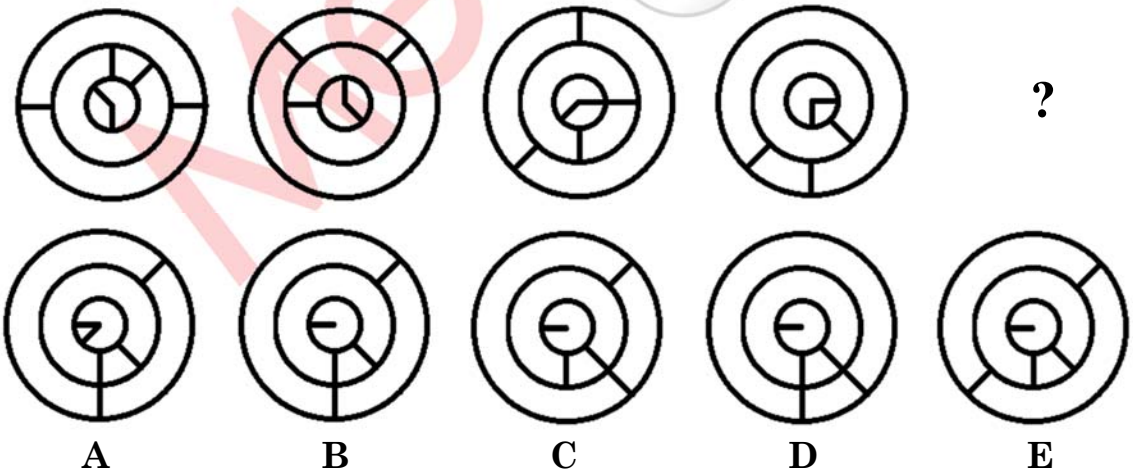
Question 27

Select the alternative that most logically and simply continues the series.



Question 28

Select the alternative that most logically and simply continues the series.



Questions 29 – 31

The following is an interaction between a young man and his gastroenterologist.

1 Doctor: So has it just been the diarrhoea? Any other symptoms you can think of?

2 Patient: Nope

3 Doctor: Now your stomach felt perfectly fine on examination. (Places hand on patient's hand). I don't want you to be concerned that it is something serious like cancer, because your symptoms and the examination show it isn't anything serious. But I think since it's been going on for so long I'll book you in for a simple colonoscopy, just to rule out an inflammatory disorder.

4 Patient: Ok thanks doctor. Is there any medication I can take?

5 Doctor: For now you can take some anti-diarrhoea medication. Talk to the receptionist about appointment times for the colonoscopy. But before you leave, do you have any questions or concerns? I have plenty of time to discuss them.

Question 29

Which best describes the tone of the doctor in statement 3?

A) Tactful
B) Explicit
C) Comprehensive
D) Trepidatious

Question 30

The patient's reaction to statement 3 is best described as

A) Appreciative
B) Assuaged
C) Calm
D) Stolid

Question 31

What is the patient next likely to do?

A) Ask what a colonoscopy procedure is.
B) Ask for the prescription and leave.
C) Ask when the procedure will take place.
D) Talk to the doctor about how the symptoms are affecting his life.

Question 32

There has been an outbreak of a disease in Sydney, and Angela has tested positive in random testing. However, as this strain is new and the doctors are unfamiliar with it, the tests being used are not entirely accurate. Five percent of healthy individuals tested return a false positive result. Overall, in the greater population, only one in 1000 has the disease.

What is the probability that Angela has the disease?

A) 95%
B) 2%
C) 80%
D) 1%

Questions 33 and 34 refer to the following information

The following table lists common medications used to treat chronic urticaria and angioedema, as well as their possible side effects.

TABLE 1. MEDICATIONS USED TO TREAT CHRONIC URTICARIA AND ANGIOEDEMA.

DRUG	INITIAL DOSE	MAXIMAL DOSE	SIDE EFFECTS
H_1-receptor antagonists			
Nonsedating			
Fexofenadine (Allegra)	180 mg/day	240 mg/day	Mild sedation at maximal dose
Loratadine (Claritin)	10 mg/day	20 mg/day	Mild sedation at maximal dose
Cetirizine (Zyrtec)	10 mg/day	20 mg/day	Mild sedation
Sedating			
Hydroxyzine (Atarax)	10 mg 4 times a day	50 mg 4 times a day	Sedation, dry mouth, dizziness
Diphenhydramine (Benadryl)	25 mg twice a day	50 mg 4 times a day	Sedation, dry mouth, dizziness
Cyproheptadine (Periactin)	4 mg 4 times a day	8 mg 4 times a day	Sedation, dry mouth, dizziness, increased appetite
H_2-receptor antagonists			
Cimetidine (Tagamet)	400 mg twice a day	800 mg twice a day	Headache, gynecomastia
Ranitidine (Zantac)	150 mg twice a day	300 mg twice a day	Headache, rare cases of transaminasemia
Famotidine (Pepcid)	20 mg twice a day	40 mg twice a day	Headache, diarrhea
H_1- and H_2-receptor antagonist			
Doxepin (Sinequan)	10 mg 4 times a day	50 mg 4 times a day	Sedation, dry mouth, dizziness, blurred vision, urinary retention
Leukotriene antagonists			
Zafirlukast (Accolate)	20 mg twice a day		Headache, rare cases of hepatotoxicity, Churg–Strauss syndrome
Montelukast (Singulair)	10 mg/day		Headache, Churg–Strauss syndrome in rare cases
Corticosteroids*			
Prednisone	20 mg every other day, with gradual tapering		Weight gain, striae, premature cataracts, easy bruising, osteoporosis, acne, aseptic necrosis, elevated blood pressure, hyperglycemia
Methylprednisolone (Medrol)	16 mg every other day, with gradual tapering		

Question 33

With regard to the table above, which of the following statements cannot be concluded?

A) The maximal amount of Tagamet that should be taken in an entire day is 1600mg.
B) Accolate's initial daily dose is greater than that of Zyrtec's maximal daily dose.
C) Side effects will result when treating urticaria and angioedema with the listed drugs.
D) Doxepin's overall daily intake can increase by 160mg by the time an individual reaches maximal dose.

Question 34 refers to the following additional information

Jenny is being treated for chronic urticaria, but the label on her prescription medicine bottle has been slightly faded. The only information that can be read is that the medicine must be consumed twice daily.

Question 34

All of the following pieces of information would allow us to identify the exact drug she was prescribed, except:

A) The drug is a leukotriene antagonist.
B) The drug is not a H_2 receptor antagonist.
C) The drug's dosage in milligrams is a multiple of 15.
D) The drug should not be used for those who are already at an increased risk of transaminasemia.

Question 35

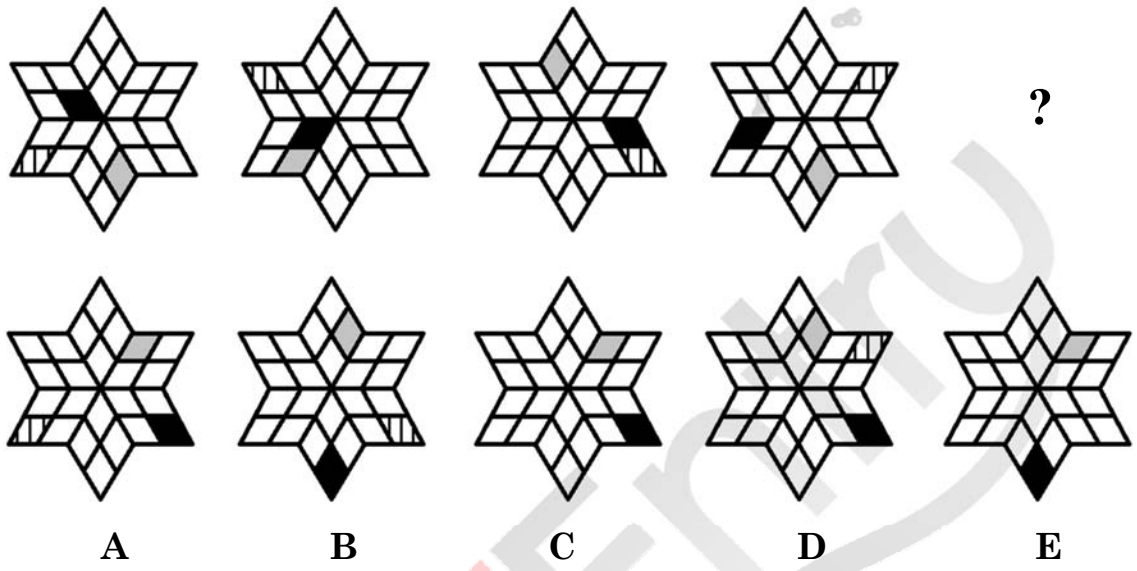
The results of a study on 1104 adolescents were used to investigate the possibility of a relationship between weight and prevalence of cigarette smoking amongst teenagers aged between 14 and 18 years. Conducted in 2004, the study found that those who were overweight or obese were 30% more likely to smoke regularly than those who had a healthy or low body weight, while male adolescents as a whole were found to be 25% more likely to smoke regularly than their female counterparts. The findings of this study were then compared to a 2010 study on a group of 1200 subjects of all ages. The 2010 study found that those who were overweight or obese were 40% more likely to smoke regularly than those of a healthy or low bodyweight. However, the study found no significant difference between the incidence of smoking amongst males versus that amongst females.

According to the two studies, which of the following can be reasonably concluded about the incidence of cigarette smoking?

A) Poor eating habits and unhealthy body weight cause people to smoke cigarettes.
B) Of the adolescents in the first study, there were more male smokers than female smokers.
C) The gap between the prevalence of male smokers and the prevalence of female smokers has decreased in recent years.
D) There appears to be a correlation between a person's weight and the likelihood of them smoking regularly.

Question 36

Select the alternative that most logically and simply continues the series.



Questions 37 and 38

Paul uses recreational drugs. In the following passage he talks about his impression of how others who know about his activities perceive him.

It's like, you know, I don't want to be known as an addict. It's hard having everybody you know think you're some hopeless degenerate, when in all honesty you're only an occasional user. Life gets stressful, and where I live, drugs are widespread – you grow up with your parents telling you not to, even though you know Dad is using, and your peers putting this unbelievable pressure on you… I mean, I like to think I'm a smart guy. I really am in control – I shoot up only once or twice a week and trust me with heroin that means I'm in control. I tell them all that. I'm honest.

But the way they look at me – as if most of them aren't using too, I'm just the one who was caught! – it… Ugh. It sounds like typical junkie

speak. “I’m in control!” and they think you’re off the rails, “I’m addicted” and they are so ready to believe it and judge you. The stress I’m under… and this isn’t helping. I wonder, what right they have to judge me? My “friends”?

Question 37

Which of the following best describes how Paul would react if he was accused of having a drug addiction?

A) Denying the accusation outright.
B) With outrage, attempting to explain the specifics of his use, for example, how often he uses.
C) With anger, admitting his use but denying the accusation of habit.
D) With restrained anger, denying the habit and attempting to explain the specifics of his use.

Question 38

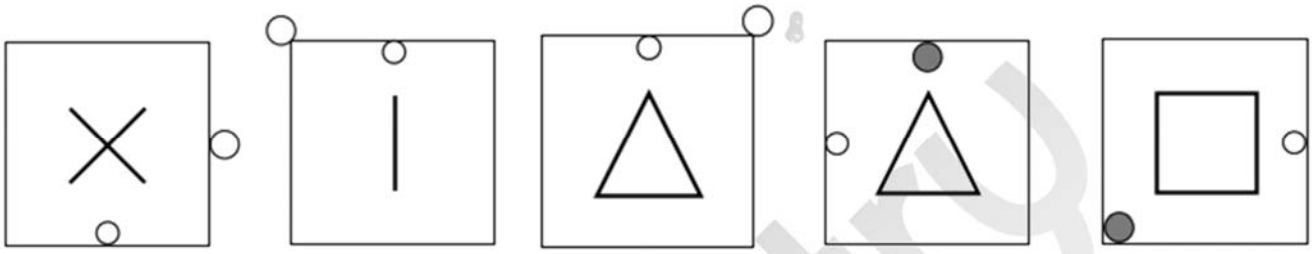
“The stress I’m under… My ‘friends’?” In light of the text as a whole and this sentence in particular, Paul is most likely to

A) Confront his drug use to remove the social stigma attached to it.
B) Confront his ‘friends’ about their treatment of him and their hypocrisy.
C) Seek out help from his friends, swallow his pride and combat his drug use.
D) Increase the level of his drug use.

Question 39

The five figures can be rearranged to form a logical sequence.

Select the alternative that would most logically and simply be in the **middle** of the sequence.

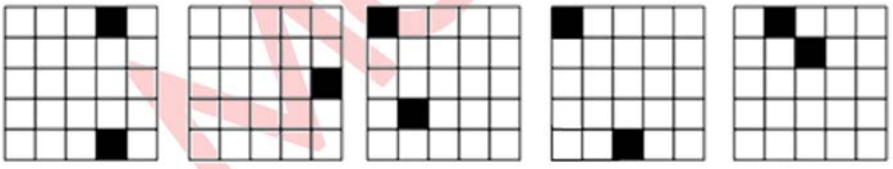


A **B** **C** **D** **E**

Question 40

The five figures can be rearranged to form a logical sequence.

Select the alternative that would most logically and simply be in the **middle** of the sequence



A **B** **C** **D** **E**

Questions 41 to 43 refer to the following information.

Scientists trained a group of rats to run through a maze by rewarding them with food when they completed the maze. Once the rats were capable of running the maze, they were separated into 3 groups. The first group was injected with scopolamine. Scopolamine blocks the muscarinic acetylcholine receptor sites. The second group was injected with physostigmine. Physostigmine inhibits the production of acetylcholinesterase. Acetylcholinesterase is an enzyme that helps to break down acetylcholine into acetate and choline. The third group was not injected with anything. All of the rats were then put in the maze again one by one. The first group took longer to complete the maze than the third group. The second group made the fewest errors. The third group made fewer errors than the first group, but took longer to complete the maze than the second group.

Question 41

Which of the following correctly lists the groups from the lowest acetylcholine activity to the highest acetylcholine activity?

A) 1, 3, 2
B) 2, 3, 1
C) 1, 2, 3
D) 2, 1, 3

Question 42

A control group is the group which receives no treatment, or standard treatment. Which group, if any, was the control group in this experiment?

A) Group 1.
B) Group 2.
C) Group 3.
D) There was no control group.

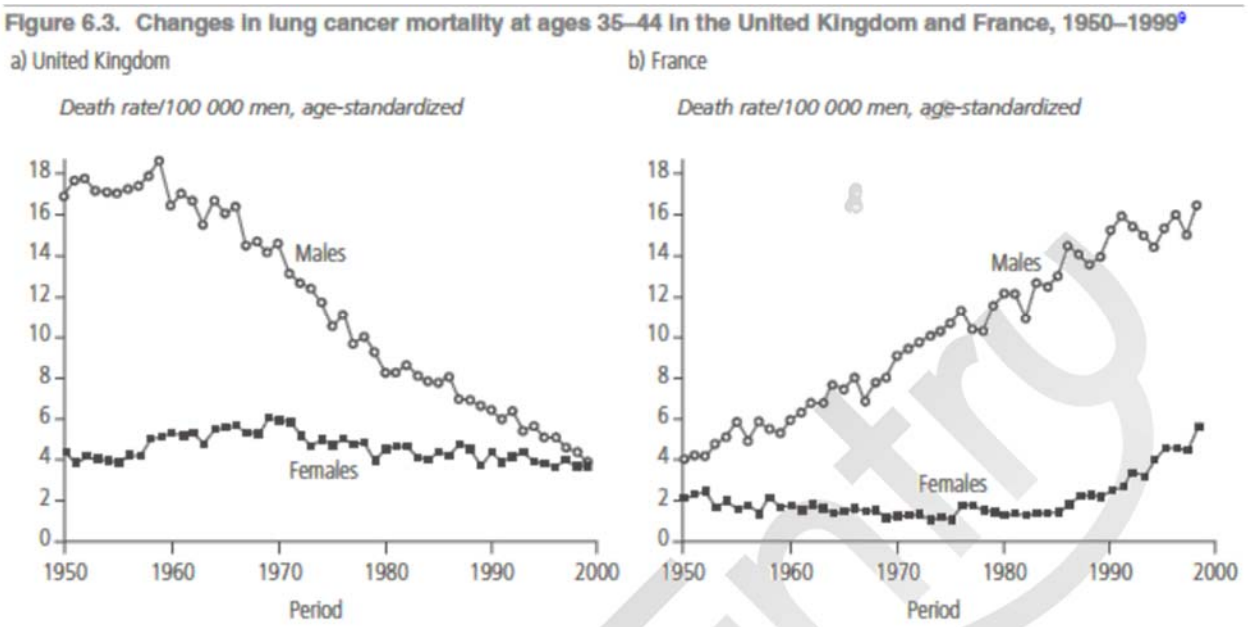
Question 43

Which of the following can be concluded from the passage?

A) Rats with more acetylcholine activity tended to run faster.
B) Physostigmine triggers hunger receptors and makes rats more desperate to get food.
C) If muscarinic acetylcholine receptor sites are not blocked, the rats tended to take longer to finish the course.
D) Rats with more acetylcholinesterase tended to make more errors.

Question 44

The following graph is from a textbook on epidemiology.



Assume that approximately half of the UK's population and France's population are male. Which of the following can be concluded from the two graphs and this assumption?

A) In 1975, per 100,000, the combined mortality of males and females at ages 35-44 in both France and the UK was equal.

B) Per 100,000 people, more people at ages of 35-44 died in UK of lung cancer in 1965 than France.

C) Between 1950-1999, there was always a higher proportion of people at ages 35-44 dying of lung cancer in the UK than France.

D) The mortality rate for males in the UK declined in the same proportion that the rate increased for males in France.

Question 45

The pancreas, in addition to its digestive functions, secretes two important hormones, insulin and glucagon, that are crucial for normal regulation of glucose, lipid and protein metabolism.

Insulin was first isolated from the pancreas in 1922 by Banting and Best, and almost overnight the outlook for the severely diabetic patient changed from one of rapid decline and death to that of a nearly normal person. Historically, insulin has been associated with 'blood sugar' and true enough, insulin has profound effects on carbohydrate metabolism. Yet it is abnormalities of fat metabolism that causes death in diabetic patients. Also, in patients with prolonged diabetes, diminished ability to synthesize proteins leads to wasting of the tissues as well as many cellular functional disorders. Therefore, it is clear that insulin affects fat and protein metabolism almost as much as it does carbohydrate metabolism.

Insulin secretion is associated with energy abundance, as when there is great abundance of energy-giving foods in the diet, especially excess amounts of carbohydrates, insulin is secreted in great quantity. In turn, the insulin plays an important role in storing the excess energy. In the case of excess carbohydrates it causes them to be stored as glycogen mainly in the liver and muscles. All the excess carbohydrates that cannot be stored as glycogen are converted under the stimulus of insulin into fats and stored in the adipose tissue.

Which of the following statements regarding insulin is correct?

A) The body releases insulin when there is excess energy in the body.
B) Excess carbohydrates are stored by the body as insulin for future use.
C) The body converts excess glycogen into fats and stores it in the adipose tissue.
D) Although insulin has effects on fat and protein metabolism it has much more profound effects on carbohydrate metabolism.

Question 46

Astronomers have recently discovered four new planets, with some curious properties. The planets have been named planet A, B, C and D before their proper naming ceremony. The four planets are four different colours: red, blue, green and yellow. Each of them is a different diameter, being one of 5,000km, 10,000km, 15,000km, or 20,000km in diameter. The information known so far is as follows:

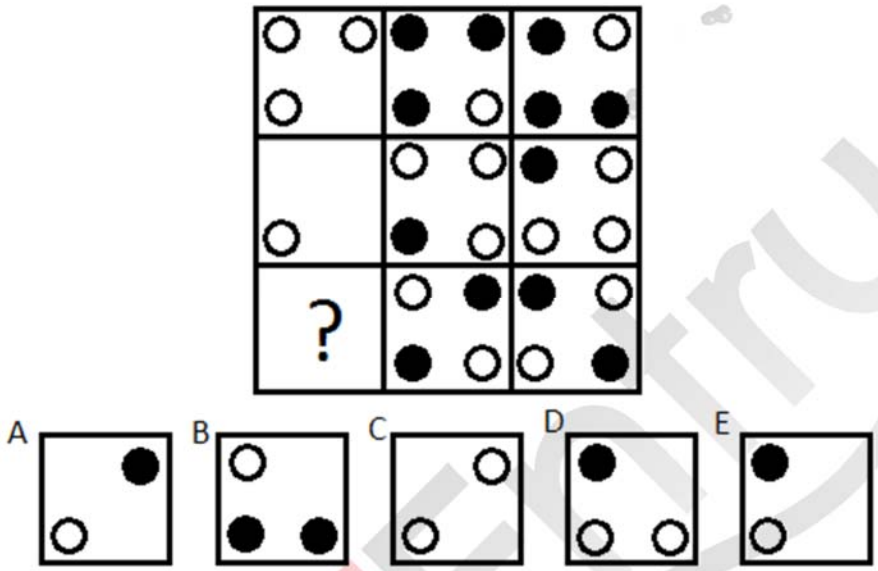
1. Planet A is blue, but is not the smallest planet.
2. The green Planet is the second smallest and is not Planet C.
3. Planet C is the second largest planet.
4. Planet B is exactly 5,000km larger in diameter than planet D.
5. The yellow planet is one alphabet letter after the second smallest planet.

Which of the following correctly describes the size of the planets in ascending order?

A) Blue, Green, Yellow, Red
B) D, A, C, B
C) D, B, C, A
D) Red, Green, Blue, Yellow

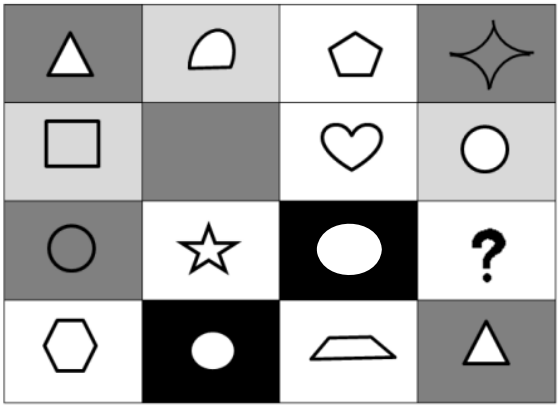
Question 47

Select the alternative that most logically and simply completes the picture.



Question 48

Select the alternative that most logically and simply completes the picture.



A B C D E

Questions 49 and 50 refer to the following information.

A brand new deck is in the following order, from bottom to top:

Ace, 2, 3, 4, 5, 6, 7, 8, 9, 10, Jack, Queen, King of Spades, Ace, 2, 3, 4, 5, 6, 7, 8, 9, 10, Jack, Queen, King of Diamonds, King, Queen, Jack, 10, 9, 8, 7, 6, 5, 4, 3, 2, Ace of Clubs, King, Queen, Jack, 10, 9, 8, 7, 6, 5, 4, 3, 2, Ace of Hearts.

The Mongean shuffle is performed as follows:

Start with the unshuffled deck in the left hand and transfer the top card to the right. Then repeatedly take the top card from the left hand and transfer it to the right, putting the second card at the top of the new deck, the third at the bottom, the fourth at the top, the fifth at the bottom, etc.

For example, if the top 5 cards of the unshuffled deck are the 2, 3, 4, 5 and 6 of a suit, the order of the shuffled deck so far would be 5, 3, 2, 4, 6.

Question 49

Consider that a new deck in the afore-mentioned order was shuffled once using this method. In which position would the 7 of Clubs fall?

A) 20^{th}
B) 17^{th}
C) 35^{th}
D) 34^{th}

Question 50

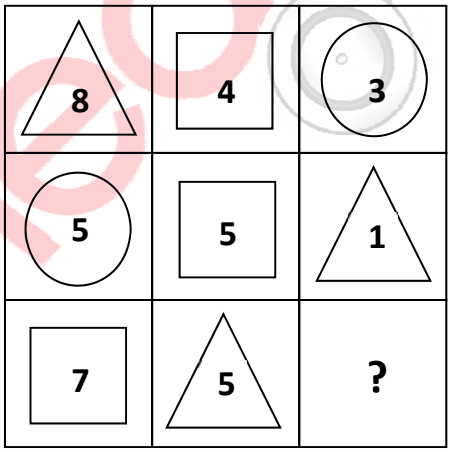
The card game Bridge is played using a standard 52 card deck, with 4 players. The cards are dealt, one to each player, until each has 13 cards. Once a player has picked up their cards, they must count their 'high-card points': 4 for an Ace, 3 for a King, 2 for a Queen and 1 for a Jack.

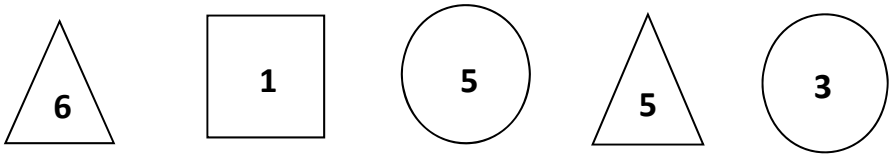
Considering that a new deck was shuffled once using the Mongean shuffle, how many high card points would the player in the first position (dealt to first) have?

A) 7
B) 12
C) 10
D) 15

Question 51

Select the alternative that most logically and simply completes the picture.

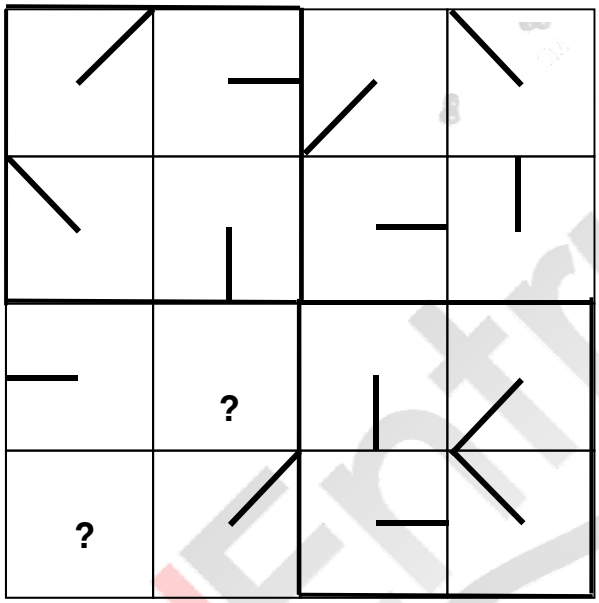


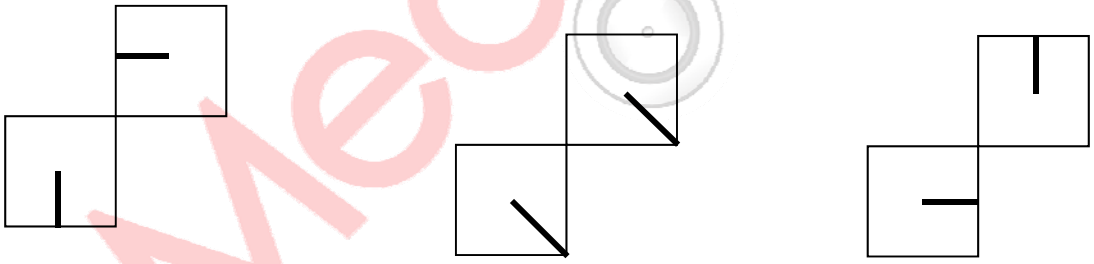


A **B** **C** **D** **E**

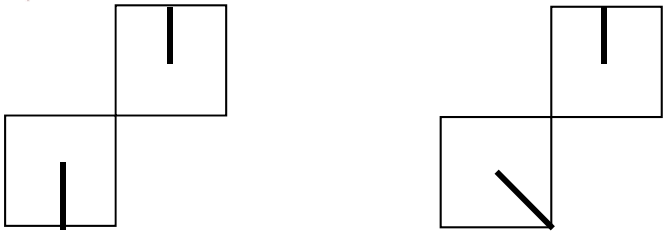
Question 52

Select the alternative that most logically and simply completes the picture.





A **B** **C**



D **E**

Questions 53 and 54 relate to the following information.

All animals seem to have ways of exchanging information – monkeys vocalise complex messages; ants create scent trails to food; and fireflies light up their bellies to attract mates. Yet, despite the fact that nematodes, or roundworms, are among the most abundant animals on the planet, little is known about the way they network. Now, research has shown that a wide range of nematodes communicate using a recently discovered class of chemical cues. Nematodes are wide-ranging creatures; they have been found in hot springs, arctic ice, and deep-sea sediments. Many types of nematodes are harmless, or even beneficial, but others cause damage to plants and harm to humans and animals. Decoding the language of these worms could allow us to develop strategies to prevent the spread of unwanted nematode species, saving time and money for the agricultural and health-care industries. "We can now say that many – maybe all – nematodes are communicating by secreting small molecules to build chemical structures called ascarosides," says Paul Sternberg, whose past research in *C. elegans* (a species of nematode) found that those worms secrete ascarosides both as a sexual attractant and as a way to control the social behaviour of aggregation.

Question 53

Which of the following **is least likely** to be true according to the above article?

A) Ringworm infections in humans could be cured by using ascarosides.
B) Ascarosides could be used to create new pesticides against nematodes.
C) *C. elegans* may use more than one ascaroside for communication.
D) Nematodes found in hot springs may be able to communicate with nematodes found in deep-sea sediments.

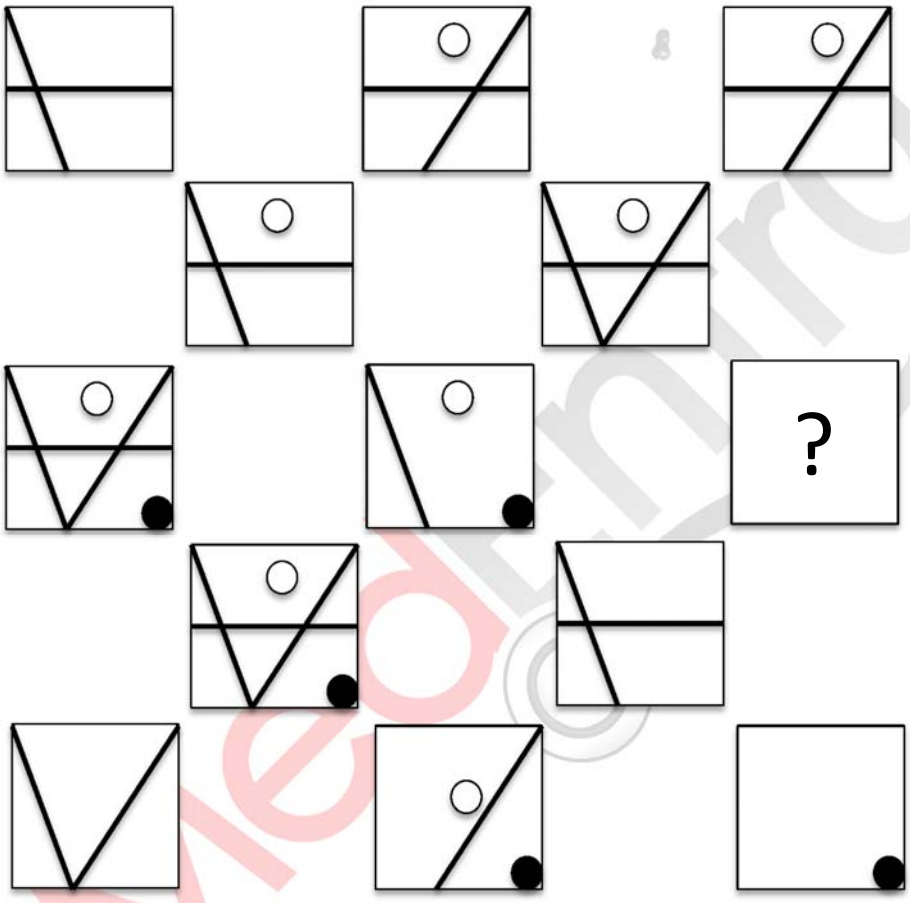
Question 54

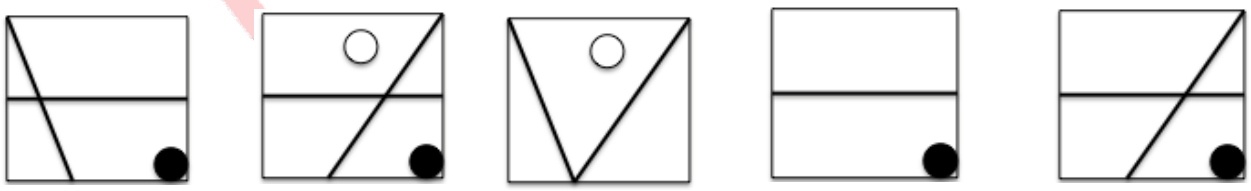
Which of the following, if true, would **most severely** challenge the claims of the passage?

A) *C. elegans* worms are able to aggregate when no ascarosides are present.
B) It is impossible for humans to make ascarosides in large enough amounts to be used agriculturally or in health-care.
C) Arctic ice nematodes do not respond to ascarosides.
D) Ascarosides are always secreted by nematodes in conjunction with several other molecules.

Question 55

This question has a picture with one segment missing. From the five alternatives below each picture, select the segment that would logically complete the picture (**A**, **B**, **C**, **D** or **E**).





A **B** **C** **D** **E**

Question 56

Antioxidants are important disease fighting compounds. Scientists believe they help prevent and repair the stress that comes from oxidation, a natural process that occurs during normal cell function. A small percentage of cells become damaged during oxidation and produce free radicals, which can start a chain reaction which harms more cells and possibly causes disease. Unchecked free radical activity has been linked to cancer, heart disease, Alzheimer's disease, and Parkinson's disease.

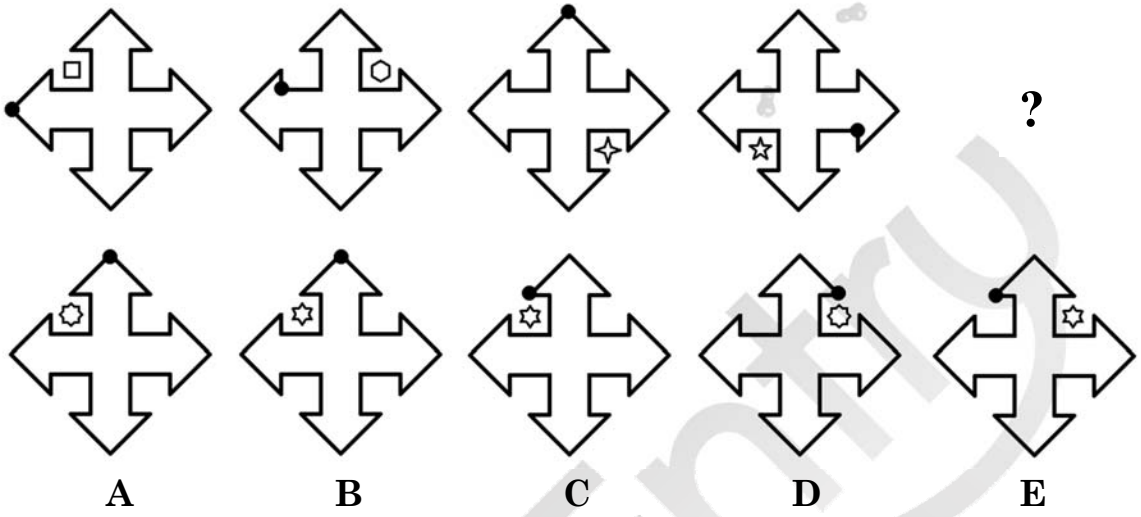
Blueberries were found to be the fruit with the most antioxidants. Just one cup has 13,427 antioxidants in total, including vitamins A and C, and flavonoids (a type of antioxidant) like querticin and anthocyanidin. Red wine is also high in antioxidants. According to the American Heart Association, drinking a moderate amount of wine - one or two glasses daily for men, no more than one for women - lowers heart disease and may be safe. However, it cautions that this recommendation should be tailored for an individual's risks for heart disease and the potential benefits (as well as risks) of drinking.

Which of the following can be concluded from the passage?

A) Eating blueberries is the best way to prevent damage due to oxidation.
B) Adults should drink 1-2 glasses of red wine every day to prevent disease.
C) Antioxidant rich foods can be helpful in preventing diseases.
D) The free radicals from oxidation cause diseases such as cancer, heart disease, Alzheimer's disease, and Parkinson's disease.

Question 57

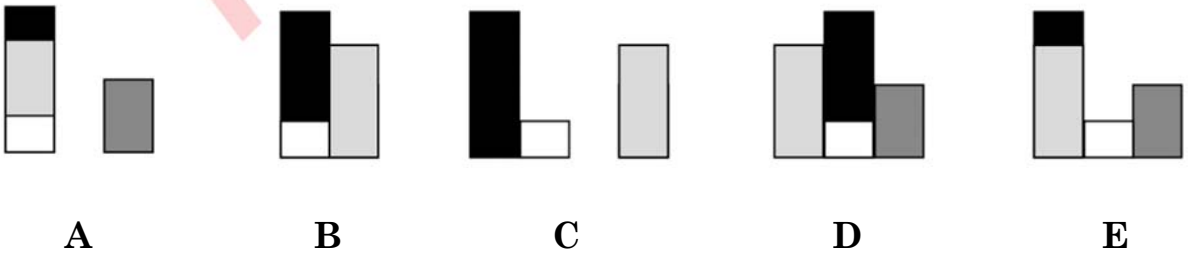
Select the alternative that most logically and simply continues the series.



Question 58

The five figures can be rearranged to form a logical sequence.

Select the alternative that would most logically and simply be in the **middle** of the sequence.



Question 59

The following passage refers to the discovery of the rare Cyclops shark.

An extremely rare Cyclops shark, recently confirmed in Mexico, has been deemed one of the ten oddest life-forms found in 2011. The 56 centimetre long foetus has a single functioning eye at the front of its head. The eye is a hallmark of a congenital condition called cyclopia, which occurs in several animal species, including humans.

Jim Gelsleichter, a shark biologist at the University of North Florida in Jacksonville, states: "The fact that none has been caught outside the womb suggests Cyclops sharks don't survive long in the wild."

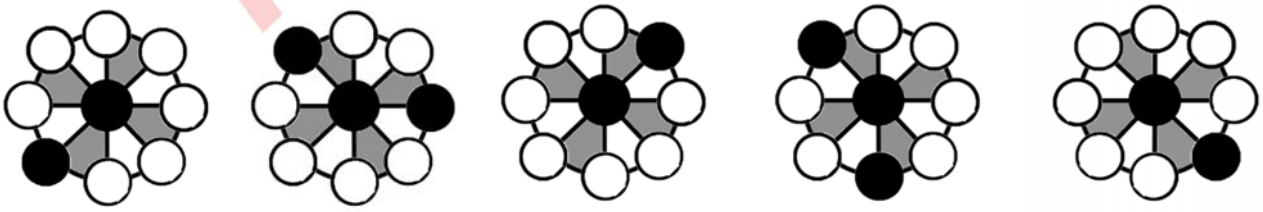
Which of the following, if true, most seriously challenges the conclusion of Jim Gelsleichter?

A) Sharks that have one eye are more vulnerable to their hunting predators.
B) Animals with one eye are feared by their predators.
C) The womb provides essential nutrients for the growth of the Cyclops shark.
D) Cyclopia makes evading predators and humans a simple task.

Question 60

The five figures can be rearranged to form a logical sequence.

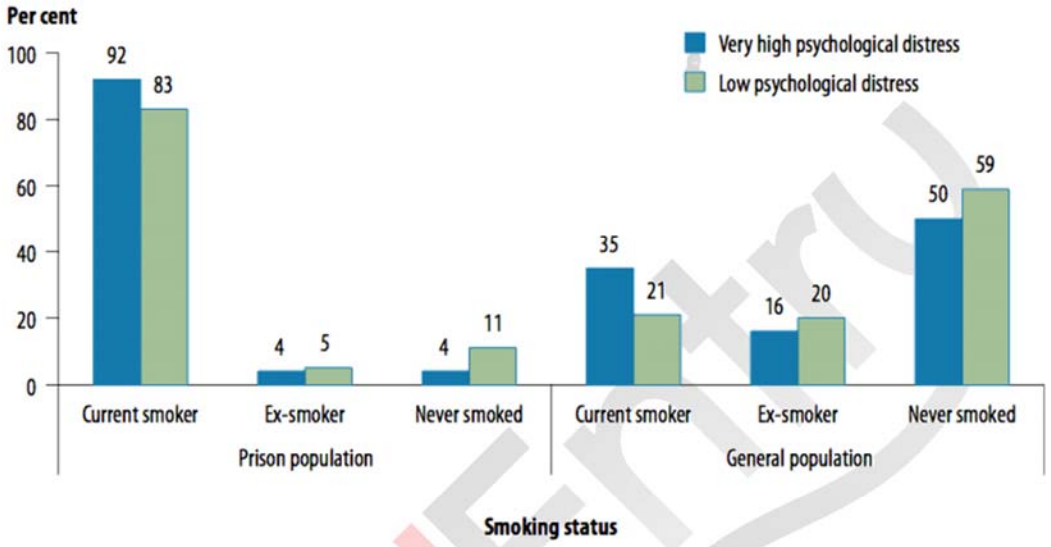
Select the alternative that would most logically and simply be in the **middle** of the sequence.



A **B** **C** **D** **E**

Question 61

The following graph presents the proportion of low and very high psychologically distressed prison entrants aged 18-44 who are current smokers, ex-smokers or lifetime non-smokers, compared to the general population.



Note: Excludes New South Wales and Victoria from both the prison and the general population as they did not participate in the 2010 National Prisoner Health Census.

Source: Table A5, AIHW analysis of National Drug Strategy Household Survey 2010.

Figure 8: Proportion of prison entrants and general population aged 18–44 by smoking status and level of psychological distress, 2010

Which of the following can be concluded from the graph above, with respect to people aged 18-44?

A) Smoking is correlated with psychological distress in both the prison and general population.

B) A person with low psychological distress from the general population is more likely to be an ex-smoker than a person with low psychological distress from the prison population.

C) Regardless of whether a person is in a prison population or general population, and regardless of their level of psychological distress, he/she is more likely to be a current smoker.

D) Regardless of whether a person is in a prison population or general population, if they have low psychological distress he/she is likely to have never smoked

Question 62

Select the alternative that most logically and simply completes the picture.

BIG	TAP	FOX
CAT	RAG	THE
HAT	BEE	?

BAT	DOG	FHN	SFL	COAT
A	B	C	D	E

Question 63

The following is an interaction between the Sylvia and her doctor, who is recommending that she go to hospital to treat her heart condition

Doctor: I think it's best we get you to hospital, Sylvia. This ulcer doesn't look good. Especially with the heart problems you've had, I suspect we need to get you started on some medications.

Sylvia: No I won't. I just won't.

Doctor: Why do you feel that way?

Sylvia: Those hospitals are for people ready to die. Bunch of sick vegetables. Last time I was there my father died. I can't go there I'm

telling you.

Doctor: I can assure you Sylvia that people, much like yourself, go into hospital and come out feeling much better. Isn't that what you want? To get rid of this ulcer before it takes control of your life?

Sylvia: (crying) It was awful doctor. The place scares me.

The final line by Sylvia, in response to the doctor's question, shows which of the following?

A) The anguish of her past concerns her more than her current predicament.
B) The ulcer is not causing her any serious pain.
C) She will require medical assistance at her home.
D) The trauma of her past is impeding her from getting proper help.

Question 64

The following passage is an excerpt from a novel.

Her phone rings. She snatches it up. It's Mark. He says, 'Have you been watching the news?'

'I'm watching it now.'

'Jesus Christ, Zoe. Are you okay?'

She doesn't know.

Mark says, 'Have you heard from him?'

'No.'

'Do you think he's okay?'

'I don't know,' she says testily. 'I really don't know who's okay and who's not.'

'Listen,' he says, not rising to the bait. She loves him for it. 'Whatever you need me to do, I'm here. If you want me to come over, I'll be right over. If you want me to stay away, I'll stay away. Just let me know.'

She says 'Look. Thanks. I appreciate it. I really do. But we had a row last night. A pretty bad one. And then, here he is on TV, crying. That's not like him. And… I just don't know. I don't know what I'm going to do. I've got to go.'

'Go where?'

'To work.'

After a moment he says, 'Is that a good idea?'

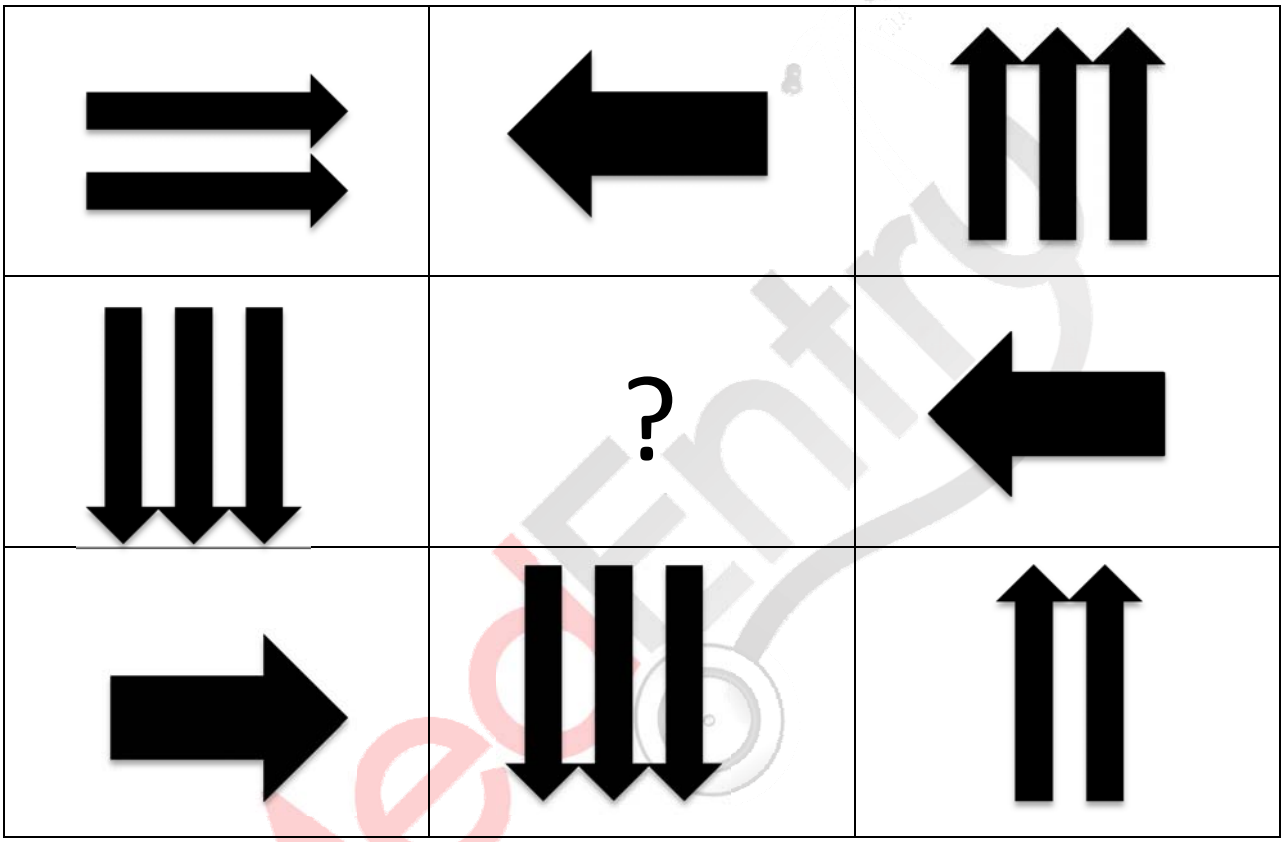
'What else am I supposed to do?' she says. 'Hang around the house all day, watching the news? If I did that every time John was up to his neck in something horrible, I wouldn't have a job to go to.'

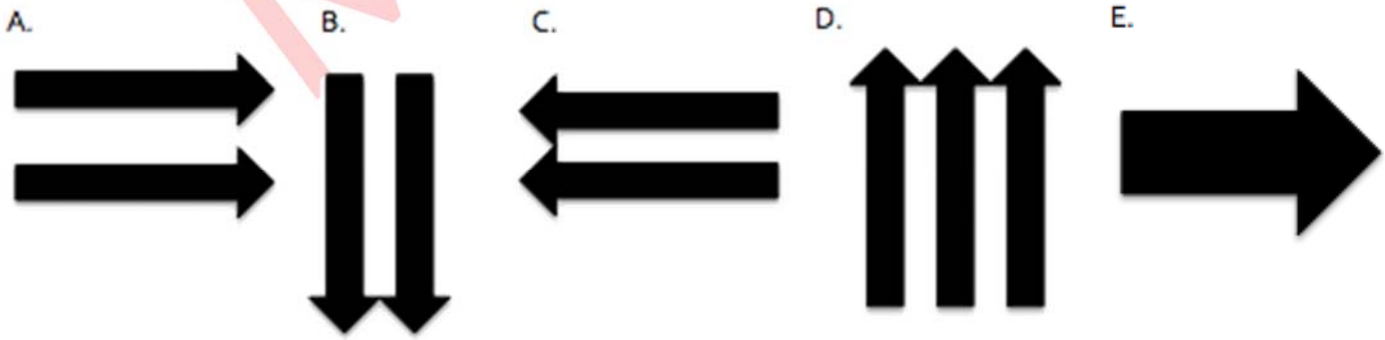
Which of the following best describes how Zoe is feeling in her final comment?

A) Nervous
B) Matter-of-fact
C) Anxious
D) Angry

Question 65

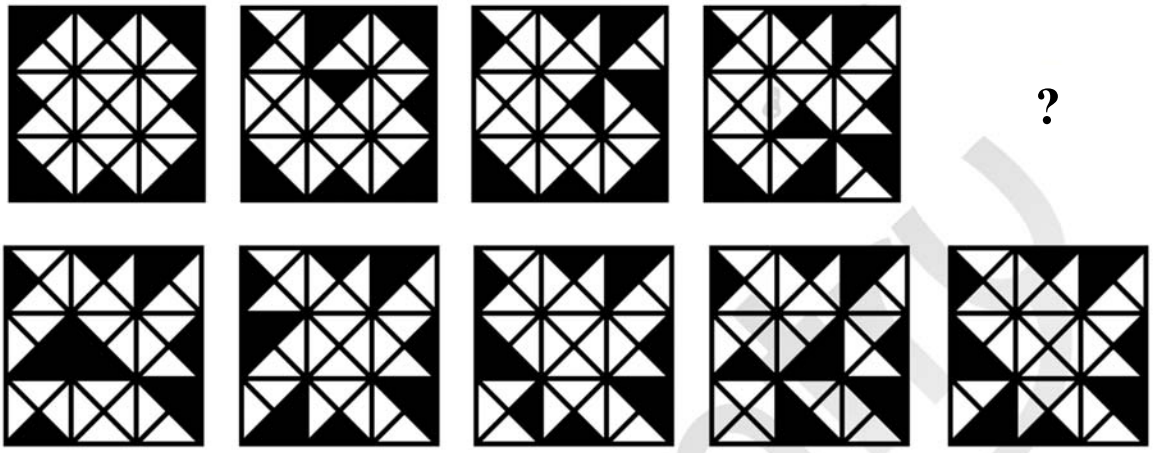
Select the alternative that most logically and simply completes the picture.





Question 66

Select the alternative that most logically and simply completes the picture.



A **B** **C** **D** **E**

Question 67

The five figures can be rearranged to form a logical sequence.

Select the alternative that would most logically and simply be in the **middle** of the sequence.

A **B** **C** **D** **E**

ANSWERS

Q1. C	Q10. C	Q19. B	Q28. B	Q37. D	Q46. C	Q55. E	Q64. C
Q2. D	Q11. D	Q20. C	Q29. A	Q38. B	Q47. C	Q56. C	Q65. A
Q3. B	Q12. B	Q21. B	Q30. D	Q39. A	Q48. A	Q57. B	Q66. E
Q4. A	Q13. D	Q22. C	Q31. B	Q40. A	Q49. B	Q58. A	Q67. A
Q5. C	Q14. D	Q23. D	Q32. B	Q41. A	Q50. B	Q59. D	
Q6. D	Q15. B	Q24. B	Q33. C	Q42. C	Q51. E	Q60. E	
Q7. C	Q16. D	Q25. D	Q34. B	Q43. D	Q52. E	Q61. B	
Q8. D	Q17. C	Q26. C	Q35. D	Q44. B	Q53. A	Q62. C	
Q9. D	Q18. D	Q27. A	Q36. C	Q45. A	Q54. D	Q63. D	

FULLY WORKED SOLUTIONS

Question 1

Since Crumpkins can either be Bumpkins or Dumpkins, Bumpkins can be Crumpkins. Therefore, since Lumpkins are sometimes Crumpkins, it is possible for Bumpkins to be Lumpkins. i.e Statement I is not true. Although some Crumpkins are Dumpkins, not all Dumpkins are necessarily Crumpkins. Therefore Statement II is not true. Lumpkins can be Crumpkins, Crumpkins can be Bumpkins and Bumpkins can be Rumpkins (since all Rumpkins are Bumpkins). Therefore a Lumpkin can be a Rumpkin. Therefore, statement III is true. Since Rumpkins are always Bumpkins, a Rumpkin can only be a Dumpkin if a Bumpkin can be a Dumpkin. Even though Crumpkins cannot be both Bumpkins and Dumpkins, it is possible for a Bumpkin to be a Dumpkin if it is not a Crumpkin. Therefore, it is possible for a Rumpkin to be a Dumpkin. Therefore, statement IV is true. Therefore, the answer is C, III and IV.

Question 2

Bernard is cynical and frustrated by her perceived hypocrisy, making D the best answer. There is no contempt in his remark; thus B and C are false. A is incorrect as Florence's comment does not offend Bernard or cause him to feel indignant.

Question 3

June yields to Bernard's demands but does so grudgingly and resentfully; she is described as being 'extremely sullen'. Thus B is correct. As she surrenders she is bitter but not irate; her anger comes later (option C). She is not disdainful (option A) particularly as it is Bernard and not her who has prevailed and holds the upper hand. June's feelings towards Bernard are much stronger than disappointment and the last sentence indicates that her simmering rage is barely contained (option D). Whilst she may feel let down, 'grudging' is a more accurate descriptor of her reaction in the moment when she surrenders the dragonfly.

Question 4

Throughout the passage, Bernard's comments reflect his domineering ('June, do just bring it over here'), patronizing ('this was not the moment to start an ethical discussion about the rights of insects') and obstinate attitude, so much so that he is willing to exploit their relationship rather than surrender ('June, you know how much it means to me. If you let it go, I'll never forgive you.'). He struggles to understand her stance which is alien to him, or to recognize her protestations as legitimate. In light of this, Bernard is unlikely to be persuaded by her argument (option C). Whilst he does take on a superior tone throughout the passage, he is unlikely to humour her with an apology (option B); rather he is more likely to mount a case for his argument and defend his opinion (option A). However, the passage gives no indication that Bernard has a volatile temper – we might believe this readily of June but not of Bernard – and thus a violent response from Bernard, at least to June's immediate anger, is unlikely (option D).

Question 5

Both A and B would not assuage June's anger but only give it further fuel. D would likely trigger an immediate denial from June and she may well resent his assumption; further it would not soothe her anger in response to his decision to kill the dragonfly as per his wishes. There is a possibility that even after reasoned, empathetic discussion (option C) the couple would not be able to reconcile their opinions; however it is the best option and at the very least would avert a heated argument.

Question 6

In this series, there are two potential patterns. Both patterns will give you the same answer. The first pattern involves counting the number of times two lines cross each other in each picture. Note: for two lines to cross, both lines must continue on both sides of the point of intersection. You must be able to trace a + sign along the two lines around the crossing point. Therefore, T intersections and corners in the shape of an

L do not count. In the first picture, there are no points where two lines cross. In the second picture, there are two points. In the third picture, there are four points. In the fourth picture, there are six points. Therefore, the answer should have 8 crossing points. A has 6, B has 6, C has 5, D has 8 and E has 12. Therefore, D is the correct answer.

The second pattern is concerned with the total number of squares of all sizes in each shape. For this explanation, 1x1 squares will be named small, 2x2 squares will be named medium and 3x3 squares will be named large. The total number of squares in the first shape is two (two small squares). The total number of squares in the second shape is eight (six small and two medium sized squares). The total number of squares in the third shape is fourteen (nine small squares, four medium squares and one large square). The total number of squares in the fourth shape is twenty (twelve small, six medium and two large). The pattern thus far is that each time the series progresses, the total number of squares in the shape increases by six. Therefore, the answer must have twenty six squares of any size. Option A has thirty, option B has twenty, option C has seventeen, option D has twenty six and option E has eighteen. Hence the answer is D.

Question 7

Option A is over simplified and largely unsubstantiated. While Mark questions whether or not Sam has any friends to see the movie with, there is nothing in the conversation to suggest that Sam indeed has no friends. Moreover, Sam does not express any personal interest in or excitement about the movie.

While there does appear to be tension and even hostility in the dialogue, we cannot assume that Sam's relationship with Mark is distant just because of this, or because he is Sam's stepfather. While Mark's frustration is evident, the dialogue states that he went to a movie with Sam last week and indeed used to go to the movies with him on Sundays when his mother was alive, suggesting that their relationship is not necessarily distant. Thus option B is not the best answer.

Option C is correct. Sam actively raises the touchy subject of his mother and her interest in movies in his second comment, suggesting that her memory is on his mind, and that he wishes to keep it alive through the act of seeing a movie. Moreover, he clearly expresses the desire to do things "together… as a family," and to maintain the family's tradition of seeing movies, evincing his yearning to retain a sense of family.

While it is natural to assume that Sam is grief-stricken over his mother's death, there is very little reference to any grief he feels in the dialogue, and it cannot be assumed that he is motivated by such a feeling. Furthermore, Sam's comments suggest that he is eager to keep his mother's memory alive by maintaining their traditions, rather than replacing her with Mark. Thus option D is incorrect.

Question 8

While Mark does use the game he is watching as an initial excuse for not wanting to take Sam, he does not reference it once more throughout the conversation, suggesting that it was likely not his true reason for refusing Sam. He also uses work as another reason for not taking Sam, suggesting that he is simply making false excuses, rather than revealing his true reasoning. Thus option A is incorrect.

Option B is tempting, as Mark appears quite hostile towards Sam – "what is it now?" However, the fact that Mark used to go to movies with Sam and his mother suggests that he is not entirely uninterested in Sam. It is also unfair to assume that the death of Sam's mother has made Mark less interested in his stepson, as Mark mentions that he took Sam to a movie "last week," evidencing his remaining involvement in Sam's life.

Option C is another tempting answer, yet one that fails to capture the deepest cause of Mark's behaviour. It is evident in Mark's frustration (and also in Sam's eagerness) that he is frustrated by Sam's requests, yet it is too superficial to suggest that this is the essence of his resistance towards Sam. Mark does indeed appear to be frustrated by

Sam, but the cause of his resistance lies in the deeper cause of this feeling, rather than the frustration itself.

Option D is the most correct answer as it explains the variety of emotions and reasons expressed in Mark's comments. Mark's frustration with Sam, his use of numerous excuses and his struggling relationship with Sam can all be explained by his anguish over his wife's death, as Sam is desperate to discuss a topic that causes Mark immense pain. Moreover, Mark initially ignores Sam's mentions of his mother, refusing to discuss her at all. Mark's final outburst finally reveals that he is still very emotional about the death of his wife and refuses to view himself and Sam as a family; it is for this reason that he does not want to maintain their familial traditions.

Question 9

A is incorrect because there is a slight difference in Group 1 before and after the study was performed, and hence it is incorrect to state there is "no effect." C is incorrect because although Group 3 shows a substantial increase in the level of feeling awake after the month of no access to MySpace, one cannot conclude the reason for which this occurring. Hence, to conclude it is more "addictive and time-consuming" is a simply a guess as to why it showed such a strong effect (e.g. perhaps MySpace takes up less time, but students become more exhausted psychologically from its use). B is tricky. However, to label the result as "inconclusive" is too strong – we need more information about the data (such as standard error values) to make such a conclusion. (NB. If you don't know what standard error is, don't worry – it's just an example. Essentially, in this context, it is the standard deviation of an estimated average. It would therefore tell us how accurate our estimate of the average rank was.) Doubt may stem from the fact that Group 4 has a much higher original "awake" level, but nevertheless, for that specific group, the effects were documented and an increase of only 0.2 was noted. Hence, there is a slight/almost zero effect in Group 4.

Question 10

If Option A were true, it is likely to strengthen the conclusion, because there is a larger difference in the amount that MySpace is used before and during the month – thus, the experiment shows the effects MySpace even more clearly.

B is incorrect, because MySpace being a source of learning and knowledge has no relevance to this conclusion, which is focusing on students' ability to feel awake during school; so even if MySpace helps learning, it may still make them tired during school.

D is close, but is still incorrect. Since students may use TV and Facebook more as a consequence of having MySpace banned, this still is not an issue, because the end result is that students banned from MySpace show considerably greater alertness during school. The fact that students spend more time using TV and Facebook is not relevant.

C is the only option that could weaken the conclusion. If Group 3 was subject to intense exercise prior to their initial ranking, then this could account for their lower starting rank, and cause the effect of banning MySpace to be more pronounced than it actually is.

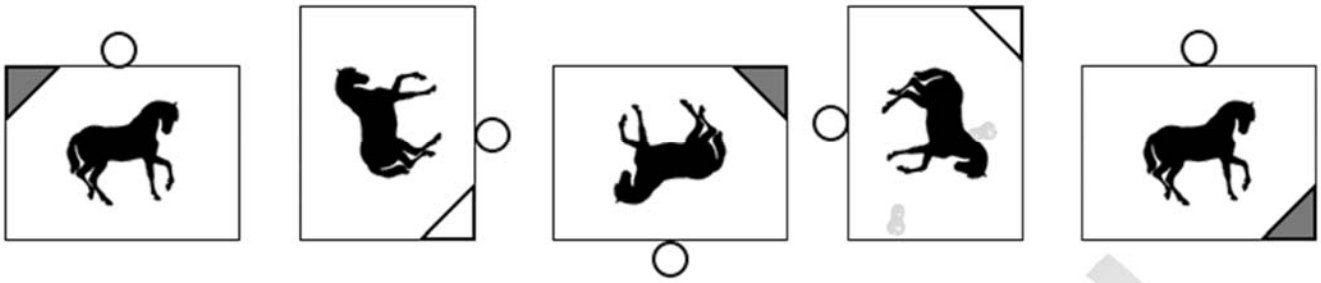
Question 11

To determine if the some of the conditions are true or false, you need to calculate how many total shots were taken and how many total shots were made.

Let us consider each of the statements:

I. True, only 5 people missed their first attempt, so 25 out of 30 people hit the target on their first attempt. Eliminate (A) and (C).
II. True, 90 shots were attempted, 60 shots were made, 30 shots were missed. Eliminate (B).
III. True, each contestant continued to shoot until they missed, so everyone missed one shot. In order to hit the target five times, a contestant would have to take six shots, but the most shots taken was 5. Therefore, the most anyone hit the target was 4 times.

Question 12

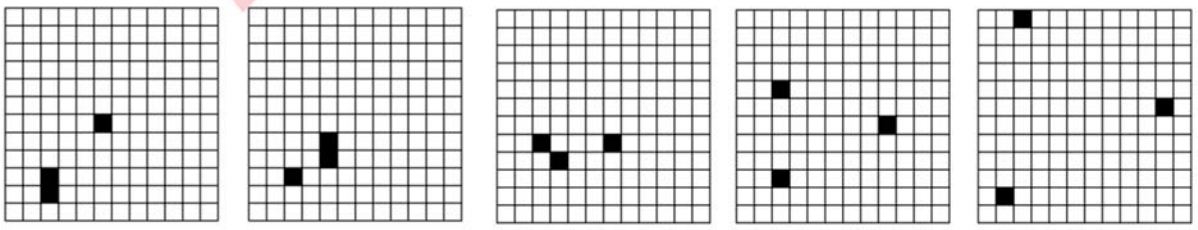


C D B A E

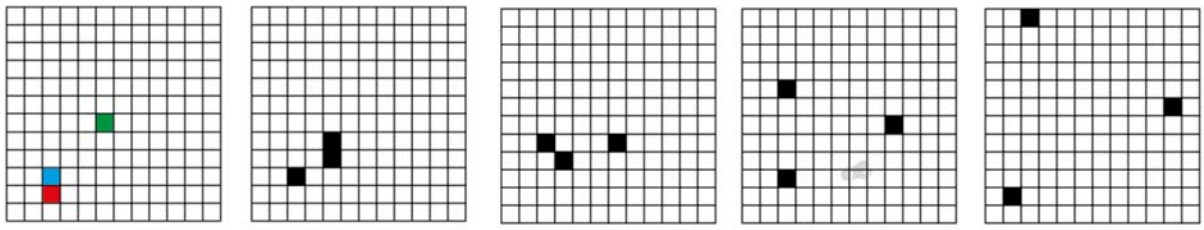
The corner triangle alternates between being grey in colour and white in colour. Therefore, we can apply the 3-2 rule. The entire rectangle is rotating 90 degrees clockwise with each move and the ball is remaining stationary on top of it. The corner is moving clockwise around the rectangle in increasing increments (moving 1 corner, then 2, then 3, then 4) and changing colour with each move. This clockwise rotation is dependent upon the movement of the rectangle. It rotates 90 degrees clockwise with the rectangle and then moves around the rectangle clockwise in increasing increments. The horse rotates anticlockwise 90° with each move (note it moves independently of the rectangle, unlike the corner).

Question 13

The sequence is displayed in the correct order (EBDAC) below:



Explanation:



The green square simply moves diagonally down to the left each step. The red square moves up one, then up two, then up three and finally up four spaces. The blue square moves across two steps and up one each move.

Question 14

The doctor is attempting to reassure the new mother by being confident in his responses. "Of course" and "quite certain" indicate that he is completely sure and confident about what he is saying. However, his short sentences suggest that his tone of voice is not soothing – thus A is incorrect. The mother's tone is anxious, demonstrated by repeating the question 'Is he alright?' Her emotion is not strong enough to be fearful or hysterical, therefore B and C are incorrect. Hence answer D is most correct.

Question 15

It is important to read the stem of the question here. While incredulity or disbelief would closer describe the mother's actual reaction, the doctor would not have said this if he expected this response. He would have thought that the mother would most likely trust his professional opinion. Therefore, A and D are incorrect. The mother still has not seen her child, so she cannot agree with the doctor here. In order to agree with him, she would need to see her child as well and decide for herself that he is healthy. The doctor is attempting to reassure the mother by patting her hand and he hopes that his reassurance would help her to accept what he has told her. Therefore, B is the correct answer.

Question 16

In this series there are three elements: a cross (which can also take the form of a plus), a diagonal line from top left to bottom right and a diagonal line from top right to bottom left. The cross moves to the right and when it gets to the end of the row. It continues on the row below it. It moves at first by one space, then two, then three and finally four. Also, from the first to the second in the series, the cross rotates by 45 degrees, making it a plus. It then rotates 90 degrees (so it remains a plus), then 135 degrees (so it is a cross) and finally by 180 degrees so that it is still a cross. In the missing figure, it should therefore be located in the last box of the third row. The diagonal line going from top left to bottom right starts in the first box of the second row and also moves to the right (continuing in the row below when it reaches the end of a row, including from the bottom row to the top). It moves three spaces to the right each time. It should therefore be located in the first box of the top row in the missing figure. Finally, the diagonal line going from top right to bottom left begins in the first row on the very left and moves in the opposite direction of the other diagonal line, that is to the left (and it continues in the row above when it reaches the end of the row, including from the top row to the bottom row). It moves left by two spaces, then four, then six and finally eight. It should therefore be located in the first column in the bottom row in the missing figure. Note that the two diagonal lines occupy the same square in the third in the series, making it look like a cross. Option D is the only figure that satisfies these requirements.

Question 17

Peter is trying to qualify his frequent visits to see Dr. Stevens, but feels strongly that his illness is real. His tone is not apologetic, since he does not feel he has anything to apologise for, thus A is incorrect. “Hang on!” does not indicate surprise; his tone of voice is more defensive than surprised, so B is incorrect. Peter is not embarrassed, since again he feels that his illness is real. In his mind, he has nothing to be embarrassed about, just as he does not have anything to apologise for. Therefore, D is incorrect. Peter feels indignant about Dr. Stevens’

suggestion that his symptoms are not real, as he is confident that his symptoms are legitimate. Therefore C is correct.

Question 18

Dr. Stevens picks up on Peter's offhand comment of not being able to go to work, and suggests that anxiety may be the cause of Peter's symptoms. However, there is nothing to suggest confidence in his tone; Dr. Stevens is just taking a guess – therefore A is incorrect. There is nothing to suggest that Dr. Stevens feels he is not dealing well with Peter; the referral is merely a way to palm off Peter to another doctor. Dr. Stevens makes no specific mention of tests, and he does not discuss his decision with Peter. He is referring him to a psychiatrist without thoroughly speaking to him about the problems. If Dr. Stevens really wanted to help Peter, he would have talked through his problems. This would have allowed him to explore more options and decide whether it really was a good idea to refer him to Dr. Marks. Therefore, B and C are incorrect. Dr. Stevens seems sick of dealing with Peter. He preempts Peter's symptoms and interrupts him. He does not give Peter any opportunity to talk about what is wrong. Therefore, he is merely referring Peter to someone else. Therefore, D is correct.

Question 19

Peter makes it clear that he does not feel that a visit to the psychiatrist is necessary (comment 6), therefore he would not even be grudgingly happy with his appointment with Dr. Marks. However, there is nothing to suggest that Peter doubts Dr. Marks' competence as a psychiatrist. There is no indication in the text that he even knows Dr. Marks – therefore C is incorrect, and D is also incorrect. Dr. Stevens put no effort into finding out what was wrong with Peter and also suggested that his symptoms were not real. Therefore, B is correct. Peter would be offended that his needs were ignored by Dr. Stevens, whose manner was patronising and uncaring.

Question 20

This question is easier if you quickly write down the alphabet. The first letter of the original word could be an E, because 9 letters behind E (a vowel) is a V; OR V could have come from an M, because 9 letters after M (a consonant) is V. The second letter, F, can come from an O, because 9 letters behind an O is F; OR it could come from a W, because 9 letters after a W is F. Finally, the last letter, C, can only come from a T, because 9 letters after a T is a C. (L cannot be converted into a C because it is NOT a vowel). Hence, knowing that the first letter can be an E or M, the second letter can be an O or W, and the last letter must be a T, the only possible answer is C.

Question 21

Again, it helps if you quickly write out the alphabet – in fact, even writing out the entire code does not take long and is extremely useful.

A	B	C	D	**E**	F	G	H	**I**	J	K	L	M	N	**O**	P	Q	R	S	T	**U**	V	W	X	Y	Z
R	K	L	M	**V**	O	P	Q	**Z**	S	T	U	V	W	**F**	Y	Z	A	B	C	**L**	E	F	G	H	I

In this table, the top row shows the letters of the original word, while the bottom row shows the letters of the code word.

The letter Y can only come from P. The letter Z can come from I (9 letters behind I is Z) OR it could come from Q (9 letters after Q is Z). The letter A can only come from R. The letter R can only come from A (9 letters behind A is R). This is the main trick of this question – candidates may just assume that all letters can come from consonants, and thus only check if they can also come from vowels. However, R **cannot** come from a consonant, because 9 letters behind R is I, a vowel.

So there is one option for the Y, 2 options for the Z, one option for the A, and one option for the R. Hence, there are 2 possible original words (PIRA or PQRA).

Question 22

We have no idea what the original words the captain gave the recruit were. Therefore, since this question suggests that we can still work out which code must be incorrect, it is implied that certain letters must **never** be able to be used in this code. Thus, in order to work out the correct answer, we just need to find out which letters these are.

Look carefully at the code written down in the second question:

A	B	C	D	**E**	F	G	H	**I**	J	K	L	M	N	**O**	P	Q	R	S	T	**U**	V	W	X	Y	Z
R	K	L	M	**V**	O	P	Q	**Z**	S	T	U	V	W	**F**	Y	Z	A	B	C	**L**	E	F	G	H	I

Note that the 'code alphabet' is almost the same as the real alphabet (albeit shifted 9 places earlier). The differences come, however, when there is a vowel in real alphabet – this interrupts the sequence of the code alphabet, and could potentially lead to some letters featuring in the code alphabet twice, and others being completely absent.

When there is an 'A' in the real alphabet, there is an 'R' in the code alphabet; this replaces a 'J' which would otherwise be in the code alphabet if 'A' were a consonant. Thus we can see that the letter 'J' is not in the code alphabet at all. Similarly, 'E' goes to 'V' instead of 'N' (so there is no 'N' in the code alphabet). 'I' goes to 'Z' instead of 'R'; however, 'A' goes to 'R', so there is an 'R' in the code alphabet. 'O' goes to 'F' instead of 'X' (so there is no 'X' in the code alphabet). 'U' goes to 'L' instead of 'D' (so there is no 'D' in the code alphabet).

Therefore, there are four letters which **cannot** be in any code words: J, N, X, and D. Since the code word in option C contains an 'N', this must be the incorrect code, making option C the correct answer.

Question 23

The question expressly points to the beginning of the extract, not any other part. At the beginning of the extract, Georgie cannot be frenzied, as this only occurs when she hears that her parents are downstairs in

her house. Her sense of resignation is not strong at any point in the extract, but is only alluded to in the relationship with Grace at the end of the extract. While she is concerned that she is not being a responsible adult at the beginning of the extract, she is overwhelmingly apologetic for the fact that she has to be looked after by "this poor kid" when "she's supposed to be the adult". She is apologetic because she believes that she should be looking after Tom instead.

Question 24

A is manifestly incorrect as Tom makes no attempts to control the situation. It is Georgie who tries to reassure Tom by saying "Calm down. It's fine. I'm fine." C may very well be correct in the broader plot of the novel however the extract gives no indication of this. D is wrong because his apology is because his grandparents are there. This is not a previous misdemeanour, but something that is happening as he speaks. B is correct. Tom's sentence is unfinished, indicating he had more to say. The next thing he says is that he called his grandparents, which can only lead to telling her that they are downstairs. By giving his reasons for calling them, he is trying to make her understand how he felt and explain why his grandparents are downstairs.

Question 25

Reading the question carefully is very important here. Her manner is the way she behaves, so her behaviour is crucial to this question. A is incorrect because Georgie is "out of the bedroom door in a moment" after previously only being able to shuffle and she calls out "Mummy!" from the top of the stairs. These actions are certainly not cool, but suggest some sort of anxiety. There is no indication in the text that Georgie and Grace are distant and her anxiety certainly does not indicate that. If she acted distant or cool, she would be unlikely to rush out of the bedroom and call out. Therefore, C is also incorrect. B is an extreme adjective that is only faintly alluded to in the text and therefore cannot be correct. D is the best answer because it would explain her anxiety and shock.

Question 26

A is designed to trip up students who have skimmed the extract, and who do not appreciate the complex emotions involved. D feigns some kind of analysis of the text however is also a dummy option. B and C are trickier to distinguish between as both could be right. It is important to remember, however, that B makes assumptions beyond the stimulus and lacks analytical depth. While Grace is well groomed in this situation and Georgie suggests that her mother is usually well groomed, we cannot assume that she is always well groomed in all situations. C is correct because Grace has put effort into maintaining her composure even when she is "grief ravaged". This means that her composure is very important to her.

Question 27

From the first picture to the second picture, it is important to note that the bottom half stays exactly the same. In this transition, only the top half of the picture is being altered. Similarly, from the second picture to the third picture, only the right half is being altered. From the third picture to the fourth picture, only the bottom half is being altered. The pattern has gone from top, to right, to bottom. Therefore, in the next transition, only the left half of the picture should be changed. However, this does not allow us to rule out any options as all of the potential answers have the same right side as the fourth picture in the series.

This pattern is exceedingly difficult to spot because it has so many parts. The half that changes can be divided into two 2x2 squares. The two 2x2 squares swap places. Both 2x2 squares are rotated clockwise by 90 degrees. The colours of the half of the picture that changes are then inverted – the black becomes white and the white becomes black. This is repeated for each transition, and by applying this to the fourth picture, you get answer A.

Question 28

In this series there are three patterns contained within each of the three circles and each time the series progresses, each pattern moves outwards by one circle (i.e. from the innermost circle to the middle circle and from the middle circle to the outermost circle), except from the outermost circle, where the pattern moves to back to the smallest circle. The pattern which starts in the smallest circle has two lines, one starting pointing north-west and on pointing south. The line pointing north-west rotates counter-clockwise by 45 degrees each time and the line pointing south rotates clockwise by 90 degrees each time. This produces one line pointing west (they overlap) in the second in the series in the middle circle. These two lines continue to rotate in exactly the same way for the rest of the series. In the third picture, they are in the outermost circle and in the fourth picture they are in the smallest circle again. In the fourth picture, the line which originally pointed northwest is now pointing south. It will rotate another 45 degrees clockwise and will point south east in the answer. The line which was originally pointing south is now pointing east. It will rotate another 90 degrees and point south in the answer. These two lines will be in the medium sized circle. This does not rule out any answers yet.

The pattern which starts in the middle circle also has two lines. The line which starts pointing north moves clockwise by 45 degrees each time and the line which starts pointing north-east moves counter-clockwise by 90 degrees each time. In the fourth picture, they both point south east and are in the middle circle again. Therefore, in the answer, they will both be in the outermost circle. The line that originally pointed north will rotate another 45 degrees clockwise and point south. The line that originally pointed north east will rotate another 90 degrees anticlockwise to point north east again. This rules out options C, D and E.

Finally, the pattern which starts in the outermost circle has a line initially pointing west which rotates clockwise by 90 degrees each time and a line initially pointing east which rotates clockwise by 45 degrees each time. In the fourth picture, these lines are in the outermost circle again. Therefore, they will be in the innermost circle in the answer. The

line originally pointing east is now pointing south west. It will rotate another 45 degrees clockwise to point west. The line originally pointing west is now pointing south. It will rotate another 90 degrees clockwise to point west as well. This rules out option A. Therefore, B is correct as all other options have been ruled out.

Question 29

B and C are not the best answer because the doctor could have explained the procedure more thoroughly. He did not explain the potential consequences of an inflammatory disorder or anything about the colonoscopy. Therefore, he was not explicit or comprehensive. D is incorrect as the doctor does not seem fearful or alarmed by the patient's condition, as he has already reassured him that it is not serious. A is the best answer as the doctor was quite sensitive and compassionate by reassurance and the gesture of the hand. By ruling out serious problems, he tactfully gives the patient peace of mind.

Question 30

A is not the best answer; he may be thankful but it seems his main impetus was to obtain medication. People say 'thanks' quite often without being genuinely appreciative. B is incorrect as there is no evidence the patient was initially concerned and therefore reassured by the statement. C is close but is not the best answer. D is the best answer, as though he remains composed, he shows very little reaction to the fact he could have an inflammatory disorder. A calm person would still react to this information, but they would not be worried by it, whereas a stolid person would not react to it.

Question 31

A is incorrect because if the patient was concerned about the procedure he would have asked about it immediately after the doctor mentioned it. C is incorrect because the doctor had just told him to organise the time

for the procedure with the receptionist. Throughout their discussion, the patient has remained stolid and has not shown any sign of emotion. His replies have been short, straightforward and to the point. He seems unperturbed by his condition. Therefore, D is incorrect because he is unlikely to suddenly open up about his life. His main concern is obtaining the medication. Therefore B is the best answer.

Question 32

The best way to approach these types of question is to work with a specific number. Let us take a sample pool of 1000 individuals. All of them are tested. One of these has the disease, but approximately 50 give a false positive result, i.e. 5% of the remaining 999. That means 51 people give a positive result, but only one has the disease. Therefore, there is a 1 in 51 chance Angela has the disease, approximately 2%.

Question 33

All of the above statements can be concluded except C. A is a true statement because in an entire day, if 800mg of Tagamet is taken twice, then this amounts to a maximal intake of 1600mg. B is another true statement, because Accolate's intial daily dose (20x2=40mg) is greater than Zyrtec's maximal daily dose (20mg). D is also a true statement because the initial dose for Doxepin is 10mg 4 times a day (40mg/day), and the maximal dose is 50mg 4 times a day (200mg/day), and hence this is an increase of 160mg. C is the correct answer, because this cannot be concluded from the table above. The table lists the **possible** side effects of the drugs, and so it is not entirely certain that these effects **will** occur.

Question 34

If the label says that the drug must be taken twice daily, this leaves Benadryl, Tagamet, Zantac, Pepcid and Accolate. If statement A was true, this would allow us to identify that the drug was Accolate (a

leukotriene antagonist). If statement C was correct, the only drug that satisfies this information would be Zantac (initial dosage of 150mg twice a day and maximum dosage of 300mg twice a day), which has a dosage that is a multiple of 15. If Statement D was true, then we could identify that the drug was Zantac, because this causes rare cases of transaminasemia. Option B is the correct answer. If the drug was identified to not be a H_2 receptor antagonist, this would leave Accolate (the leukotriene antagonist) and Benadryl (the H_1 receptor antagonist), and hence statement B does not allow us to identify the exact drug.

Question 35

In questions like these, you are often expected to choose the most substantiated and supportable answer, rather than one that is definitive. Most definitive answers will be generalisations in these questions. In both trials, despite the difference in the general ages of the subjects, there were notable (30% and 40%) increases in the incidence of regular smoking amongst those who were overweight or obese. As such, it is reasonable to assume that there is a correlation between weight and smoking.

Option A makes a far too definitive statement. There only appears to be a correlation between weight and cigarette smoking – there is no result that suggests that poor eating habits or unhealthy body weight cause one to smoke.

Option B makes an incorrect assumption by assuming that there are an equal or very similar number of males and females in the first study. While the study found that males were 25% more likely to smoke, it mentions only the proportion of smokers by gender, not the number. We do not know how many males and females were in the study, there may have been far more females included than males.

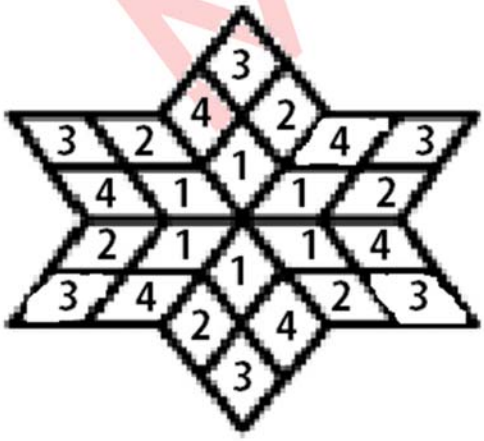
Option C also makes an unreasonable assumption. The first study was conducted solely using adolescents, while the second involved subjects of all ages. Therefore, it is not fair to assume that the gap has closed in recent years, as the age range of the subjects used is inconsistent. The

apparent decrease in the gap may be due to their ages, rather than an actual change in the last few years.

Question 36

In this series, there are six large rhombi, each containing four small rhombi. The black spot is rotating in two different ways: it rotates anticlockwise between the large rhombi and clockwise between the small rhombi within each large rhombus. For the movement between the large rhombi: It first rotates anticlockwise by one large rhombus, moving from the top left large rhombus to the bottom left large rhombus. Then it rotates by two large rhombi, moving from the bottom left large rhombus to the bottom right large rhombus (skipping the bottom large rhombus). It rotates by four large rhombi in the next part of the sequence. So it rotates by 1, then by 2, then by 4. The amount of rotation doubles each time. Therefore, it should rotate anticlockwise by 8 large rhombi for the last option. This should place it in the bottom right large rhombus. This automatically rules out B and E, as the black rhombi in these options are in the bottom large rhombus and have only rotated by 7 large rhombi.

The black rhombus also rotates around the four smaller rhombi within the larger rhombi. We need to label the small rhombi in order to see this pattern: the small rhombi closest to the centre of the entire shape are all labelled 1 within their own larger rhombi. Then, within each large rhombus, we go around anticlockwise from the number 1, labelling 2 to 4 as shown below.



The black rhombus begins in position 1. In the first movement, it does not rotate between the small rhombi, remaining in position 1, but in the next large rhombus because it is still rotating between the large rhombi. In the second movement, the black rhombus rotates clockwise by one position to be in position 4 in the next part of the sequence. In the third movement, it rotates 2 spaces clockwise to be in position 2 in the next part of the sequence. It has moved 0, then 1, then 2. Therefore, it should have moved 3 spaces clockwise to be in position 3 in the alternative we are looking for. All of the answers have the black rhombus in position 3, so this does not eliminate any answers.

The grey rhombus is always in position 4 of a large rhombus (see labelling system above). It is rotating anticlockwise between the large rhombi. In the first movement, it rotates by one large rhombus from the bottom to the bottom left. In the second movement, it rotates by two large rhombi from the bottom left to the top. In the third movement, it rotates by three large rhombi. It has rotated anticlockwise by 1, then 2, then 3. Next, it should rotate by 4 large rhombi, so it should be in the top right large rhombus in the answer. This rules out B and D (although we've already ruled out B). The only remaining possible options are A and C.

The white lines are only in position 3 of a large rhombus. They start in the bottom left large rhombus and move clockwise by one large rhombus to be in the top right large rhombus. They then rotate clockwise by three large rhombi to be in the bottom right large rhombus. Then the lines rotate clockwise by five large rhombi to be in the top right large rhombus. The lines have rotated clockwise by 1, then 3, then 5. Therefore, they should next rotate by 7 large rhombi. This puts the lines in the bottom right large rhombus. As this puts them in the same small rhombus as the black rhombus, the lines are hidden. B and C are the only options with the lines in the correct position. As B has already been ruled out, C must be the answer.

Question 37

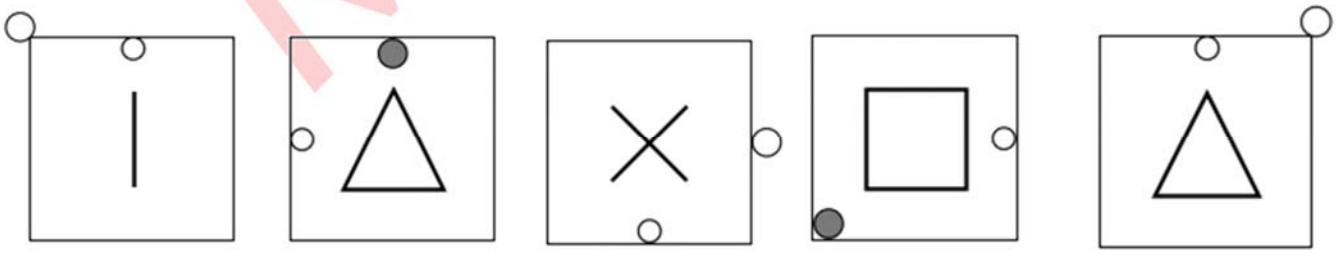
Paul is quite adamant that he does not have a habit, and in this passage explains carefully why this is the case and why he is in control. Although he is frustrated at the way others view him, he does not appear outright angry in the passage. Therefore options B and C can be ruled out. Paul is unlikely to deny the accusation outright without providing an explanation, seeing as he does indeed have an explanation for his drug use – this therefore makes option A incorrect. D is best as he would be somewhat angry at the accusation, but remain calm and explain exactly how and why he uses drugs.

Question 38

Paul gives no indication anywhere in the text that he believes his level of drug use is a problem. These means he is unlikely to do something about his drug use, making options A and C incorrect. There is no indication that he feels the need to use more and more drugs to cope with stress, which makes D incorrect. Paul spends the passage explaining why he uses drugs and why his friends and associates are perceiving him in the wrong light. It would seem that after this tirade he would most likely want to speak to them about his use.

Question 39

The correct sequence is shown below:



B **D** **A** **E** **C**

The larger ball alternates between being inside and outside of the square, as well as between being grey and white in colour. When it is inside the square, it is grey. This alternating sequence allows us to apply the 3-2 rule. This larger ball moves clockwise around the square, first by one step, then two, then three, then four. One step is half of the distance between the corners of the square.

The smaller ball moves anticlockwise one side each time. The number of lines in the middle of the figure changes with each step. It follows the pattern add two, subtract one, add two and so on.

Question 40

The sequence is shown in the correct order (CEABD) below:

The black square in the top left hand corner moves one step, then two, then three in a clockwise manner around the edge of the large square each move. The other black square moves up two and right one each move – when it reaches the top of the large square, it goes back to the bottom.

Question 41

The first group was injected with scopolamine. This blocked the muscarinic acetylcholine receptor sites, so the acetylcholine could not function properly and therefore this group had lower activity than normal. The second group was injected with physostigmine. This caused these rats to produce less acetylcholinesterase. Therefore, less acetylcholine is broken down into acetate and choline, thus, there is more acetylcholine remaining. Acetylcholine activity is higher than normal in group 2. Group 3 do not receive any drugs, so they have

normal acetylcholine activity. Therefore, group 1 has lower acetylcholine activity than group 3 and group 2 has higher acetylcholine activity than group 3. Therefore, option A is correct.

Question 42

It is important to identify what is being changed in each group to understand what is being tested. In this experiment, the first group received scopolamine to lower their acetylcholine activity. The second group received physostigmine to raise acetylcholine activity. The third group received no treatment so they maintained their normal acetylcholine activity. Therefore, the effects of lowered and raised acetylcholine activity in groups 1 and 2 can be compared against the effects of the normal acetylcholine activity in the third group. Thus, group 3 is the control group (option C).

Question 43

In order to answer this question, we must first make sense of the results.

	Group 1	Group 2	Group 3
Errors			
Time to finish			

We can rank the number of errors and time taken to finish for each group. We know that "the second group made the fewest errors". Therefore, we can put this into our table.

	Group 1	Group 2	Group 3
Errors		Fewest	
Time to finish			

We also know that "the third group made fewer errors than the first group". This means that the first group must've made the most errors and the third group must have made a moderate amount of errors.

	Group 1	Group 2	Group 3
Errors	Most	Fewest	Moderate
Time to finish			

We also know that the first group "took longer to complete the maze than the third group" and that the third group "took longer to complete the maze than the second group." Therefore, the second group finished in the least time, the first group took the most time, and the third group took a moderate amount of time. We can put this into our table as well.

	Group 1	Group 2	Group 3
Errors	Most	Fewest	Moderate
Time to finish	Most	Least	Moderate

Option A is incorrect because we do not know how fast the rats were running. There is never any mention of running speed in the text. While the rats with more acetylcholine tended to finish the course in less time, making fewer errors could have caused this. Option B is also incorrect because it also assumes too much. While the rats injected with physostigmine finish the course in less time, this does not mean that they are more desperate to get food and certainly does not mean that "hunger receptors" were triggered. It is more likely that these rats finished the course in less time because they were more capable of finishing the course quickly. C is also incorrect. The only group that had blocked muscarinic acetylcholine receptor sites was group 1. Therefore, the cases where muscarinic acetylcholine receptor sites were not blocked were in groups 2 and 3. These groups took a shorter time to finish the course than group 1. Therefore, C is incorrect. The second group's acetylcholinesterase production was inhibited. Therefore, the rats in the second group would have had the least acetylcholinesterase. Therefore, the rats in groups 1 and 3 would've had more acetylcholinesterase. These rats tended to make more errors than the rats in group 2.

Therefore, D is correct.

Question 44

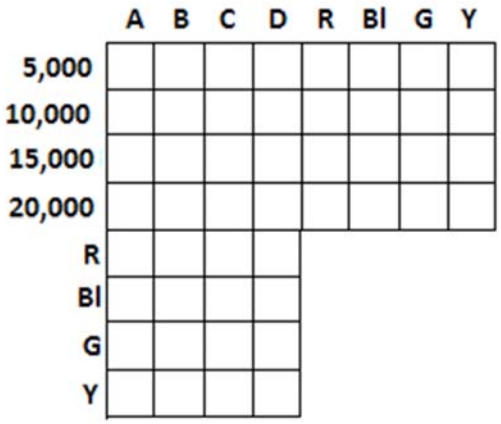
Using the graphs it can be seen that A is incorrect. C is not true as in the 1990s it is clear that France is outstripping the UK. There is no evidence to support D as the graphs do not give information about mortality rates for all males in the UK and all males in France. The data only specifies the mortality rate due to lung cancer at ages 35-44. By analysing the graphs, it can be seen that a much larger proportion of both males and females at ages 35-44 died in the UK of lung cancer in 1965 than in France. As both populations are made up of approximately 50% males, a larger proportion of all people at ages 35-44 died of lung cancer in the UK in 1965 than in France. Therefore, option B is correct.

Question 45

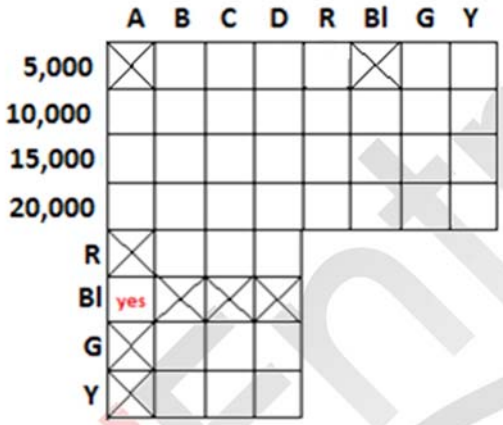
Option A is correct as insulin is secreted when there is excess carbohydrates. Option B is incorrect as insulin causes the storage of excess carbohydrates as glycogen (not as insulin itself). Option C is incorrect as excess carbohydrates (not excess glycogen) that cannot be converted to glycogen are stored as fats. Option D is incorrect as although insulin has profound effects on carbohydrate metabolism, the text states that insulin affects fat and protein metabolism almost as much as it does carbohydrate metabolism.

Question 46

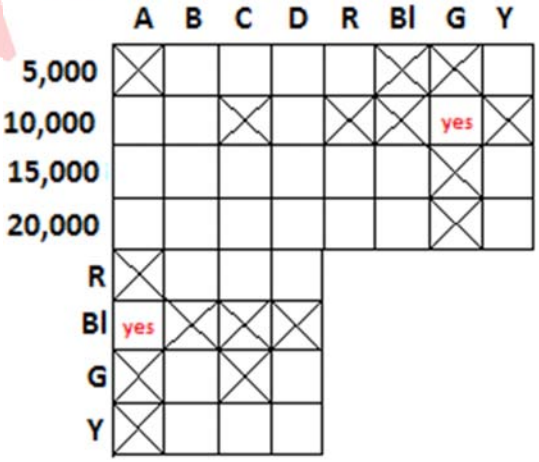
Let the following table be a guide to completion of the question. From the text we know that each planet will have one of the individual diameters and characteristics.



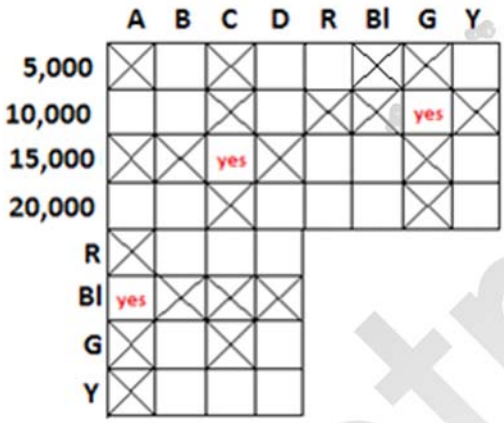
The first clue is that "Planet A is blue, but is not the smallest planet." Hence we can mark A as the blue planet. Therefore planets B, C and D cannot be the blue planet and planet A cannot be the red, green or yellow planet. Also, planet A cannot be the smallest planet, and the blue planet cannot be the smallest planet. These can be added to our table as such. Notice how when a yes is obtained, the three other squares horizontally and vertically in line of the yes can be crossed – this is applicable to all 'yeses' obtained in this question.



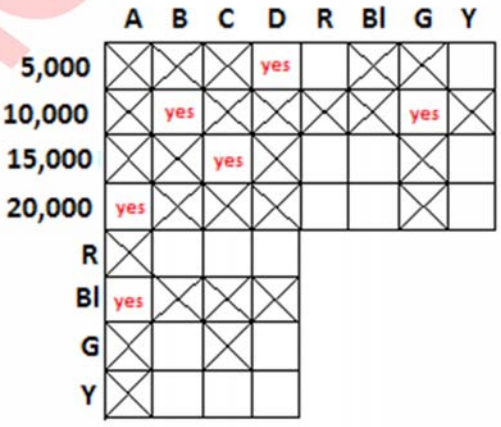
The second clue is that "The Green Planet is the second smallest and is not Planet C." Similar to first clue we can now deduce that the second smallest planet must be green and no other colour, and the green planet is 10,000km in diameter. We can also note that planet C is NOT the green planet and it is not the planet with a 10,000km diameter. These can be added to our table as below.



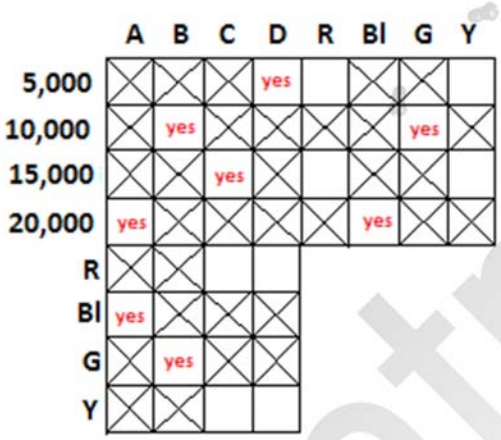
The third clue is "Planet C is the second largest planet." Therefore Planet C is the 15,000km diameter planet. This can be added to the table as such.



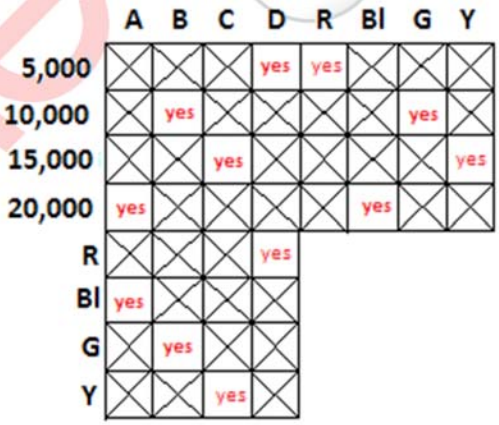
The fourth clue is that "Planet B is exactly 5,000km larger in diameter than planet D." Although it may seem like a simple clue, there is much to be implied. Since the last clue has said that planet C is the 15,000km diameter planet, planet A, B and D can only be 5,000km, 10,000km or 20,000km in diameter. If B is 5,000km more than D, then planet B **must** be 10,000km in diameter, and planet D **must** be 5,000km in diameter. Planet A will therefore take 20,000km. This can be presented as such.



Notice now that the 10,000km diameter is "yes" to both being planet B and the green planet. Therefore the green planet is planet B. Also, planet A is "yes" to being 20,000km and blue. Therefore the 20,000km diameter planet is blue. These can be presented as below.



The final clue "The yellow planet is one alphabet letter after the second smallest planet." The second smallest planet is planet B, so the yellow planet must be planet C. The red planet must therefore be planet D, and 5,000km in diameter. Planet C is 15,000km in diameter. Final table:

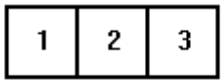


Thus, we know the following:

A is blue, and 20,000 km in diameter
B is green, and 10,000 km in diameter
C is yellow, and 15,000 km in diameter
D is red, and 5000 km in diameter.
The answer is C. From the final table, the order must be either, DBCA or red, green, yellow, blue. Hence the answer is C.

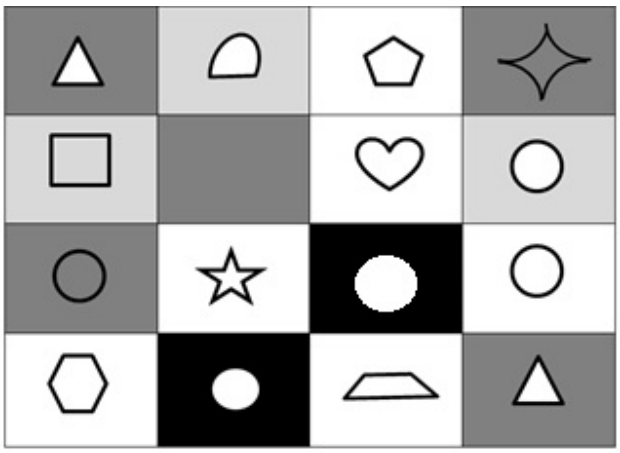
Question 47

Across each row, the boxes can be labelled box 1 through to box 3, from left to right.



By identifying that box 3 is just a flipped version of box 2, it becomes apparent that box 3 is a distractor. The missing segment is in box 1, so the change from box 2 to box 3 is irrelevant. As you move from box 1 to box 2, the white dots become black and the blank spaces become white dots. For example, in the first row, the three white dots in box 1 become the three black dots in box 2. These dots do not change position. The blank spot in the bottom right hand corner also becomes a white dot. Then as the dots move from box 2 to box 3, they get flipped upside down. The missing segment is in box 1 of the third row. Therefore, the answer we are looking for has blank spaces where the white dots are in box 2 of the third row. It also has white dots where the black dots are in box 2 of the third row. C is the only answer that fits these criteria.

Question 48



The dark grey box moves across to the right by 3 boxes and 2 boxes alternatively. It starts in the top left hand corner and when it reaches the end of the row it continues in the row below. The light grey box moves to the right by 3 boxes at a time starting from the 2nd box from the top left hand corner and when it reaches the end of the row it continues in the row below. The black box is indicative of a box on which both the light and dark grey boxes have landed on. In the positions where the dark and light grey boxes do not land, there are white boxes. The missing segment should be a white box, because neither a dark grey or light grey box belongs here. Therefore only A, C and D are options. A straight side of a shape = 1 point while a curved side = 2 points. The total number of points for each column is 15. Therefore A is correct.

Question 49

The result, if one started with cards numbered consecutively: $1,2,3,4,5,6,\ldots,2n$, would be a deck with the cards in the following order: $2n,2n-2,2n-4,\ldots,4,2,1,3,\ldots,2n-3,2n-1$. In this case, n=26 since there are 52 cards in the deck. The 7 of Clubs is in the 20th position in the new, unshuffled deck, and 20 = 2n-32 where n=26. If position 1 in the shuffled deck is the 52nd card of the original deck, position 2 is the 50th card of the original deck and so on, the 20th card would fall after 16 cards, and thus in the 17th position.

Question 50

The first player would be dealt the 1st, 5th, 9th etc. card. Hence, he/she would receive card 52, 52-8, 52-16, 52-24…52-15, 52-7. These cards are numbered 52, 44, 36, 28, 20, 12, 4, 5, 13, 21, 29, 37, 45.

The cards worth high-card points are numbered 52, 39, 14, 1 (worth 4 points); 40, 27, 26, 13 (worth 3 points); 41, 28, 25, 12 (worth 2 points); 42, 29, 24, 11 (worth 1 point). Since the first player has cards 52(4 points), 13(3), 28(2), 12(2), 29(1), he/she has 12 high-card points.

Question 51

Each row must have one circle, one square and one triangle. Therefore, the missing segment is a circle. In each row, the first two numbers add together to make the third number. However, if the third number has two digits, the two digits of this number are added together to get the third number (e.g. in the second row: 5+5=10 and 1+0=1). In the case of the third row, 7+5=12 and 1+2=3. Consequently, the answer is a circle with the number 3: E.

Question 52

The matrix can be divided into four 4x4 grids, each following a different pattern. There are two 4x4 grids with a thick border, and two 4x4 grids with a thin border.

Within the top-left 4x4 grid, the pattern begins with the top-left square and moves around the squares in a clockwise direction. The line within the squares rotates in a clockwise direction, first by 45 degrees, then 90 degrees, then 135 degrees. The other thick-lined 4x4 grid (located in the bottom right) follows the same pattern.

The thin-lined 4x4 grids follow a different pattern. The pattern moves from square to square within these grids in a clockwise direction, beginning from the top-right square. The difference is that the line

moves clockwise but alternates between moving 90 degrees and moving 45 degrees, beginning with moving 45 degrees. Option E is the alternative that fits this pattern.

Question 53

Elimination is the best way to go about doing this question. Consider option B: the stimulus directly states that decoding the language of the species can help deal with agricultural problems caused by nematodes - i.e. it would be sensible to state that ascarosides (the 'language' that nematodes use) **could** be used to create new pesticides. Note that, although we can't be 100% sure that this is correct, it is still likely to be so, and is not the answer.

Option C is substantiated, as *C. elegans* is said to use ascarosides for two separate purposes (sexual attraction and aggregation). It would therefore be possible, but not certain, that for example, two different ascarosides would be used to elicit these different responses, thus suggesting that option C is sensible.

Option D, although not as good as B and C, is still rooted in the article: as it states that "many - maybe all - nematodes" use ascarosides, it may be possible for nematodes found in different places to communicate. Obviously we do not have enough evidence to conclude this for sure, but there is still a basis for it in the article. As we will see when we consider A, D is the second-best answer here (and if A was something more substantial, then D would be the answer).

However, option A is too far outside the scope of the question. The paragraph says nothing about ringworm infections, and there is no evidence to suggest that ringworm infections involve a nematode. The point is that assuming that ringworm infections are caused from a nematode is too presumptuous, and most likely the result of a reading error – there is really no logic behind it. Hence the answer is A, as there is not enough evidence in the passage to suggest that there is a connection between ascarosides and ringworm. (NB. In fact, 'ringworm' is actually caused by a fungus, not even a worm at all.)

Question 54

It must be understood that, in essence, the passage is saying that 'finally the means of communication of nematodes (ascarosides) have been discovered, which may have beneficial consequences'. In light of this, let us consider the different options. A is not really a tremendous issue when it is properly considered: ascarosides are said to 'control' the social behaviour of aggregation, but this could very well mean that in the presence of ascarosides, aggregation is discouraged, and if they are not present, aggregation becomes the normal behaviour. Hence A does not truly question the passage, and is therefore not the answer.

B would only really challenge the idea that ascarosides could be used for agriculture or health care as some nematodes are harmful. This is not the main point of the article, but just a side note that explains why this is an important discovery. As such, if B was true, it would challenge part of the article, but not really its essence; subsequently there are better options, meaning that B can be discarded.

The article states that "many – maybe all – nematodes" communicate via ascarosides. This means that if a significant number of nematode species were found to not use ascarosides, then the article would be challenged. But arctic ice nematodes could potentially comprise as little as one species of nematodes; therefore it may still be the case that the majority of nematodes use ascarosides. As such, option C is not enough to severely challenge the passage.

Conversely, if option D is true, then we have other compounds being secreted whenever nematodes secrete ascarosides. This means that the responses attributed to ascarosides could very well result from the other molecules. Consequently, any of these new molecules could actually be the 'language' used by nematodes, or multiple molecule classes could be involved in communication. This would imply that the communication of nematodes is not well understood currently, and thus that this discovery of ascarosides does not adequately explain how nematodes communicate; and *also* that agricultural/medical products targeting communication are still a long way away. Thus this option challenges the article the most, and really hones in on the essence of it - therefore D is the answer.

Question 55

The squares in the rows of two squares are derived from the four squares surrounding it. Any element that is present an odd number of times in these four squares will appear in the middle square, while any element that is present an even number of times in these four squares will not appear.

The rightmost square in the second lowest row of squares has no balls, but one horizontal line and diagonal line originating from the top left corner. Therefore, among the four squares surrounding it, there must be an odd number of horizontal lines and diagonal lines originating from the top right corner, while even numbers of each type of ball and the diagonal line originating from the top right corner.

As the black ball is present three times in its surrounding four squares, it must be present in the missing square to have an even number of black balls. The diagonal line originating from the top left corner cannot be present in the missing square as this would result in an even number of diagonal lines from the top left corner. As there is already an even number of white balls, the white ball cannot be present in the missing square. The horizontal line must be present in the missing square to achieve an odd number of horizontal lines. Finally, the diagonal line originating from the top right corner must be present to reach an even number of this type of line.
E is the only option that satisfies the above requirements.

Question 56

Whilst all answers could be true, it is important to look at the scope of the question to determine which is actually inferred in the passage. A cannot be concluded from this passage as while blueberries are the fruit with the most antioxidants, the passage does not state that this means that blueberries are the best way to prevent oxidation damage (there could be something such as a medication or another food which is not fruit which better prevents the damage). B is not true as the passage states that the recommendation is tailored to each individual to

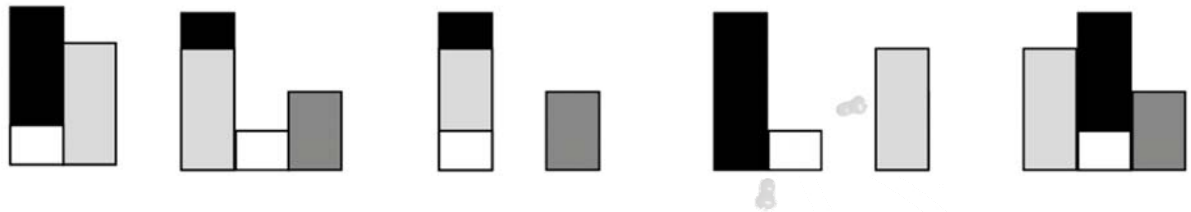
consider factors such as heart disease. The passage also says that this "may be safe", so it also may not be safe for some people. Hence, statement B is too broad. D cannot be concluded from this passage as although "Unchecked free radical activity has been linked to cancer, heart disease, Alzheimer's disease, and Parkinson's disease", a linkage does not prove that one causes the other. C is true as the text makes the connection between oxidation and the possibility of disease and states that antioxidants help "prevent and repair the stress that comes from oxidation". C is correct where D is not because the statement says that they "can" be helpful in preventing disease, does not mean that they definitely will.

Question 57

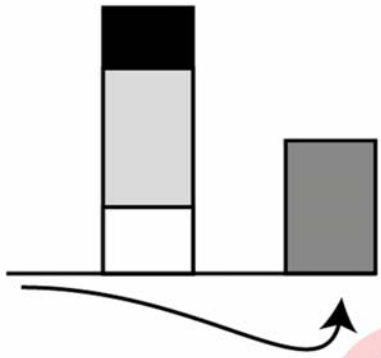
In this series, the dot moves along the edges of the shape in a clockwise fashion. It moves by two edges at first, then four and then eight. The movement doubles every time. Following this pattern, the dot must then move along sixteen edges clockwise from the fourth in the series to the answer. This leaves options A or B. The second pattern is the shape that moves from the top left to the top right to the bottom right and then to the bottom left. This shape is moving around clockwise by one space at a time. This means that the answer must have its shape in the top left. This shape follows a pattern concerned with its number of sides. The first in the series is a square with four sides. The second shape in the series has six sides, the third shape in the series has eight sides and the fourth in the series has ten sides. Therefore, the number of sides increases by two every time. The shape in the answer must have 12 sides. The shape in option A has 16 sides. Therefore, A is incorrect. We have already ruled out C, D and E. The shape in option B has 12 sides. Therefore, B is next in the series.

Question 58

The correct sequence (BEACD) is as follows:



Here, the small white block remains stationary. The large black block alternates between moving one to the left and one to the right. The light grey block moves two to the left, then one to the right, then to the left, then one to the right. When it reaches the 'end' on the left, it moves across to the right hand side. To visualise this, imagine a small platform:



In the third step, when the light grey block moves two to the left, on its second step it crosses over the left hand edge and continues from the right end.

Lastly, the dark grey block alternates between not moving, moving one step to the right, not moving and moving back one step to the left.

Question 59

A is incorrect because this would strengthen the conclusion. If one eye makes sharks more vulnerable to their predators, then they will not survive long in the wild. C is incorrect because this is irrelevant and does not affect the argument made. B and D are close. On closer

inspection, however, B actually does not seriously weaken Gelsleichter's conclusion – while it may mean that Cyclops sharks are not killed as frequently by predators, it still does not necessarily mean that they survive long in the wild. For example, perhaps Cyclops sharks also find it extremely difficult to catch their own food, and this is why they do not survive long in the wild. Therefore, the statement in option B can be true without weakening Gelsleichter's conclusion. D will most seriously weaken the conclusion because it is more relevant to the inability of humans to catch the sharks outside the womb. Gelsleichter's conclusion rests upon the idea that because they have not been caught, this must mean that the sharks are dying in the wild early. However, if the one eye makes evading humans (i.e. not being caught) easy, then this seriously weakens the conclusion that they are not surviving in the wild.

Question 60

The correct sequence (BCEAD) is shown below:

The grey stripes alternate between two positions, allowing application of the 3-2 rule. The first black ball is permanently in the centre.

The second black ball starting in the top left in figure B moves clockwise around the outer circles, two circles at a time.

The third black ball, starting in the rightmost circle in figure B, moves to the centre, then moves back out to the next clockwise outer circle, then back to the centre and then back out again, having gone clockwise one ball again.

Question 61

A is incorrect because smoking is **not** an indicator of psychological distress in the general population. Rather, a high proportion of those with very high psychological distress have never smoked, and so A is a poor conclusion. C is incorrect because this graph tells us nothing about the proportion of the entire general or prison population (including people with no psychological distress, a medium level of psychological distress, etc.) who smoke – all it tells us is the proportions of people with low psychological distress or very high psychological distress who smoke. Even if the graph did show the entire population, it shows more non-smokers than smokers in the general population, making the conclusion in option C incorrect. D is incorrect too, because though this may be true for the general population, where of those with low psychological distress, they are more likely to have never smoked, the same cannot be deduced about the prison population. In the prison population, a person with low psychological distress is likely to be a current smoker (83%), and hence D cannot be concluded. B is the best answer. A person with low psychological distress in the general population is more likely to be an ex-smoker (20%) than a person with low psychological distress in prison (5%).

Question 62

In this problem, the number of straight, vertical lines is the key to solving the question. In each column, the number of straight vertical lines in the third box is equal to the sum of the number of straight vertical lines in the first two boxes. For example, BIG has two straight, vertical lines and CAT has one. This adds to three, which equals the number of straight vertical lines in the word HAT. This process is replicated in the rightmost column; FOX (1 line) and THE (4 lines) equals 5 lines, which corresponds to FHN. The other four options do not contain 5 vertical, straight lines. Therefore, C is correct.

Question 63

B is incorrect. Though she does not wish to go to the hospital, she may still be in pain, but just very frightened. The passage makes no reference to whether or not she is in pain, so we cannot assume that she is not. C also cannot be deduced because we cannot accurately extrapolate what will happen after this conversation. Perhaps she will warm to the idea of the hospital and go. A and D are close. Though her past does indeed suggest anguish and sad memories, it does not mean that it concerns her **more** than her current condition. It more reflects the dilemma she has, whereby she needs medical help but is impeded by her view of the hospital in light of past events, so D is a better answer.

Question 64

Zoe is clearly quite uneasy about the entire situation. She answers Mark 'testily' early in the passage, and does not know if she is okay. As a result, it is not accurate for her to have a matter of fact tone here.

Although she is starting to snap at Mark, anger is a very strong emotion, too strong for this interaction.

It is important to understand the subtle difference between nervousness and anxiety. Nervous can mean both excited and worried, and is a less intense emotion than anxiety. However, in this situation Zoe does not know if her seemingly close friend is ok, and although she is attempting to forget about the situation she is in by going to work, some anxiety is still likely to seep into her tone.

Question 65

In each row and column, there is a square with one arrow, a square with two arrows, and a square with three arrows. The missing square should therefore contain two arrows.

This matrix works in an a clockwise sequence; that is, each box determines the rotation of the arrows in the box that is next in a clockwise sequence, starting with the top left box and finishing with the middle box, in a spiral movement. For each arrow in a box, the arrows in the next box in the clockwise sequence will rotate 90 degrees clockwise. Therefore, one arrow will cause the next set to rotate 90 degrees, two arrows will cause the next box to rotate 180 degrees and three arrows will cause the next box to rotate 270 degrees.

The first square (in the top left corner) has two arrows facing to the right, while the square immediately clockwise to it has one arrow that has been rotated 180 degrees – or "two steps" clockwise, where one step equals a clockwise rotation of 90 degrees. The next square clockwise has its arrows rotated one step clockwise, or 90 degrees. The pattern is that the next square in the series rotates clockwise a number of steps based on the number of arrows in the previous square – one step for one arrow, two steps for two arrows and three steps for three arrows.

The missing segment should therefore have rotated three steps from the arrows located in the square immediately anticlockwise to it, and therefore should have two arrows pointing towards the right. Option A satisfies these requirements.

Question 66

In this series, there are nine small squares, each divided into four smaller triangles, some of which are black. In the transition from the first to the second in the series, only the 4 top left squares change. In the next transition, only the 4 top right squares change. In the next transition, only the four bottom right squares change. Continuing the clockwise movement around the picture, only the 4 bottom left squares should change in the final transition. This does not allow us to rule out any options. We need to look at what changes are occurring.

From the first to the second in the series, the four top left squares all move in a clockwise fashion. That is, the top left square becomes the top middle square, the top middle square becomes the very middle square,

the very middle square becomes the middle left square and the middle left square becomes the top left square. These squares do not rotate; they stay upright throughout this transition. The clockwise movement is the only change in this pattern. From the second to the third in the series, the four top right squares move clockwise. From the third to the fourth in the series, the four bottom right squares move clockwise. The final transition will result in the four bottom left squares moving clockwise. By completing this transition, it can be seen that E is the answer.

Question 67

The correct sequence is shown below:

D **C** **A** **E** **B**

The grey arrow alternates between being behind the black arrow and in front of the black arrow, allowing the 3-2 rule to be applied (the 3-2 rule is a specific strategy developed by MedEntry to answer pick the middle questions).

The grey arrow rotates anticlockwise, first by 90 degrees, then 180 degrees, then 270 degrees and finally by 360 degrees.

The black arrow rotates anticlockwise, first by 45 degrees, then 90 degrees, then 135 degrees, and finally by 180 degrees. Note that it is covered by the grey arrow in the final figure.