
UCAT MOCK EXAMINATION 1

2019

Time allowed: 2 hours

The examination consists of five sections:

Section 1 - Verbal Reasoning

Looks at your ability to think logically about written information. You will have 21 minutes to answer 44 questions.

Section 2 - Decision Making

Looks at your ability to apply logic to reach a decision or conclusion, evaluate arguments and analyse statistical information. You will have 31 minutes to answer 29 questions.

Section 3 - Quantitative Reasoning

Looks at your ability to solve numerical problems. You will have 24 minutes to answer 36 questions.

Section 4 - Abstract Reasoning

Looks at your ability to identify patterns and relationships between shapes. You will have 13 minutes to answer 55 questions.

Section 5 - Situational Judgement

Assess your judgment regarding healthcare related scenarios. You will have 26 minutes to answer 69 questions.

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Section 1 – Verbal Reasoning

In the exam you would have one minute to read this section.

In this section of the exam, you will be presented with 11 passages to read, each associated with 4 questions.

Some questions assess critical reasoning skills, requiring candidates to make inferences and draw conclusions from information. You will need to read the passage of text carefully. You will then be presented with a question or incomplete statement and four response options. You are required to pick the best or most suitable response.

For other questions, your task is to read each passage of text carefully and then decide whether the statement provided follows logically. There are three answer options you can choose from:

True: On the basis of the information in the passage, the statement is true.

False: On the basis of the information in the passage, the statement is false.

Can't Tell: You cannot tell from the information in the passage whether the statement is true or false.

Candidates are only able to select one response.

You have 21 minutes to answer 44 questions. It is in your best interest to answer all questions as there is no penalty for guessing. All unanswered questions will be scored as incorrect.



Passage 1 of 11 (VRTF0024)

The Wars of the Roses were a series of English civil wars fought between supporters of rival branches of the Royal House of Plantagenet for the control of the throne of England. These wars between The House of Lancaster (associated with a red rose) and The House of York (associated with a white rose) eliminated the male lines of both families.

The majority of battles were fought sporadically between 1455 and 1487, however fights also occurred before and after this period. The power struggle ignited around social and financial troubles following the Hundred Years' War, the unfolding of the structural problems of feudalism, and the mental infirmity and languorous rule of king Henry VI which revived interest in Richard of York's claim to the throne. With the Duke of York's death, the claim transferred to his heir, Edward, who later became the first Yorkist king of England, known as Edward IV. His reign began in 1461 but was temporarily interrupted by a Lancastrian uprising and re-installment of Henry VI from 1470 to 1471, after which his reign resumed until his sudden death in 1483. His son reigned for 78 days as Edward V, but Parliament then decided that Edward and his brother Richard were illegitimate and offered the crown to Edward IV's younger brother, who became Richard III. The two young princes disappeared within the confines of the Tower of London.

The final victory went to a relative and claimant of the Lancastrian party after it was wiped out upon the murder of Henry VI following the battlefield execution of his son Edward of Westminster; Henry Tudor (Earl of Richmond) who defeated Richard III at the Battle of Bosworth Field. After assuming throne as Henry VII, he married Elizabeth of York, thereby uniting the claims.

Spoke 15: The Biblewheel and The 15th Century - Wars of the Roses https://thebiblewheel.blogspot.com/2018/10/spoke-15-biblewheel-and-15th-century_9.html

1. All of the wars of the rose's battles were fought between 1455 and 1487.

- True
- False
- Can't Tell

2. Edward IV was king of England for 21 years.

- True
- False
- Can't Tell

3. Edward IV had 2 sons.

- True
- False
- Can't Tell

4. Edward IV had 2 sons.

- True
- False
- Can't Tell



Passage 2 of 11 (VRTF0001)

The Sykes-Picot Agreement was a secret treaty, created in August 1916, ratified in May of the same year and leaked by the Bolsheviks in November of the following year; it was a pivotal agreement between the Triple Entente that sought to divide the lands of the Ottoman Empire following its eventual defeat at the end of WWI by the allies. The agreement has shaped the Middle East into its modern form. The three countries needed to protect and advance their interests and respective spheres of influence. Thus, it was decided as part of the agreement that Russia would be given Constantinople (modern day Istanbul) and Armenian provinces, France would be given the land surrounding Aleppo and comprising modern day Syria, while the British would have influence over the region of Mesopotamia (modern day Iraq).

However, with the withdrawal of Russia from the war, it was swiftly replaced with the new ally - Italy; Turkish Nationalist revolutions halted any Italian ambitions however and led to the abdication of their Anatolian ambitions. Meanwhile, the agreement represented a betrayal of earlier pacts made between the Arabs of the Ottoman Empire and the British, on which the basis of the Arabian revolt against the ottomans was executed by Husayn ibn Ali - helping his son, Faysal to press into Damascus two years after the creation of the treaty to create a government. The imprint of the Class A and B mandates on the basis of this agreement between Britain and France remains in the modern-day borders of Iraq, Israel, Palestinian, Jordan, Lebanon, & Syria.

5. The Sykes-Picot Agreement was leaked by the Bolsheviks in 1917.

- True
- False
- Can't Tell

6. The Triple Entente refers to the countries of France, Russia and Italy.

- True
- False
- Can't Tell

7. Faysal was supported by the allies in the Arabian revolution against the Ottoman Empire to topple the government in Cairo.

- True
- False
- Can't Tell

8. The Class A and B mandates created, represent the original lands distributed to France and Britain by the agreement.

- True
- False
- Can't Tell



Passage 3 of 11 (VRIC0001)

Chronic obstructive pulmonary disease (COPD) is a chronic lung condition characterised by progressive persistent obstruction to normal airflow associated with chronic inflammation. In 2000 it was estimated to be the fifth leading cause of death in the world, predicted to increase to the third leading cause by 2020. Patients typically present with shortness of breath and a chronic productive cough. In the majority of cases COPD is caused by smoking, however other causes include air pollution and occupational hazards. Treatment is aimed at reducing symptoms, preventing and treating exacerbations, and improving exercise tolerance. Many pharmacological and non-pharmacological treatments may be advised for COPD patients and one aspect of this is the use of steroids.

Corticosteroids are anti-inflammatory drugs. They bind to receptors which regulate inflammatory protein synthesis, to switch-on or switch-off gene transcription. At a cellular level, this reduces the number of eosinophils, T-lymphocytes, mast cells and dendritic cells in the airways.

The recommendation for use of corticosteroids depends on whether the patient's COPD is stable, or they are experiencing an exacerbation. The National Institute for Health and Care Excellence (NICE) guidelines recommend that corticosteroids are either inhaled or taken orally. An exacerbation of COPD is defined as 'an acute event characterised by a worsening of the patient's respiratory symptoms that is beyond normal day-to-day variations and leads to a change in medication'. It is important to prevent and treat exacerbations as they can contribute to long-term decline in lung function, increased mortality and reduced quality of life. Exacerbations can vary in severity with some requiring hospital admission whilst others may be treated in the community.

9. The mechanism of action of corticosteroids is:

- A** – Increasing the number of eosinophils in the airways.
- B** – Decreasing the number of eosinophils in the oesophagus.
- C** – Decreasing the number of eosinophils in the airways.
- D** – Decreasing the number of eosinophils in the stomach.

10. COPD is always caused by smoking.

- A** – Yes.
- B** – No.
- C** – Can't tell.

11. Exacerbation of COPD can contribute to:

- A** – Short-term decline in lung function.
- B** – Decrease in mortality.
- C** – Increased quality of life.
- D** – Increased mortality.

12. Corticosteroids produce their effect by:

- A** – Binding to receptors which regulate inflammatory RNA synthesis.
- B** – Binding to receptors which regulate inflammatory protease synthesis.
- C** – Binding to receptors which regulate inflammatory protein synthesis.
- D** – Binding to receptors which inhibit inflammatory protein synthesis.



Passage 4 of 11 (VRTF0009)

A minimum price is a price floor set by the government; it is a set level that the price is not allowed to fall below (although it is allowed to rise above it). It is the minimum price that can legally be set, for example, the minimum price for alcohol or the minimum wage. To be effective the minimum price has to be set higher than the equilibrium price.

Alcohol is likely to be over consumed as people would overestimate the marginal private benefits and not take into account the marginal social costs to society, for example drunken behaviour which in turn would lead to violence. People make personal decisions regarding how much alcohol to consume, thus generating excessive consumption relative to the socially desirable level. In addition, consumers may not be fully rational in their decisions relating to alcohol consumption (not taking into account the risk of addiction for example) which would lead to an underestimation of the social costs.

A minimum price should be set on alcohol to reduce the incidence of alcohol related disease, decrease the stress on the NHS, reduce the number of deaths per year and reduce overconsumption of alcohol as price per unit increases. However, some may argue that the government should not set a minimum price as it is the individual's choice and responsibility on how much alcohol they consume. It may punish the sensible, moderate drinkers who drink responsibly, and it could increase poverty as people will spend larger proportions of their income on the increased price of alcohol especially those with addictions.

13. People may underestimate the social cost of consuming alcohol.

- True
- False
- Can't Tell

14. Setting a minimum price on alcohol may reduce the number of alcohol related deaths.

- True
- False
- Can't Tell

15. The price may not rise above the minimum price set by the government.

- True
- False
- Can't Tell

16. Setting a minimum price of alcohol will result in a surge of world poverty.

- True
- False
- Can't Tell



Passage 5 of 11 (VRIC0003)

Forensic science refers to the application of scientific techniques to assist investigations in criminal law. Fascinatingly, early developments in forensic science date back hundreds of years and mostly came from pathological studies of cadavers. The first known account of using medical science to aid criminal investigation was written in 11th century China, and included guidance on discerning murder weapons using flies, calculating time of death and distinguishing the cause of death at autopsy. During the 19th century, the process of crime scene investigation became increasingly thorough and meticulous and now included footprint analysis, the use of ballistics (the mechanical study of projectiles, such as bullets) and early approaches to fingerprinting. Furthermore, methods were developed for detecting arsenic in the tissues of poison victims (i.e. early forensic toxicology), and criminal psychology was beginning to play a larger role in the investigative process.

Perhaps the most major breakthrough in 20th century forensic science is the use of DNA analysis, developed by Sir Alec Jeffreys and first used to solve a crime in 1985. Whilst 99.9% of human DNA is the same between individuals, 0.1% of a person's DNA is made up of highly variable repetitive segments that are unique to that individual. These short tandem repeats (STRs) or microsatellites can be extracted and analysed to determine a person's unique DNA "fingerprint". DNA samples are acquired from a crime scene, analysed and either matched to an existing profile on a DNA database or compared to a reference sample, usually a buccal swab, obtained from a suspect.

17. In forensic science, what describes the mechanical study of projectiles?

- A** – Projectile mechanics.
- B** – Ballistics.
- C** – Astrodynamics.
- D** – Trajectory physics.

18. Which percentage of human DNA, utilised in DNA profiling, is unique between individuals?

- A** – 0.1%.
- B** – 1%.
- C** – 0.01%.
- D** – 10%.

19. Which year was forensic DNA analysis first used successfully in criminal investigation?

- A** – 1991.
- B** – 1981.
- C** – 1976.
- D** – 1985.

20. Which was not employed as a forensic technique in the 19th century?

- A** – Forensic toxicology.
- B** – Criminal psychology.
- C** – Cryptanalysis.
- D** – Fingerprinting.



Passage 6 of 11 (VRIC0002)

Surrealism was an artistic, philosophical and literary movement of the 20th century. The term “surrealist” was first coined by French poet Guillaume Apollinaire; however, the first description of surrealism was laid out in the “Surrealist Manifesto” written by Andre Breton in 1924. At the time, Andre Breton was the leader of a group of revolutionary poets and artists in Paris. He defines surrealism as: “pure psychic automatism, by which one proposes to express, either verbally, in writing, or by any other manner, the real functioning of thought. Dictation of thought in the absence of all control exercised by reason, outside of all aesthetic and moral preoccupation.” In many ways, surrealism was a rejection of the conventional perceptions of “reality” – an expression of the unconscious and dreaming mind - and was heavily influenced by developments in psychology at the time. As a cultural movement, it rapidly spread internationally and, whilst some argue the movement ended in 1966 with the death of Andre Breton, many believe it to still have presence and relevance today.

Perhaps one of the most famous artists of the movement is Spanish surrealist painter Salvador Dali. He is best known for creating bizarre, dream-like scenes, rich in symbolism. One of his most recognisable works, “The Persistence of Memory” features melting clocks and a strange human-like figure in a desert landscape. Whilst some have interpreted this work as being inspired by Einstein’s theory of special relativity, Dali himself refuted this. Instead he states that “the soft watches were not inspired by the theory of relativity, but by the surrealist perception of a Camembert melting in the sun.”

21. The term “surrealism” was first coined by:

- A – Andre Breton.
- B – Salvador Dali.
- C – Guillaume Apollinaire.
- D – Sigmund Freud.

22. One of Salvador Dali’s most memorable paintings is called:

- A – The Perception of Memory.
- B – The Persistence of Mortality.
- C – The Petulance of Mortality.
- D – The Persistence of Memory.

23. Surrealism was heavily influenced by developments in:

- A – Physiology.
- B – Psychology.
- C – Dream studies.
- D – Neurological imaging.

24. Surrealism was first described by Andre Breton in his 1924 book entitled:

- A – The Surrealist Declaration.
- B – The Surrealist Revolution.
- C – The Surrealist Proclamation.
- D – The Surrealist Manifesto.



Passage 7 of 11 (VRIC0004)

Sigiriya, Sri Lanka, is a UNESCO world heritage site and ancient rock fortress dating back to approximately 477 CE. The vast column of rock upon which the ruins of the royal palace of King Kashyapa sits stands at nearly 200 metres tall. The name Sigiriya derives from the Sinhalese for “Lion Rock” and the gateway to the summit of the site is guarded by two great stone lions carved into the rock face.

Sigiriya was established by King Kashyapa as the new capital of Sri Lanka after he seized the throne from his father King Dhatusena in a military coup when he discovered his mother was not the true Queen, thus forfeiting his lineage to the throne. On the summit of the rock he created an elaborate fortress and palace, with grand gardens and terraces surrounding the base. In response to the seizing of the throne, Kashyapa’s half-brother Moggallana who was the true heir to the throne returned from India to declare war on Kashyapa. In 495 CE, Moggallana defeated Kashyapa’s armies and the defeated King committed suicide. It is believed that Sigiriya has remained uninhabited since this time.

A number of legends surround the ancient citadel. Historically, Sigiriya was King Kashyapa’s “pleasure palace” and a number of concubines lived there with him. Legend has it that when the King went to war, he barricaded the concubines inside the palace to keep them safe, anticipating his return. However, after his defeat and subsequent suicide, the King never returned, and the concubines perished in the palace walls. Upon their deaths, they transformed into wasps. In modern day, Sigiriya is home to a number of aggressive wasp colonies that have been known in the past to attack tourists.

25. Sigiriya was built as the new capital of Sri Lanka by which ancient King?

- A – King Moggallana
- B – King Kashyapa
- C – King Vijaya
- D – King Dhatusena

26. According to legend, deceased concubines in the palace turned into which creature?

- A – Butterflies
- B – Hornets
- C – Bees
- D – Wasps

27. Why did King Kashyapa seize the throne from his father in a military coup?

- A – He disagreed with his father’s dictatorship.
- B – He found out the King wasn’t his true father, invalidating his right to the throne.
- C – He wanted to move the capital from the city of Anuradhapura to Sigiriya, against his father’s wishes.
- D – He found out the true Queen was not his mother, invalidating his right to the throne.

28. The ancient rock fortress of Sigiriya dates back to which year?

- A – 477 CE
- B – 495 BC
- C – 495 CE
- D – 447 CE



Even though the BMA are now calling for all prescriptions in England to be free, Cystic Fibrosis patients still pay for treatment- despite continuously being on medication for long time periods along with other people suffering with long term illnesses. Neil Churchill, Chief Executive of Asthma UK, said: 'At the moment, millions of people with long-term conditions bear a disproportionate and unfair burden of prescription charges, and huge numbers of them do not get all the treatment they need because it is too costly. A new, fairer system is urgently needed.' Although treatment is currently at a high level, and is ever advancing, many are not being provided to patients due to their cost. Invocator, a drug that directly addresses the genetic defect in certain mutations, has not been made available in Wales for this reason. Ed Owen, chief executive of the CF trust, said: 'It would be an outrage if people in Wales with CF were prevented from receiving a treatment that is freely available on the health service in the rest of Britain'

Around 1 in every 2,500 babies born in the UK are affected by CF, a genetic defect brought about through no fault of the patient. A recent Government report claimed that by 2015 obesity will cost the NHS £6.4bn per year, despite the patient being predominantly responsible for this condition, and yet the government seem cautious to spend money on advancing CF treatment despite the vast increase in quality of life it could lead to.

29. Cystic Fibrosis patients are not the only people who pay for prescriptions.

- True
- False
- Can't Tell

30. The government report claimed that more money is spent on obesity than on Cystic Fibrosis.

- True
- False
- Can't Tell

31. Neil Churchill believes all prescriptions should be free.

- True
- False
- Can't Tell

32. Invocator is not given to Cystic Fibrosis patients in England because of its cost.

- True
- False
- Can't Tell



Passage 9 of 11 (VRTF0010)

Positive externalities exist when third parties benefit from the overflow effects of production/consumption e.g. the social returns from investment in education & training or the positive benefits from health care and medical research. Negative externalities happen when production and/or consumption imposes external costs on third parties outside of the market for which there is no compensation.

Merit goods are products that tend to be under-consumed by the free market as people underestimate their benefits due to problems such as information failure. For example, people may not fully value education or healthcare or understand its true benefits.

Where positive externalities exist, the good is likely to be under-consumed, or it may be underprovided. This is because the marginal social benefits of consuming the good are greater than the marginal private benefits.

De-merit goods are believed to be 'bad' for you. The consumption of de-merit goods can lead to negative externalities, thus causing a fall in social welfare. The government normally seeks to reduce consumption of de-merit goods. Consumers may be unaware of the negative externalities that these goods create - they have imperfect information.

33. De-merit goods may cause a fall in social welfare.

- True
- False
- Can't Tell

34. The value of merit goods is overestimated.

- True
- False
- Can't Tell

35. Goods that yield positive externalities are likely to be over-consumed.

- True
- False
- Can't Tell

36. All consumers have imperfect information.

- True
- False
- Can't Tell



Passage 9 of 11 (VRIC0006)

Tutankhamun was an Ancient Egyptian pharaoh ruling from 1332-1323 BC. He ascended to the throne at the age of nine years old, marrying his half-sister, Ankhesenamun, who became his queen. The tomb of Tutankhamun was discovered in the Valley of the Kings in November 1922 by English archaeologist Howard Carter, following a seven-year search. It took three months to unseal the burial chamber in which the mummified remains of the pharaoh lay. The tomb of Tutankhamun is amongst the best preserved of ancient Egypt, and contained 5,398 items, including a solid gold sarcophagus and golden death mask, inscribed with a protective spell from the Book of the Dead. Other items buried with Tutankhamun were trumpets, archery bows, food, wine and fresh linen underwear. Given his status, the tomb in which the pharaoh is buried is comparatively small, suggesting perhaps that he died suddenly and was buried in a tomb intended for someone else, whilst his remained under construction.

There is no surviving documentation pertaining to the death of Tutankhamun. Scientists have studied the mummified remains and come up with a number of hypotheses. CT scanning in 2005 showed a compound left leg fracture, which could have become infected, leading to death. DNA analysis in 2010 showed that the pharaoh had suffered from malaria - another possible cause of death. In addition, congenital defects were discovered including kyphoscoliosis and a possible cleft palate. Other experts believe Tutankhamun died as the result of an accident, for example a chariot crash, due to the presence of multiple fractures.

37. How many items were buried with Tutankhamun in his tomb?

- 8359
- 3895
- 5839
- 5398

38. What was the familial relationship between Ankhesenamun and Tutankhamun?

- Cousins
- Half siblings
- Siblings
- Half cousins

39. According to the article, which of the following objects is not listed as being discovered in the tomb of Tutankhamun?

- Fresh linen underwear
- Wine
- His mummified pet cat
- Archery bows

40. According to the article, which of the following is not a working hypothesis for the cause of Tutankhamun's death?

- Malaria
- Infected compound fracture
- Chariot accident
- Tuberculosis



Passage 10 of 11 (VRIC0008)

The Incas were a South American culture whose empire was the largest in South America pre the Columbian invasion. The Incan empire flourished between 1438 and 1533; its capital was based in Cusco, Peru. The main language of the Incas was Quechuan, an indigenous language still spoken today in areas of the Central Andes. At its peak, the Incan empire incorporated Peru and parts of Ecuador, Bolivia, Colombia, Argentina and Chile.

The Incas are famous for their impressive architecture and stonework - most notably, for the settlement of Machu Picchu. Situated in the Peruvian Andes, Machu Picchu is believed to have been created as a citadel for the Incan emperor Pachacuti, however archaeologists continue to debate much about the UNESCO World Heritage Site. The methods used to construct Machu Picchu remain somewhat of a mystery to this day. The site is no stranger to earthquakes, being situated over two fault lines, however, the stonework remains surprisingly intact, despite the fact that no mortar is used between the stones. Instead, the stones are cut and pieced together with such precision that reportedly a credit card cannot be swiped between them; they are said to “dance” during an earthquake, and slot back together again in the correct position. There is no evidence of how the Incas calculated this with such accuracy, however it is theorised that in order to cut these enormous stones, they used a technique called the wooden wedge technique. This entailed driving wet wedges of wood into the rock, allowing the wood to freeze and expand, thus cracking the rock in a very precise fashion. However further techniques must have been used to smooth the rock edges and fit them atop one another with such precision.

41. Which of the following statements most accurately describes the geographical reach of the Incan empire?

- Bolivia plus parts of Peru, Chile, Guatemala and Ecuador.
- Peru plus parts of Argentina, Chile, Ecuador and Brazil.
- Ecuador plus parts of Colombia, Argentina, Peru and Bolivia.
- Parts of Ecuador, Bolivia, Colombia, Argentina and Chile as well as Peru itself.

42. Which of the following is a theorised method for cutting large stones to build with?

- Wet wood technique.
- Freeze expansion technique.
- Frozen wedge technique.
- Wooden wedge technique.

43. The Incan Empire existed between which dates?

- 1438-1533
- 1538-1672
- 1433-1538
- 1402-1608

44. The purpose of Machu Picchu is unclear, but it is believed to be created as:

- A citadel to protect emperors from earthquakes.
- A religious temple complex for worshipping the Sun.
- A citadel for the Incan emperor Pachacuti.
- A mountainous settlement for Incan high priests.



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Section 2 – Decision Making

In the exam you would have one minute to read this section.

In this section of the exam, you will be presented with questions that may refer to text, charts or graphs. Additional information may be presented within the question itself. All questions are standalone and do not share data.

Some questions will have four answer options but only one correct answer; others will require you to respond to five statements by placing a 'yes' or 'no' answer next to each statement.

You have 31 minutes to answer 29 questions. It is in your best interest to answer all questions as there is no penalty for guessing. All unanswered questions will be scored as incorrect.



1. (DMDR0001) **Al-Diwaniyah is south of Baqubah which is not as far north as Sulaymaniyah. Al Habbaryah is west of Baghdad which is east of Baqubah. Al Habbaryah is situated:**

- A** – North of Sulaymaniyah.
- B** – South of Al-Diwaniyah and west of Baqubah.
- C** – South of Sulaymaniyah and north of Al-Diwaniyah and can be between Baqubah and Baghdad.
- D** – East of Baqubah and south of Al-Diwaniyah.

2. (DMDR0010) **This child is a menace. All menaces are annoying.**

- A. YES** / **NO** – All children are menaces.
- B. YES** / **NO** – All annoying things are menaces.
- C. YES** / **NO** – Some menaces are annoying.
- D. YES** / **NO** – Some menaces are children.
- E. YES** / **NO** – Some children are annoying.

3. (DMEA0001) **Should the law be changed to force all soft-drinks manufacturers to label sugar content clearly on their packaging?**

- A** – Yes, children are particularly fond of sugary soft drinks, which can damage their health.
- B** – Yes, attempts to get the drinks industry to label sugar content on a voluntary basis have given mixed results.
- C** – No, the majority of countries have no equivalent legislation and not all of those have a population obesity problem.
- D** – No, the cost of monitoring the accuracy of labelling would be passed on to the consumer.



4. (DMDR0011) **Not all the people at the circus were clowns but all the clowns were in makeup. Some clowns were not professionals.**

- A. YES / NO – All those in makeup were clowns.
B. YES / NO – A person present was either a clown or not a professional.
C. YES / NO – Only clowns were professionals
D. YES / NO – Some clowns were professionals.
E. YES / NO – The clowns who were male weren't in makeup.

5. (DMFR0002) **Given that the following equations are true.**

$$\bigcirc + \bigcirc + \bigcirc + \bigcirc = \square + \square$$

$$\star = \square + \square + \bigcirc$$

$$\triangle = \bigcirc + \bigcirc + \bigcirc$$

And given that a circle is of the value of 4, what is the value of the following:

$$\star + \square + \triangle + \bigcirc$$

- A – 38
 B – 40
 C – 42
 D – 44
 E – 46

6. (DMEA0009) **Should overweight patients not be allowed access to expensive medication and hospital resources because they have brought their demise upon themselves?**

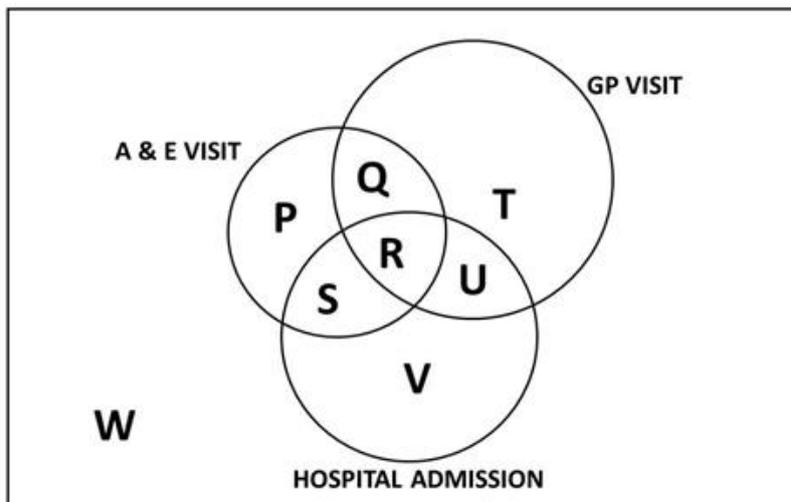
- A – Yes, they should just sign up to the gym.
 B – No, we should tax the people who sell unhealthy foods instead.
 C – No, the NHS is for everyone and discrimination is a slippery slope, it would be completely biased.
 D – Yes, the funds and resources saved can be allocated for patients who have more critical illnesses.



7. (DMSR0006) **There are five new-born babies being assessed on the maternity ward. The midwives are doing their new-born baby checks and assessing their weights. Which new-born baby weighs the most and which weighs the least?**
- **Baby Andrew weighs 3750g.**
 - **Baby Nina weighs 150g more than baby Charlotte.**
 - **Baby Gil weighs 80% of what baby Charlotte weighs.**
 - **Baby Oscar weighs more than baby Nina but less than baby Andrew**
- A** – Baby Nina (most) and baby Gil (least).
- B** – Baby Oscar (most) and baby Charlotte (least).
- C** – Baby Andrew (most) and baby Nina (least).
- D** – Baby Andrew (most) and baby Gil (least).
8. (DMEA0011) **Drugs should be legalised in England, as it would lead to supervision of production, and therefore less drug related deaths. Which of the following is the strongest argument?**
- A** – Yes, all drugs should be legalised so that dangerous drug dealers are no longer in business.
- B** – Yes, legalising drugs will ensure less drug-related crime and violence such as fatal stabbings and murder.
- C** – Legalising drugs is a good idea as currently drugs are not regulated which means dangerous and potent levels lead to death.
- D** – Legalising drugs will mean they are widely available, so individuals are more likely to die from abuse and overdose.
9. (DMDR0004) **All monkeys are simians. All humans are apes. No apes are simians.**
- A. YES** / **NO** – All humans are simians.
- B. YES** / **NO** – Some humans are apes.
- C. YES** / **NO** – No monkeys are apes.
- D. YES** / **NO** – No monkeys are human.
- E. YES** / **NO** – All simians are monkeys.



12. (DMFR0008) The diagram below represents the departments that a group of patients have visited over the last year.



Which of the following statements is true about this population?

- A** – Individuals in group P and T attended either A&E or their GP but not both in the last year.
- B** – Individuals in group S, R and V must have all attended A&E in the last year.
- C** – Individuals in W are fit and healthy and have never required healthcare services.
- D** – Individuals in P and V have attended both their GP and the A&E but have not had a hospital admission in the last year.

13. (DMEA0006) The UK has one of the highest rates of teenage pregnancy in Western Europe. The age of consent is 16. In order to reduce the rate of teenage pregnancy, should the age of consent be raised from 16 to 18?

- A** – Yes. Sixteen-year olds do not have a fully matured prefrontal cortex, and therefore they are not actually competent to agree to sexual intercourse.
- B** – Yes. When such laws are introduced, society's values usually follow suit and so people will do more to prevent teenagers from having sex.
- C** – No. It is difficult to catch and punish those who actually do engage in intercourse and so such a law will be difficult to enforce.
- D** – No. Such a law would be ineffectual, and it would be better to focus more on sex education in schools and improving access to contraception.



14. (DMSR0014) Two friends, Jason and Michael are each taking turns to free throw a basketball into a hoop. Jason is usually able to get on average 5 successful shots out of 20. Michael is usually able to get 30 successful shots out of 60.

- A** – If Michael and Jason throw 500 free throws each, Jason will have more successful shots than Michael.
- B** – If Michael and Jason throw 500 throws each, Michael will have the same number of successful shots as Jason.
- C** – If Michael and Jason throw 500 throws each, Jason will have less successful shots than Michael.
- D** – If Michael and Jason throw 500 throws each, Michael will have less successful shots than Jason.

15. (DMDR0002) Charlotte has studied three modules this year and has three exams, which start on Monday. Luckily for Charlotte she has a day break between her exams. Her friend Lucy will be finishing exams before her, as she has no day breaks, even though she starts her four exams after Charlotte has started. Louie starts his exams on the same day as Lucy, while Charlotte is on break. Both Louie and Lucy have two exams on one day, whereas Charlotte has a single exam on that day. No exams take place on the weekend, and there are up to 2 exam sittings per day.

- A. YES** / **NO** – Charlotte has an exam for each of her modules.
- B. YES** / **NO** – Lucy and Louie have two exams each on Wednesday.
- C. YES** / **NO** – All three friends have exams on Thursday.
- D. YES** / **NO** – There are 10 exams in the passage.
- E. YES** / **NO** – The majority of Charlotte’s exams don’t coincide with her friend’s exams.



16. (DMEA0010) Should assisted suicide should be made legal for practioners to relieve suffering of terminal patients?

- A** – Yes, because patients deserve dignity in death and have a right to reject treatment.
- B** – Yes, because patients should be able to receive the services they want.
- C** – No, because doctors will be held liable for their patient death.
- D** – No, because doctors should not be in control of who has a right to die or not.

17. (DMFR0001) In a group of 50 people, twice as many people like carrots only as like peas only. One more person likes carrots and peas as like peas only. 29 people like sweetcorn and nobody likes none of the three. How many people like carrots only?

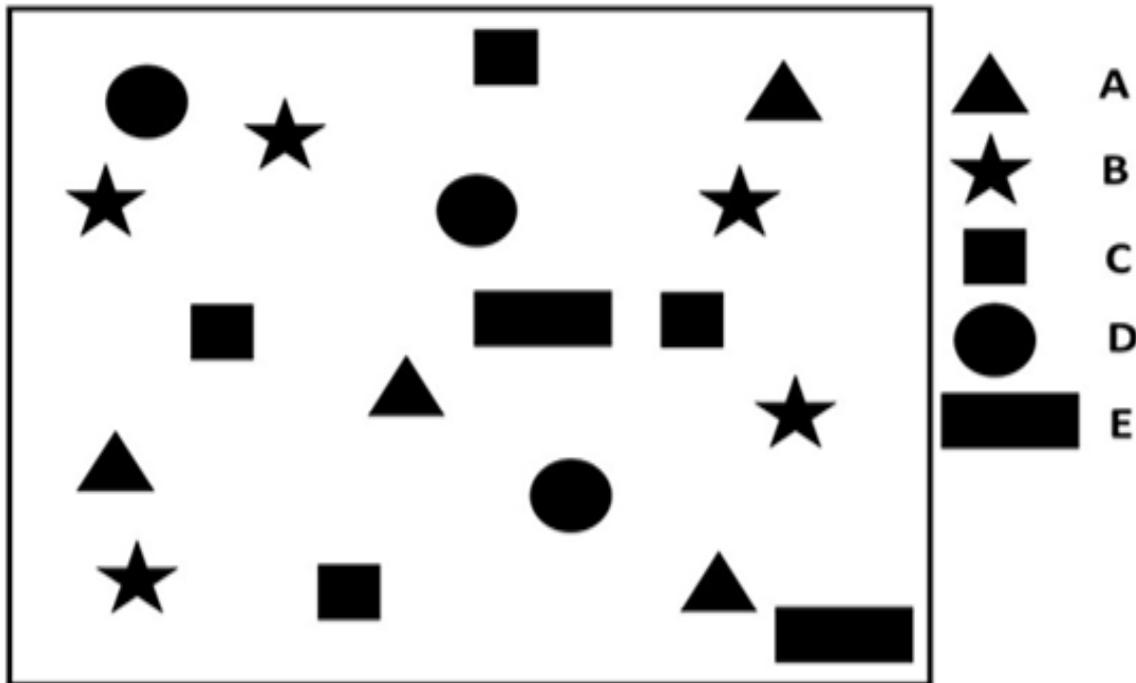
- A** – 5.
- B** – 6.
- C** – 10.
- D** – 11.

18. (DMDR0003) The neurosurgeon has a scheduled surgery at 5pm and needs a bed for his patient, otherwise it must be cancelled. There is a lack of empty patient beds at UCL Hospital (UCLH). Two patients left at midday while one was admitted through A&E. Before 4pm, the Royal Free hospital were able to transfer an elderly patient to their ward while the A&E patient from earlier has been discharged. As the operation is ending, a further two patients are admitted from A&E.

- A. YES** / **NO** – There were enough beds at midday for the surgery to go ahead.
- B. YES** / **NO** – The highest number of beds available at one point was three.
- C. YES** / **NO** – A&E patient take priority over surgical patients when it comes to beds.
- D. YES** / **NO** – The neurosurgeon started the operation with four beds available.
- E. YES** / **NO** – Upon the operation ending there were two beds available.



19.(DMFR0009) The ethnicity of a sample of patients is noted as A, B, C, D and E.



Which of the following statements is true about this population?

- A – In this sample of patients, ethnicity A is the commonest in this patient sample.
- B – The number of individuals of ethnicity B and E represent half the total patient sample.
- C – There is an equal number of individuals of ethnicity C and A in the world.
- D – The number of individuals of ethnicity A and E represent $\frac{1}{3}$ rd of the total patient sample.

20. (DMDR0005) Most chickens are egg-layers. No egg-layers can fly.

- A. YES / NO – Most chicken cannot fly.
- B. YES / NO – Some egg-layers can fly.
- C. YES / NO – The chicken which are not egg-layers can fly.
- D. YES / NO – A penguin can fly so it must not be an egg-layer.
- E. YES / NO – All chicken cannot fly.

21. (DMEA0004) The current UK breast cancer screening programme, consisting of a mammogram offered every 3 years for all women aged 50 to 70, has been successful in detecting cancers earlier. Should it therefore be extended so that it is offered both to younger women and also more frequently than every 3 years?

- A** – Yes. It is imperative to pick cancers up as early as possible in order to treat them as soon as possible and so extending the screening programme would improve overall survival rates.
- B** – Yes. Young women, such as those with genetic mutations, are also at a higher risk of breast cancer and so they should be offered the same screening programme as older women.
- C** – No. It is not economically feasible for the government to offer the screening programme to a broader segment of the population or more frequently, or else it would already be offered.
- D** – No. Women younger than fifty are not at as high a risk of breast cancer, and more frequent screening would result in a high rate of false positives and unnecessary invasive tests, not necessarily better detection rates.

22. (DMEA0007) In order to reduce the amount of air pollution, which is produced globally, an acceptable level of air pollution should be agreed upon, and sanctions should be imposed on countries who go over this level. Select the strongest argument from the statements below.

- A** – Yes. It is important to punish governments who have the worst impact on the environment as an example to other countries with poor environmental practices.
- B** – Yes. Oftentimes, the concept of doing something to benefit the environment and the health of populations is not enough of an incentive for governments to change, and so introducing an economic incentive is likely to work.
- C** – No. It would be better to focus on the lifestyles of individuals which contribute to air pollution, taking a ‘bottom up’ instead of a ‘top down’ approach.
- D** – No. A lot of the countries which are producing large amounts of air pollution are less developed, and this would cripple them economically.



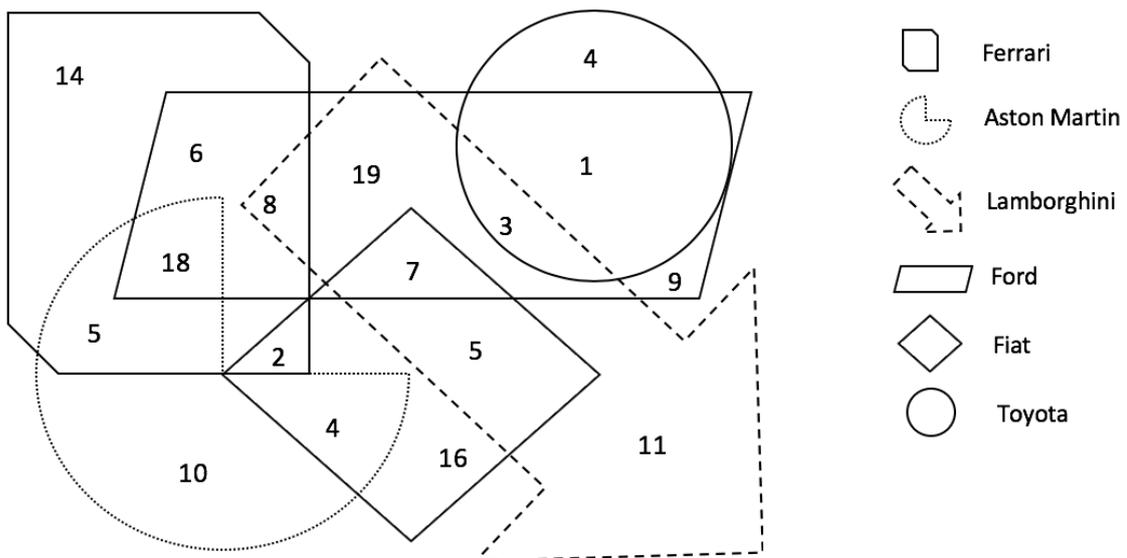
23. (DMSR0002) Sarah, the manager is sorting out the rota for nurses this weekend. She needs to find someone to work a day shift and a night shift on Friday, Saturday and Sunday. For strict health and safety reasons, no one can work consecutive shifts, and no one can work more than two shifts on Fri/Sat/Sun. Rachel can't work on Friday at all. Ellen can only work Friday and Saturday. Liam can only work the day shifts. Who must work on Saturday night?
- A – Rachel only.
 - B – Ellen only.
 - C – Liam only.
 - D – Rachel or Ellen.
 - E – Ellen or Liam.
24. (DMSR0003) The area of a square can be obtained by calculating the square of the length of its sides. Square X has sides measuring a length of L. Square Y has sides measuring a length of 2L. Square Z has sides measuring a length of 3L. Which one of the following is true?
- A – Three X can fill one Z.
 - B – One Z can accommodate 6 Y.
 - C – Two X completely fill one Y.
 - D – One Z can accommodate 9 X.
 - E – Y is twice the size of X.
25. (DMSR0004) There are 200 students in year 7 of an international school in Hong Kong. Amongst them, three languages are spoken fluently: English, Cantonese and French. If asked, a student may speak any number of these languages in different combinations. All students speak English. 150 students speak Cantonese. 60 students speak all three languages. 90 students speak French. 90 students speak English and Cantonese but not French. 30 students speak English and French but not Cantonese. How many students speak just English?
- A – 10.
 - B – 20.
 - C – 30.
 - D – 40.
 - E – 50.



26. (DMSR0008) 4, 16, 8, 64, 32, 1024, "?". Select the answer which completes this number sequence by replacing the "?".

- A – 72.
- B – 2048.
- C – 512.
- D – 216.
- E – 90.

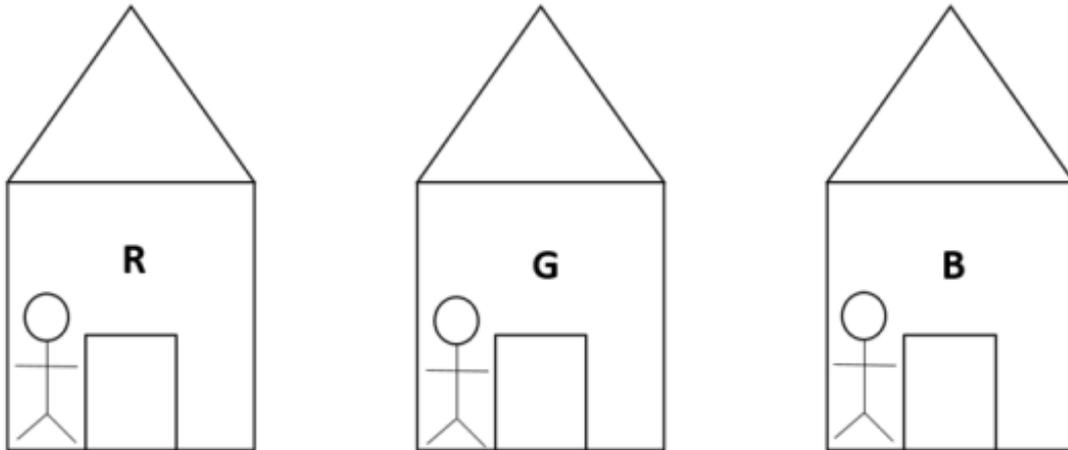
27. (DMFR0012) The diagram below presents the cars driven by people in a neighbourhood in California. The Ferrari, Aston martin and Lamborghini are classed as 'supercars', whilst the Ford, Fiat and Toyota are classed as 'standard, family cars'.



How many people drive either both one supercar and one standard family car, or just one supercar?

- A – 70.
- B – 71.
- C – 74.
- D – 75.

28. (DMFR0010) There are three university sports teams living in houses. Each house is coloured. Each sports team has their favourite drink and ice-cream/
The team at the red house drink water. The hockey team live in the green house and drink Coca-Cola. The team who drink milk eat strawberry ice-cream. The football team eat chocolate ice-cream



Which of the following statements is correct?

- A** – The football team live in the blue house, drink milk and eat strawberry ice-cream.
- B** – The hockey team live in the green house; they drink Coca-Cola and chocolate ice-cream.
- C** – The hockey team live in the green house, drink Coca-Cola and eat vanilla ice-cream.
- D** – The tennis team live in the red house, drink water and eat vanilla ice-cream.

29. (DMDR0015) Bennie has a motorbike garage. He currently has 6 bikes to repair. Half of them are red with two black bikes.

- A. YES** / **NO** – There could be two silver bikes.
- B. YES** / **NO** – There are 3 red vehicles on site.
- C. YES** / **NO** – He has at least 3 red bikes on site.
- D. YES** / **NO** – A third of the bikes for repair are black.
- E. YES** / **NO** – There is one silver bike.

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Section 3 – Quantitative Reasoning

You will have 1 minute to read these instructions.

In this section of the exam, you will be presented with questions that most often refer to charts and graphs containing data. Additional information may also be found within the question itself. Most questions will be shown as sets of four questions each connected to the same data.

In the real exam an onscreen calculator would be available to assist you with this section- therefore please feel free to use a calculator with this section.

You have 24 minutes to answer 36 questions. It is in your best interest to answer all questions as there is no penalty for guessing. All unanswered questions will be scored as incorrect.



Data set 1 (QR0001)

Ticket rates for Butterfly World, a theme park, are shown in the table below. Different rates are available for different age groups. Rates also depend on the day of the week and whether or not it's a bank holiday. Discounts are on offers for groups.

	Standard Rate (Monday to Friday)	Weekend Rate (Saturday and Sunday)	Bank Holiday Rate
Adults	£10.00	£15.00	£12.50
Children (12 and under)	£5.00	£7.50	£6.50
Infants (3 and under)	Free	Free	Free
Students	£7.50	£9.50	£8.50
Seniors (65 and over)	£5.00	£7.50	£6.50
Family - 2 adults and 2 children	£25.00	£30.00	£27.50

1. A group of seven students decide to go to Butterfly World on a Saturday. Three of them forget their student ID cards and have to pay a full price adult ticket. How much more expensive is the overall cost by %?

- A** – 10%
 B – 15%
 C – 20%
 D – 25%
 E – 30%

2. A family consisting of 2 adults and 4 children all between the ages of 4-12 are visiting Butterfly World on a normal Tuesday. How much cheaper is it to purchase the family package plus two extra children tickets compared to buying all their tickets separately?

- A** – £2.50
 B – £5.00
 C – £7.50
 D – £10.00
 E – £12.50



3. A family go to Butterfly World on a bank holiday. The family consists of two adults, an 8-year-old child and a 3-year-old. They have two options: pay for two adult tickets and a child ticket (infants go free) or pay for the family package. Which is the cheaper option and by how much?
- A – Individual tickets, by £4.00.
 - B – Family package, by £2.50.
 - C – Family package, by £4.00.
 - D – Family package, by £5.50.
 - E – Individual tickets, by £6.00.
4. An extended family consisting of 4 adults, 2 seniors, 2 students, 4 children and an infant decide to go to Butterfly World on a normal Wednesday. If they take advantage of the family group discount, how much will they have to pay?
- A – £75.00
 - B – £80.00
 - C – £85.00
 - D – £90.00
 - E – £95.00
-
5. (QR0010) Jenny buys a new car in 2010 which is worth £20,000. As soon as she buys it, the car is worth £1,500 less, and every year thereafter it depreciates in value by 10%. In 2014, she decides to buy a new car which costs £15,000. She decides to sell her old car to help afford the new car. Given that she sells the old car successfully, how much will she still have to pay for the new car?
- A – £1646.75
 - B – £2264.35
 - C – £2674.95
 - D – £2862.15
 - E – £3124.50



A cohort of 250 Year 11 students were interviewed to ask what their least favourite subject was in secondary school. Maths, Biology, Chemistry and Physics are grouped as the 'Sciences' at this school. All other subjects are called 'Arts'.

Subject	Number of students choosing this as their least favourite subject
Maths	64
English	76
Biology	12
Physics	78
Chemistry	16
PE	3
Design Technology	2

6. Which is the least liked subject?

- A** – English
- B** – Maths
- C** – Physics
- D** – Design Technology
- E** – Chemistry

7. What percentage of students least liked a 'science' subject?

- A** – 68%
- B** – 64%
- C** – 42%
- D** – 86%
- E** – 7%



8. What was the least liked 'Arts' subject?

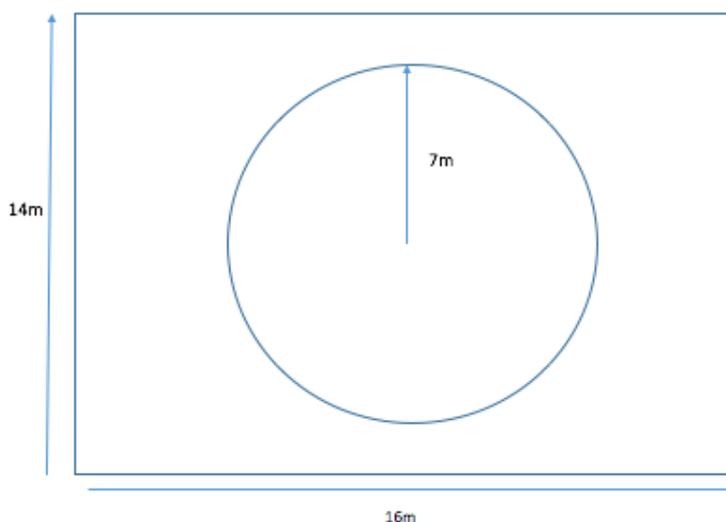
- A** – PE
- B** – Maths
- C** – English
- D** – Physics
- E** – Design Technology

9. The school changed their physics teacher and employed a new one. The next 250 cohort of year 11s did the same questionnaire and 54 chose physics. What percentage decrease occurred?

- A** – 21.6%
- B** – 54%
- C** – 24%
- D** – 9.6%
- E** – 31.2%

Data set 3 (QR0006)

Mr Duhra wants to create a circular dance floor for his 50th birthday in his basement (rectangular area). Marble - £4.30/m².



10. What percentage of area is the dance floor of the basement area?

- A** – 68.7%
- B** – 153.4%
- C** – 68.4%
- D** – 224%
- E** – 70.6%

11. What is the perimeter of the dance floor?

- A** – 44.0m
- B** – 22.0m
- C** – 153.4m
- D** – 153.9m
- E** – Can't tell.

12. How much will it cost Mr Duhra to marble the dance floor?

- A** – £963.20
- B** – £294.55
- C** – £661.60
- D** – £189.20
- E** – £94.60

13. Mr Duhra wants to add a water feature in the centre. It has a rectangular base of 4m x 2.3m. What percentage area of the dance floor does this water feature cover?

- A** – 4.1%
- B** – 5.9%
- C** – 6.0%
- D** – 8.4%
- E** – 8.5%



Data set 4 (QR0007)

Sugar and spice are a London based bakery who will make custom birthday cakes to order and offer free delivery to those living within a 3km radius. They will, however, deliver to people who live within a 20km radius but for a standard fee of £5.00 plus 50p for every kilometre travelled.

They also offer the option of cupcakes with one tier being the equivalent of one dozen cupcakes. An additional £10 is added if the customer wishes for cupcakes instead of a cake.

	One Tier	Two Tiers	Three Tiers	Four Tiers
Basic Price	£20	£25	£30	£40
Cake Toppers	+ £4.00	+ £5.00	+ £6.00	+ £7.00
Writing	+ £5.00	+ £5.50	+ £6.00	+ £6.50
Sparkler Candles	+ £2.50	+ £2.75	+ £3.00	+ £3.25

14. Emma is throwing a birthday party for her twins. She lives 2km away from the bakery. She is deciding between two options. Either she will order a four-tier cake with cake toppers and sparkler candles or she will order the equivalent amount of cupcakes with no candles or cake toppers. Which is the cheaper option and by how much?

- A** – The cake, by 25p.
- B** – The cake, by 50p.
- C** – The cake by 75p.
- D** – The cupcakes, by 25p.
- E** – The cupcakes by 50p.

15. Gregory is having a birthday party and wants a cake. He orders a three tier cake with writing and sparkler candles. He lives 7km away from the bakery and opts for delivery. How much does his order total?

- A** – £44.50
- B** – £46.00
- C** – £47.50
- D** – £48.00
- E** – 49.50



16. Nina has a budget of £55.00 to spend on a cake and delivery. She lives 12km away from the bakery and wants the order delivered. She wants a cake with toppers, writing and candles. How many tiers can she afford to get?

- A** – No tiers.
- B** – One tier.
- C** – Two tiers.
- D** – Three tiers.
- E** – Four tiers.

17. Juan orders a dozen cupcakes for himself with writing on them and opts for delivery. His total comes to £47.00. How far away does he live?

- A** – 10km
- B** – 11km
- C** – 12km
- D** – 13km
- E** – 7km

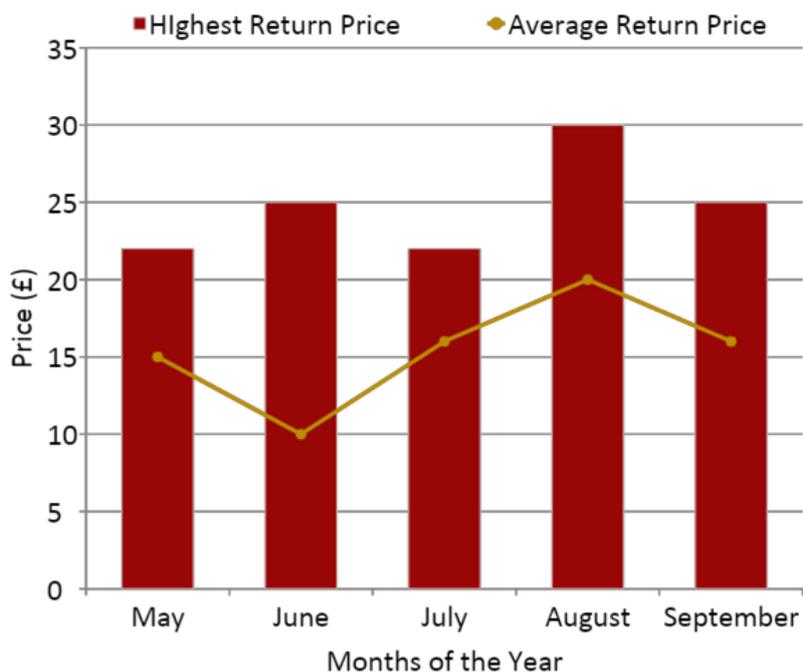
18. (QR0023) Katie scores an average of 81% in her exams for her five subjects. She achieved 78% in French, 85% in English, 73% in History and 80% in Maths. What did she get in Biology?

- A** – 79%
- B** – 81%
- C** – 83%
- D** – 86%
- E** – 89%



Data set 5 (QR0029)

The below chart shows the average and most expensive prices of a standard class train from London to Leeds booked 12 weeks in advance.



19. Which month had the lowest average return price?

- A – May
- B – June
- C – July
- D – August
- E – September

20. The second most expensive return price was found in which month?

- A – June
- B – July
- C – August
- D – September
- E – Can't tell.



21. Which two months had the same average return price?

- A** – May and July
- B** – May and June
- C** – June and July
- D** – July and September
- E** – May and September

22. If I buy the most expensive return ticket for each month, how much will I pay?

- A** – £67
- B** – £68
- C** – £122
- D** – £123
- E** – £124

23. (QR0022) In a normal early pregnancy, the level of a hormone called human chorionic gonadotrophin (hCG) rises by about 66% every 48h. Specific levels do not correlate to specific gestational ages, it is only the trend, which is relevant, hence why serial measurements might be taken. Claudia finds out she is 6 weeks pregnant. She goes to the GP and her hCG level is measured as 1200 units. Given that this is a normal pregnancy, what level would you expect it to be two weeks later?

- A** – 2432
- B** – 23,412
- C** – 35,639
- D** – 41,681
- E** – 42,374



Data set 6 (QR0016)

Stanley has a mobile phone business in Hong Kong which buys excess stock mobile phones from factories in China, marks them up, and sells them on. He works in Hong Kong Dollars (HKD).

He also buys second-hand phones and either sells them whole or sells them on for parts. Generally, he makes more profit if he sells them on for parts.

He has recently expanded his business so that he now exports mobile phones to the UK and to the US.

10 HKD equals 1-pound sterling. 8 HKD equals 1 US dollar. Table shows relative prices of mobile phone models in HKD.

Mobile Phone Model	Bought as excess stock from factory	Bought as second hand	Marked up (from excess factory stock)	Marked up (second hand sold whole)	Marked up (second hand sold for parts)
Vela Pulsar X	\$400	\$300	\$700	\$450	\$550
Andromeda 200	\$250	\$150	\$450	\$350	\$325
Primus 16	\$650	\$500	\$1000	\$675	\$750
Gravida 3	\$200	\$125	\$375	\$200	\$250
Hai Mish 1C	\$500	\$375	\$850	\$450	\$550

24. Stanley buys a batch of excess stock phones from a factory in Guangdong. He gets 20 Gravida 3s, 10 Hai Mish 1Cs and 30 Vela Pulsar Xs. He manages to sell them all on successfully as excess factory stock. How much does he make in profit?

- A** – \$13,000
 B – \$14,000
 C – \$15,000
 D – \$16,000
 E – \$17,000

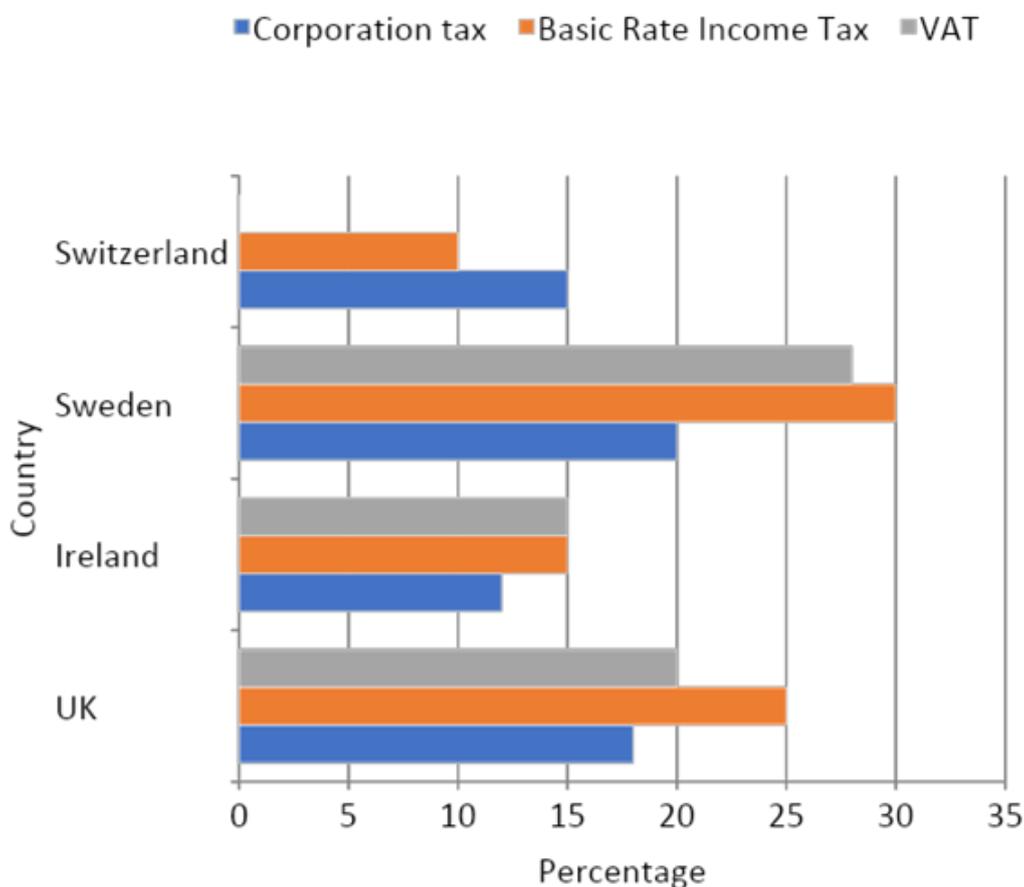


- 25. A company in the UK wants to buy a bundle of second-hand phone parts. They purchase the spare parts of 8 second-hand Hai Mish 1Cs and 15 Primus 16s. Stanley charges a \$350 shipping fee to ship all of these parts. How much does this cost them in pounds sterling?**
- A** – £1550
 - B** – £1600
 - C** – £1650
 - D** – £1700
 - E** – £1750
- 26. Stanley buys a stock of 50 Vela Pulsar Xs as excess stock from a factory. However, he gets confused and instead of selling them on as marked up excess factory stock phones, he sells them on as second-hand phones. How much more profit would he have made if he had sold them correctly?**
- A** – \$2500
 - B** – \$3725
 - C** – \$5000
 - D** – \$9750
 - E** – \$12500
- 27. A mobile phone shop in America buys some phones from Stanley. They purchase 150 Andromedas to sell as second-hand whole phones. Stanley charges 600 HKD for shipping. The American shop marks the phones up by 20% and sells them on. How much profit do they make in USD?**
- A** – \$1264.80
 - B** – \$1327.50
 - C** – \$1412.10
 - D** – \$1772.50
 - E** – \$1812.50



Data set 7 (QR0030)

The above chart shows the taxation data of a number of European countries in 2018.



28. Which country has the lowest VAT?

- A** – UK
- B** – Ireland
- C** – Sweden
- D** – Switzerland
- E** – Can't tell.

29. Which country has the highest average tax rate?

- A** – UK
- B** – Ireland
- C** – Sweden
- D** – Switzerland
- E** – Can't tell.



30. Dan buys an item which without VAT costs the equivalent of £10. If he pays £11.50 which country is he in?

- A** – UK
- B** – Ireland
- C** – Sweden
- D** – Switzerland
- E** – Can't tell.

31. In the UK, Harry pays £15,000 in taxation. How much does he earn post tax?

- A** – £60000
- B** – £55000
- C** – £50000
- D** – £45000
- E** – £40000

32. (QR0014) A candle is scented using four different fragrance oils: lemon, grapefruit, raspberry and vanillin, using the ratio 1:2:1:3 respectively. To make a candle that is 600g, there needs to be 4ml of grapefruit oil. To make a candle that is double that weight, how much vanillin oil is required in ml?

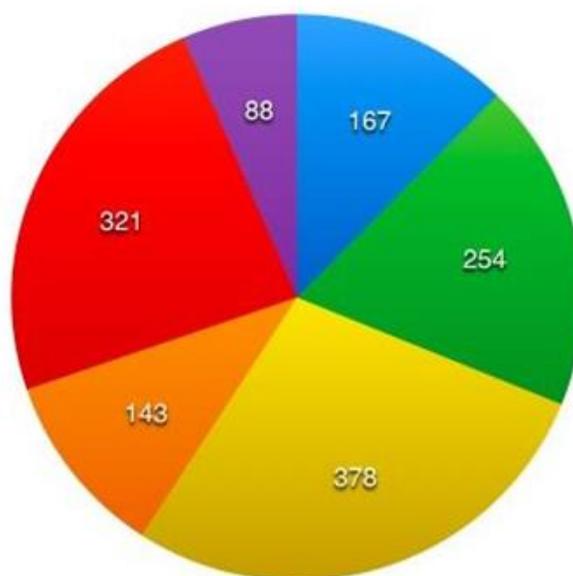
- A** – 4ml
- B** – 8ml
- C** – 10ml
- D** – 12ml
- E** – 16ml



Data set 8 (QR0008)

The pie chart below shows the different proportions of genres sold by a bookshop in May. 1351 books were sold in total.

● Historical
 ● Biographical
 ● Children's
 ● Classics
 ● New Fiction
● Poetry



33. Poetry books represent the smallest percentage of the total books sold in May. The owner does his inventory and realises that he sold an extra 100 poetry books in May that he had not accounted for. What is the new percentage of total sales made up by poetry books now? Round percentages to the nearest 0.5%.

- A** – 6.5%
- B** – 8%
- C** – 10.5%
- D** – 13%
- E** – 14%

34. The bookshop owner realises that he has forgotten to include an entire genre of books, cookery. There were 198 cookery books sold in May. What is the percentage difference between the proportion of cookery books sold and the proportion of children's books sold, using the new total number of books? Round percentages to the nearest 1%.

- A – 9%
- B – 10%
- C – 11%
- D – 12%
- E – 13%

35. Using the original pie chart and data, what percentage of the total number of books sold do the two biggest sellers, Children's and New Fiction, represent? Round to the nearest 1%.

- A – 48%
- B – 49%
- C – 50%
- D – 51%
- E – 52%

36. (QR0013) A taxi company charges a £3.00 baseline rate for every trip, 80p per kilometre after that and an additional £1.50 if the taxi is booked online. There is also an additional £2.50 charge for luggage or animals. Freddy books a taxi online to take his dog to the vet. The cost of the trip comes to £16.60. How far away is the vet from his house?

- A – 8km
- B – 9km
- C – 10km
- D – 11km
- E – 12km



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Section 4 – Abstract Reasoning

In the exam you would have one minute to read these instructions.

There are 4 different question types in this section of the exam.

For type 1, you will be presented with two sets of shapes labelled “Set A” and “Set B”. You will be given a test shape and asked to decide whether the test shape belongs to Set A, Set B or Neither.

For type 2, you will be presented with a series of shapes. You will be asked to select the next shape in the series.

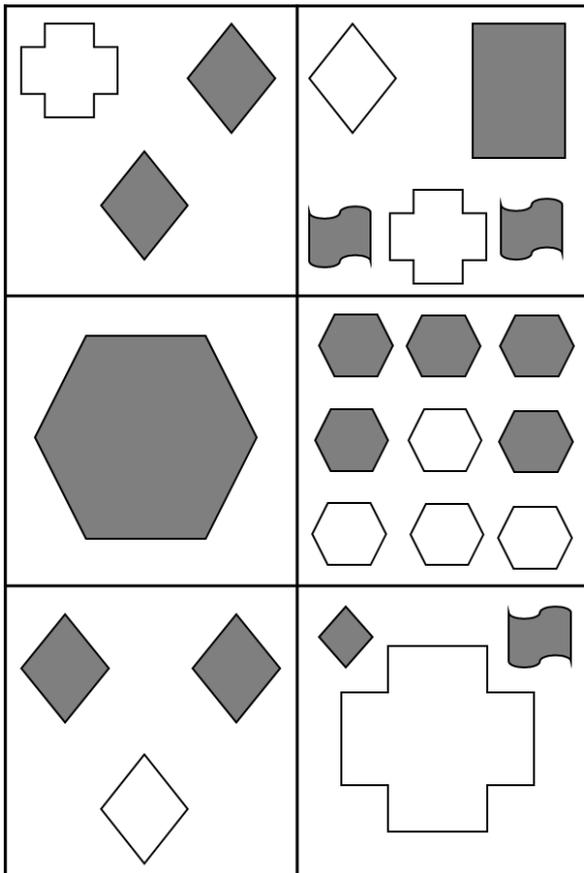
For type 3, you will be presented with a statement, involving a group of shapes. You will be asked to determine which shape completes the statement.

For type 4, will be presented with two sets of shapes labelled “Set A” and “Set B”. You will be asked to select which of the four response options belongs to Set A or Set B.

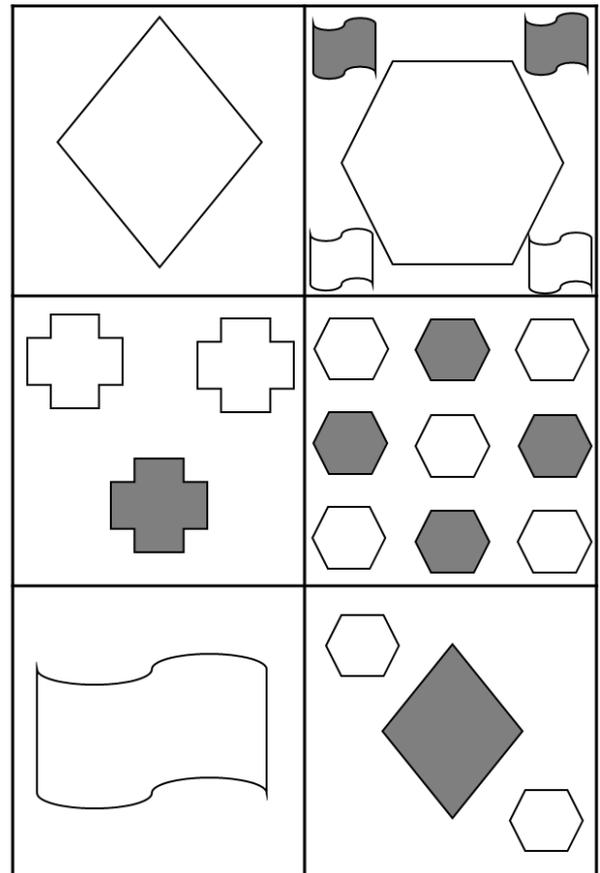
You have 13 minutes to answer 55 questions. It is in your best interest to answer all questions as there is no penalty for guessing. All unanswered questions will be scored as incorrect.



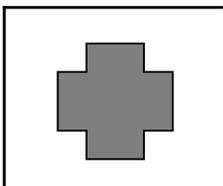
(ART10001) Set A



Set B

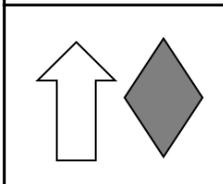


1.



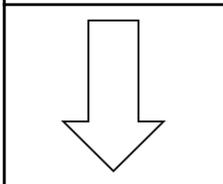
- Set A
- Set B
- Neither

2.



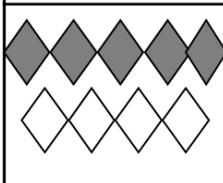
- Set A
- Set B
- Neither

3.



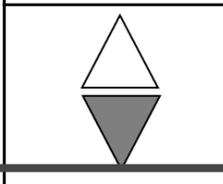
- Set A
- Set B
- Neither

4.



- Set A
- Set B
- Neither

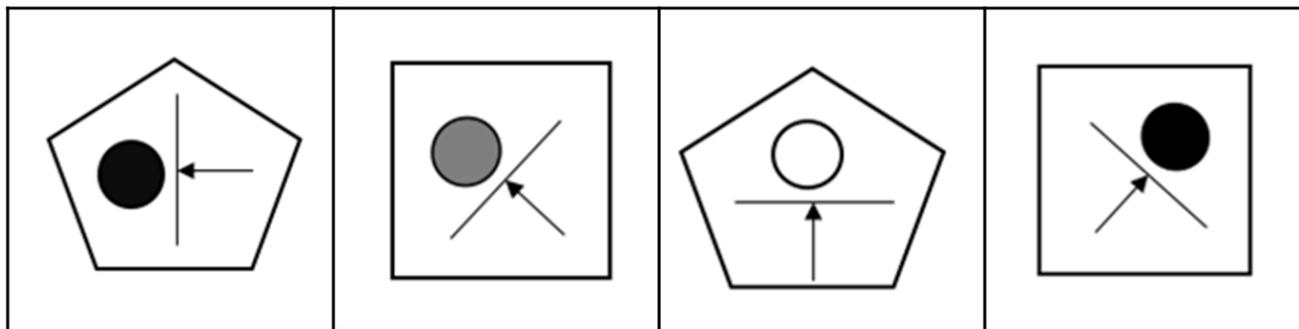
5.



- Set A
- Set B
- Neither



6. (ART20001) Which figure completes the series?

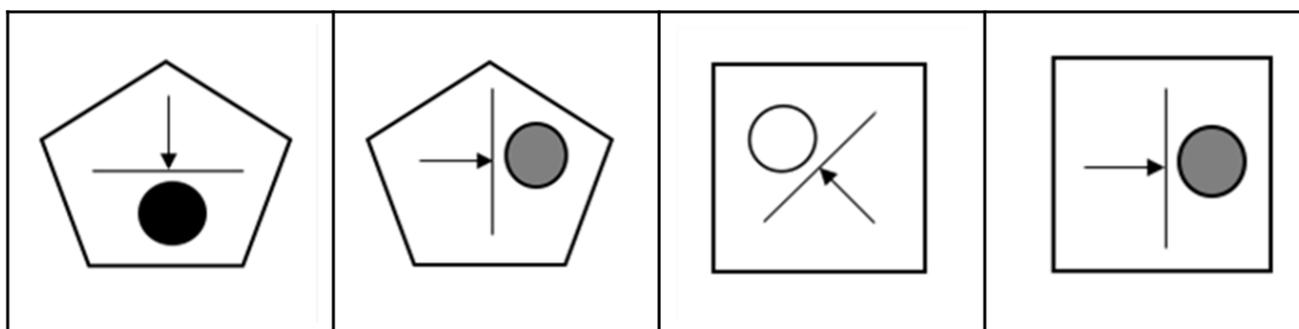


A.

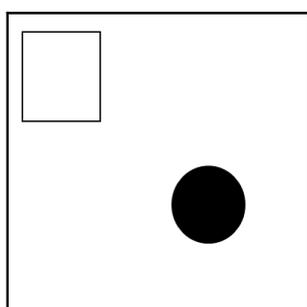
B.

C.

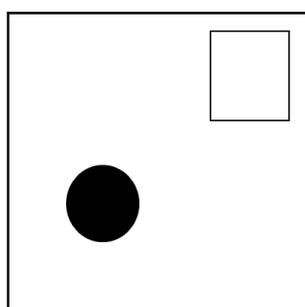
D.



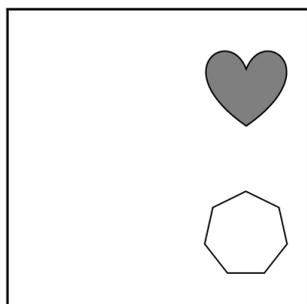
7. (ART30001) Which figure completes the statement?



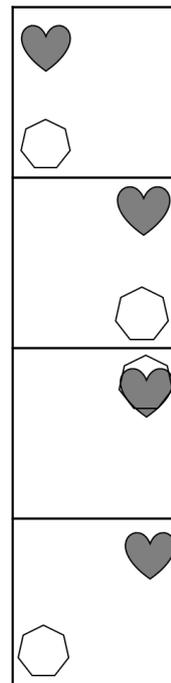
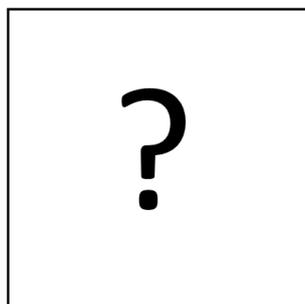
Is to



as



Is to



A.

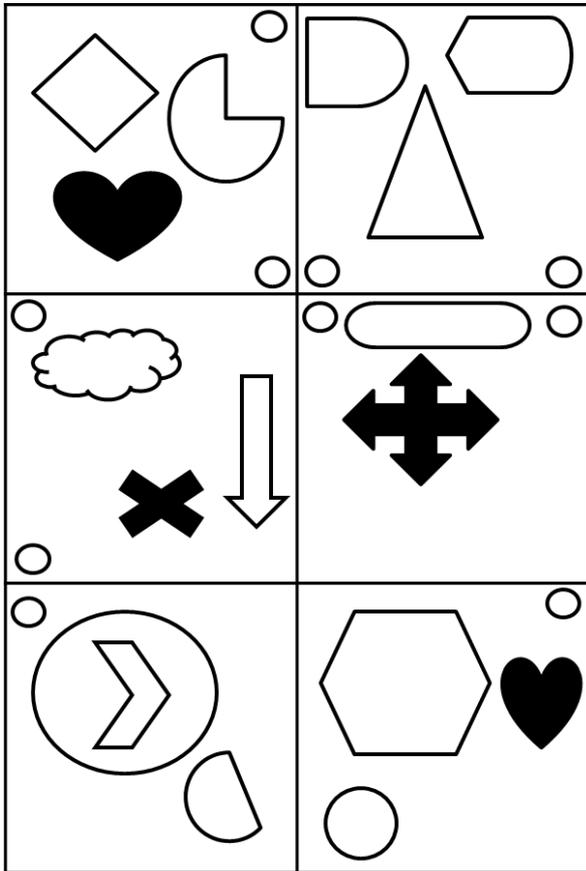
B.

C.

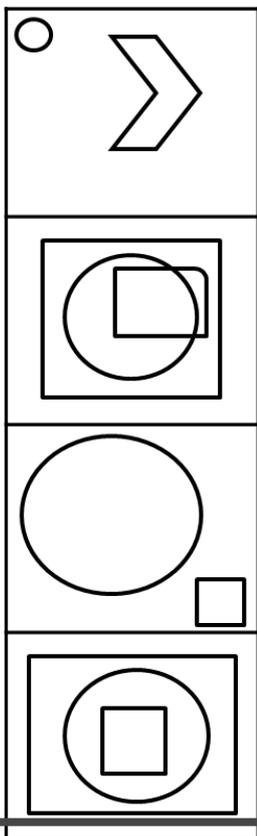
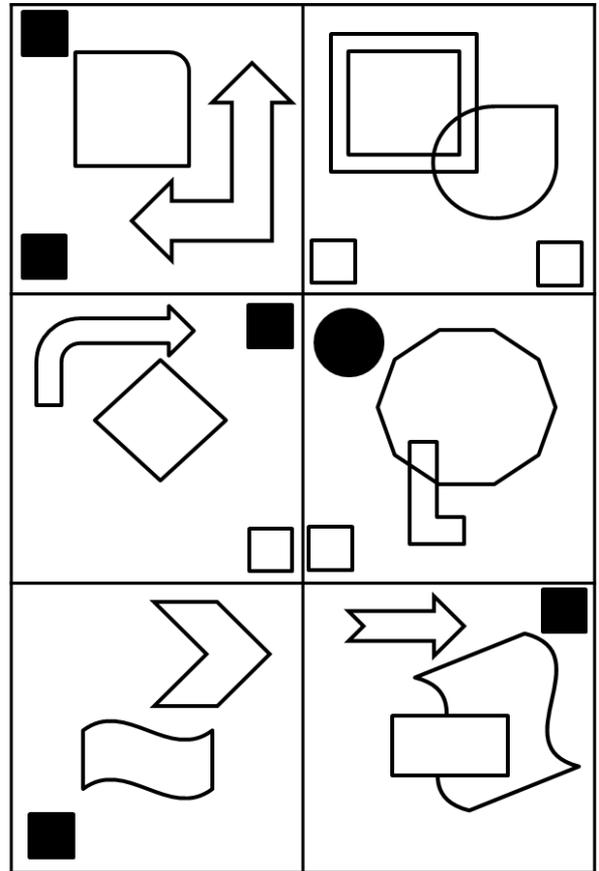
D.

8. (ART40001) Which figure matches Set B?

Set A



Set B



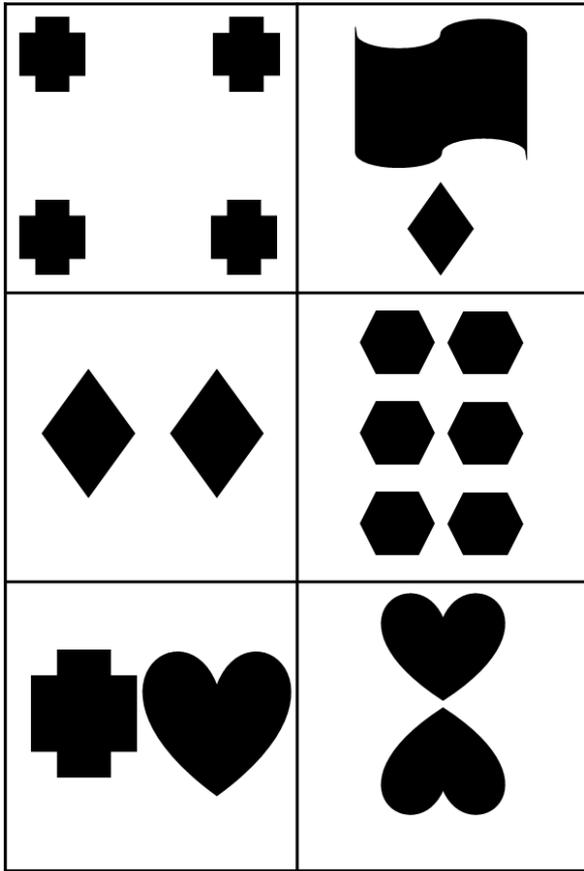
A.

B.

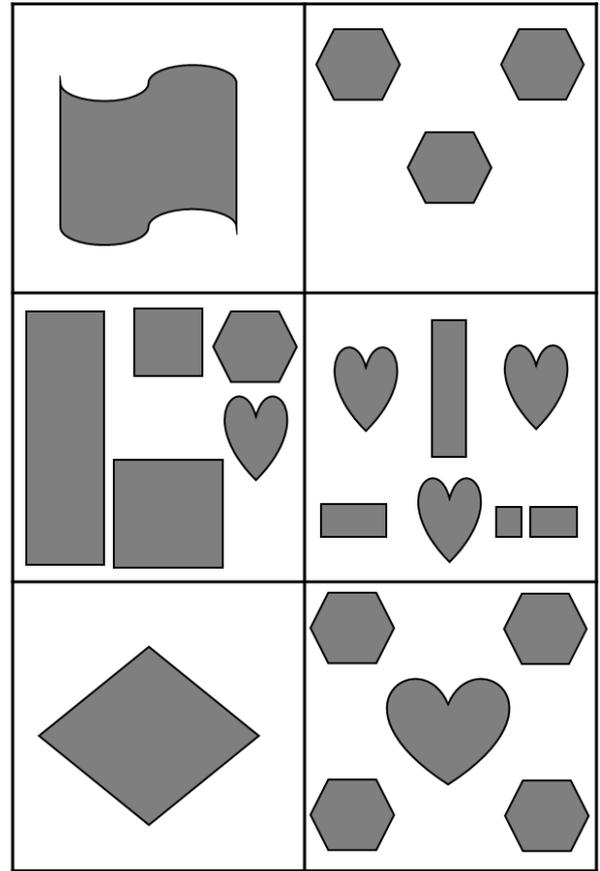
C.

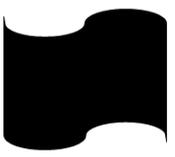
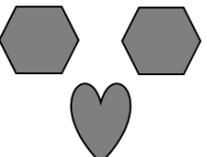
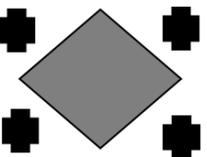
D.

(ART10002) Set A



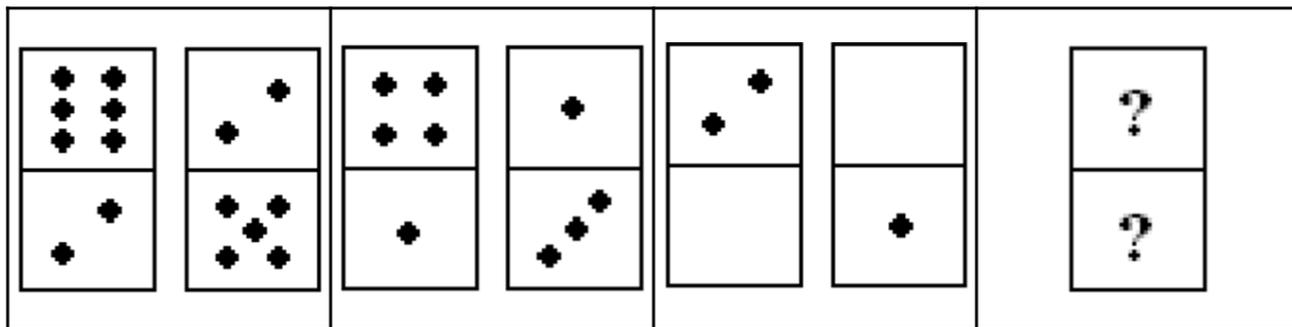
Set B



9.  Set A
 Set B
 Neither
10.  Set A
 Set B
 Neither
11.  Set A
 Set B
 Neither
12.  Set A
 Set B
 Neither
13.  Set A
 Set B
 Neither



14. (ART20002) Which figure completes the series?

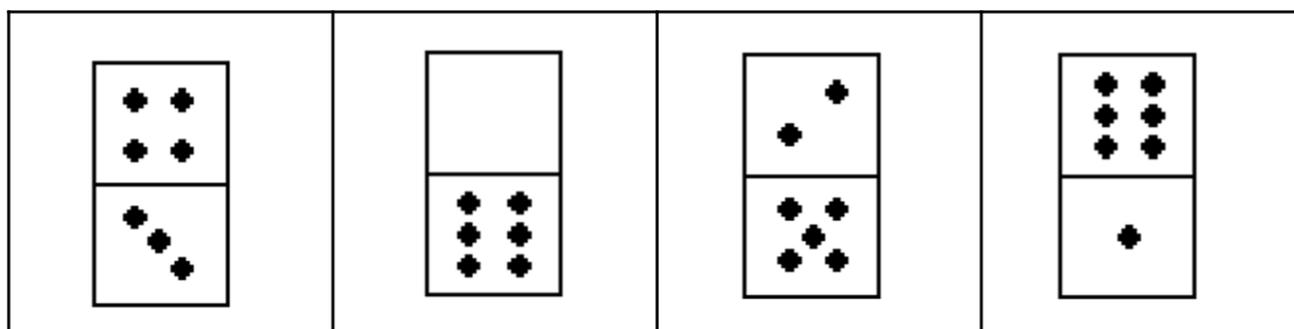


A.

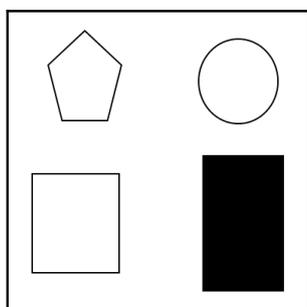
B.

C.

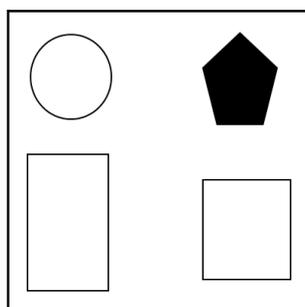
D.



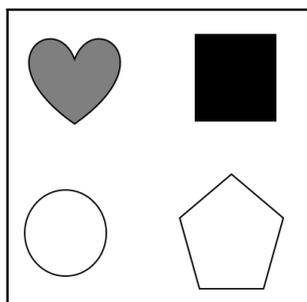
15. (ART30002) Which figure completes the statement?



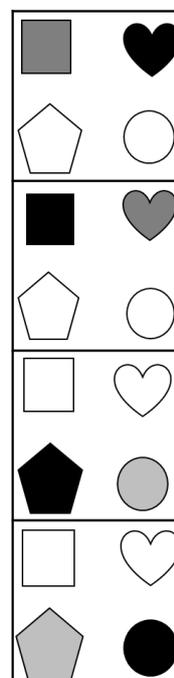
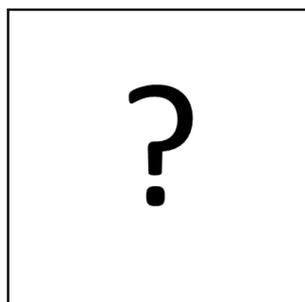
Is to



as



Is to



A.

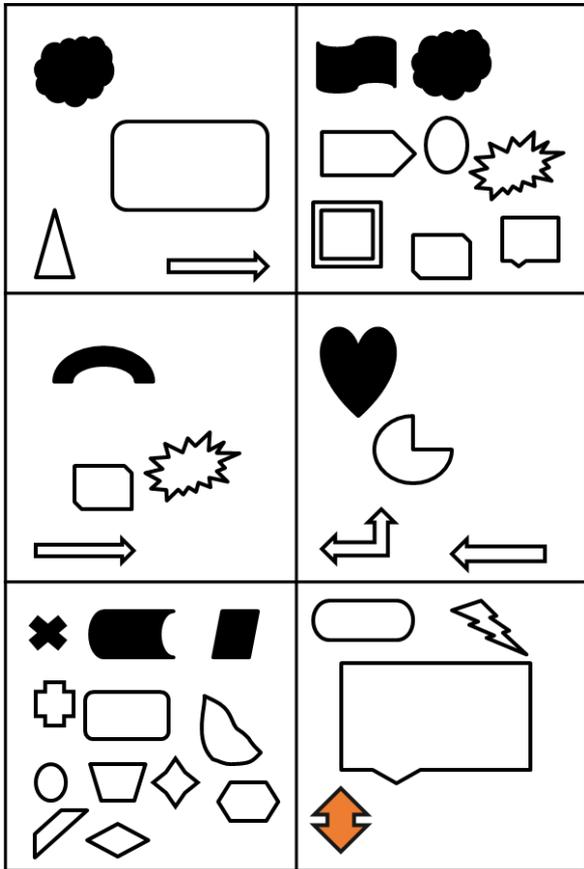
B.

C.

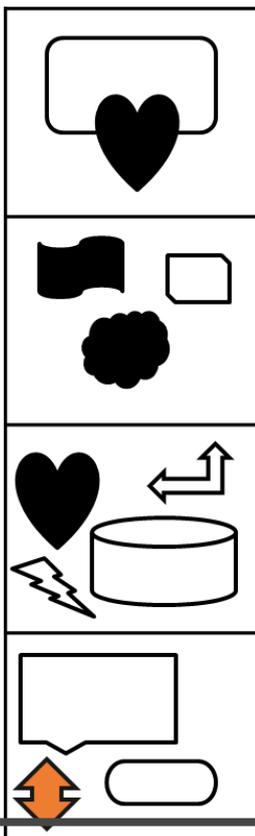
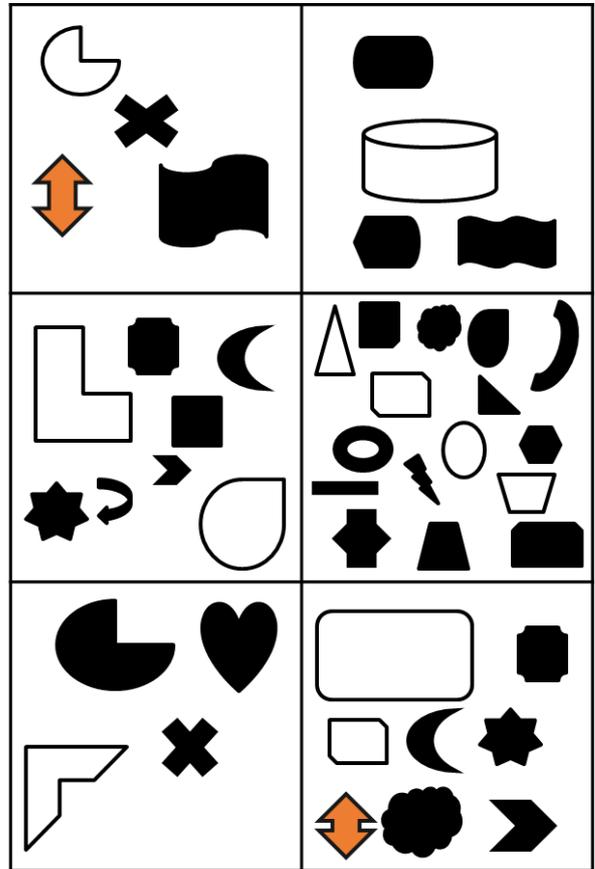
D.

16. (ART40002) Which figure matches Set B?

Set A



Set B



A.

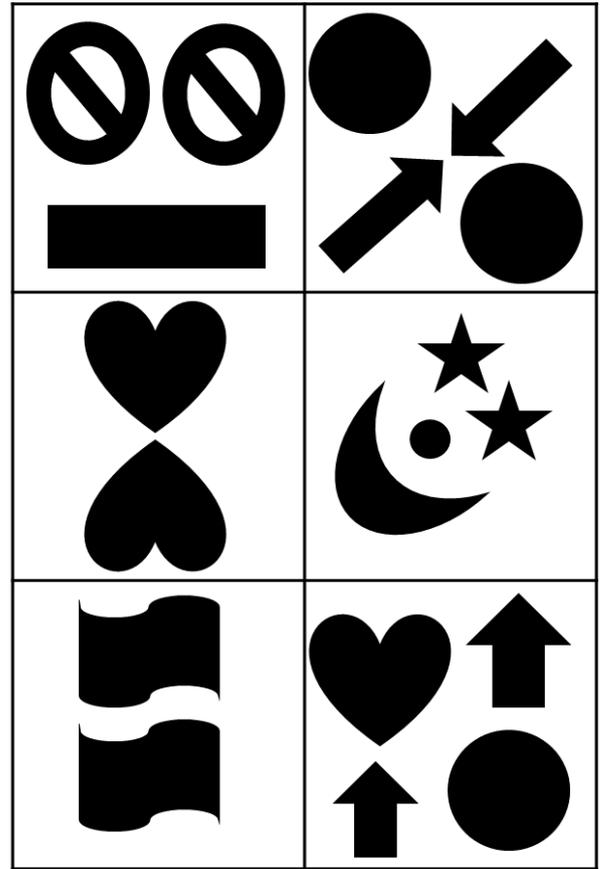
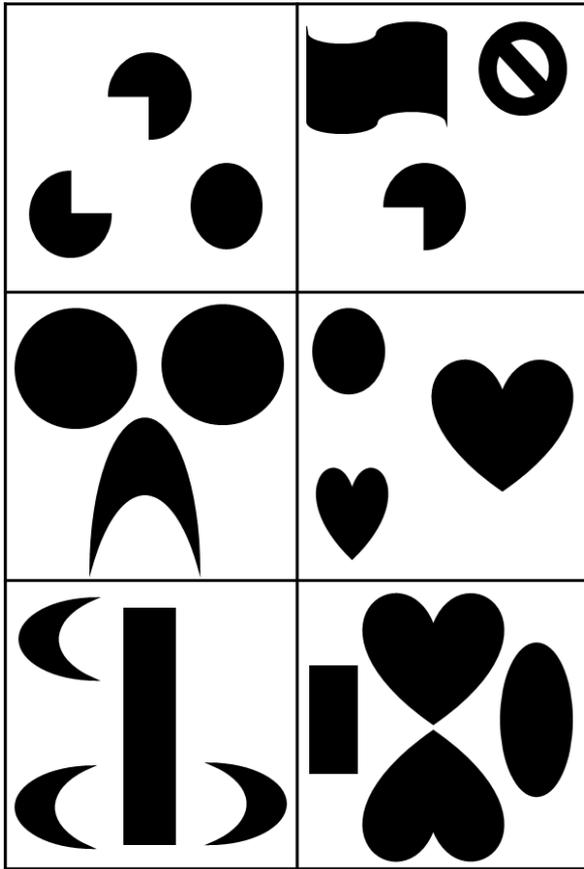
B.

C.

D.

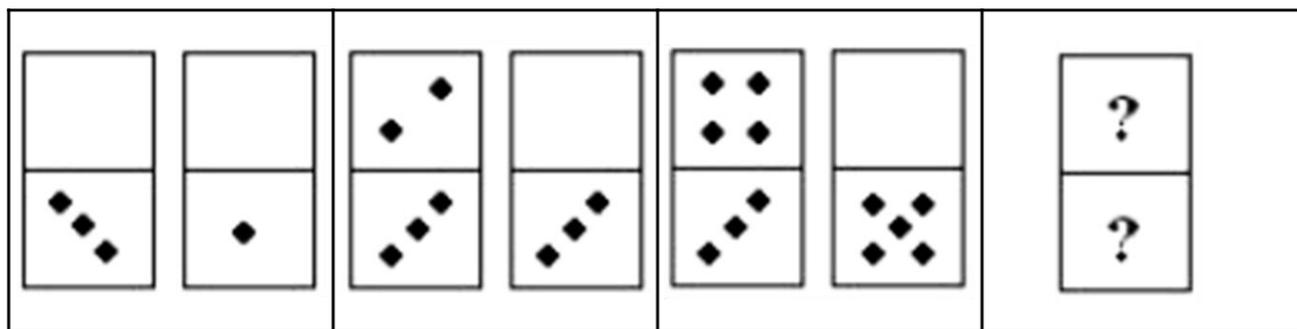
(ART10003) Set A

Set B



17. Set A
 Set B
 Neither
18. Set A
 Set B
 Neither
19. Set A
 Set B
 Neither
20. Set A
 Set B
 Neither
21. Set A
 Set B
 Neither

22. (ART20003) Which figure completes the series?

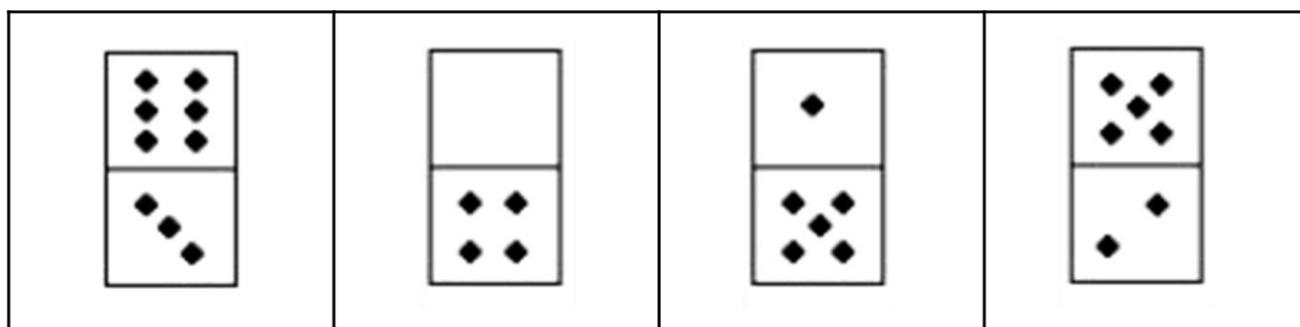


A.

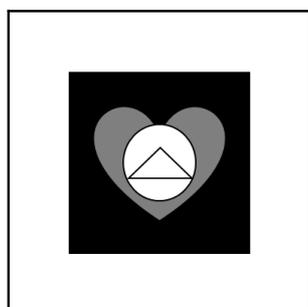
B.

C.

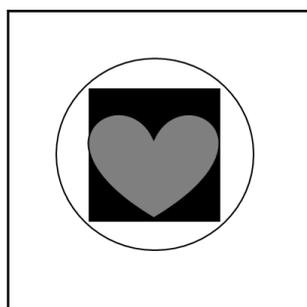
D.



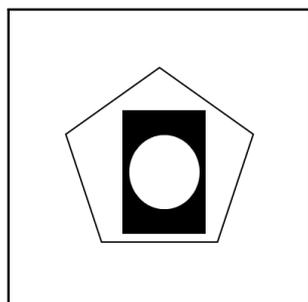
23. (ART30003) Which figure completes the statement?



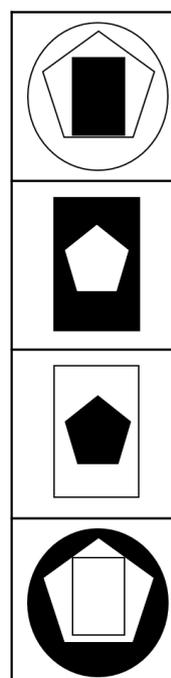
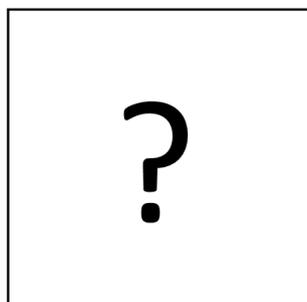
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to



as



Is
to



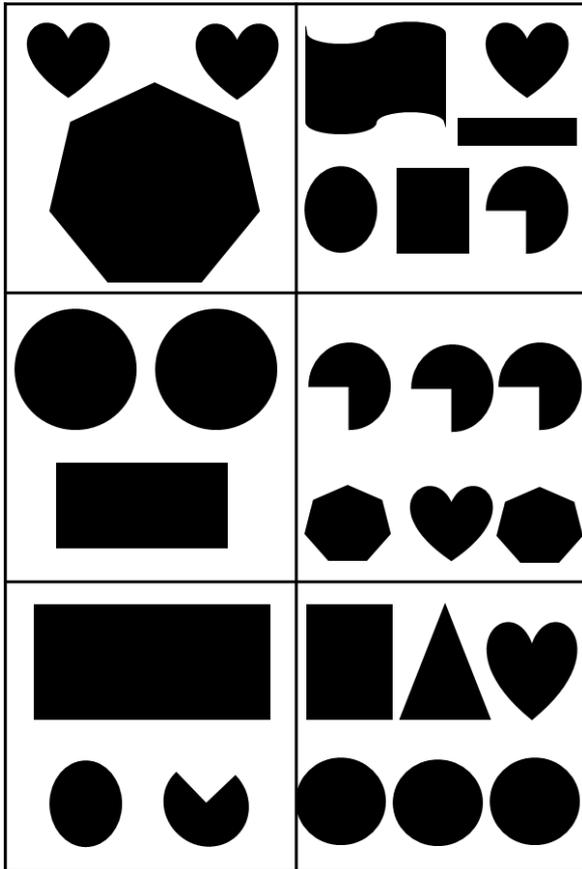
A.

B.

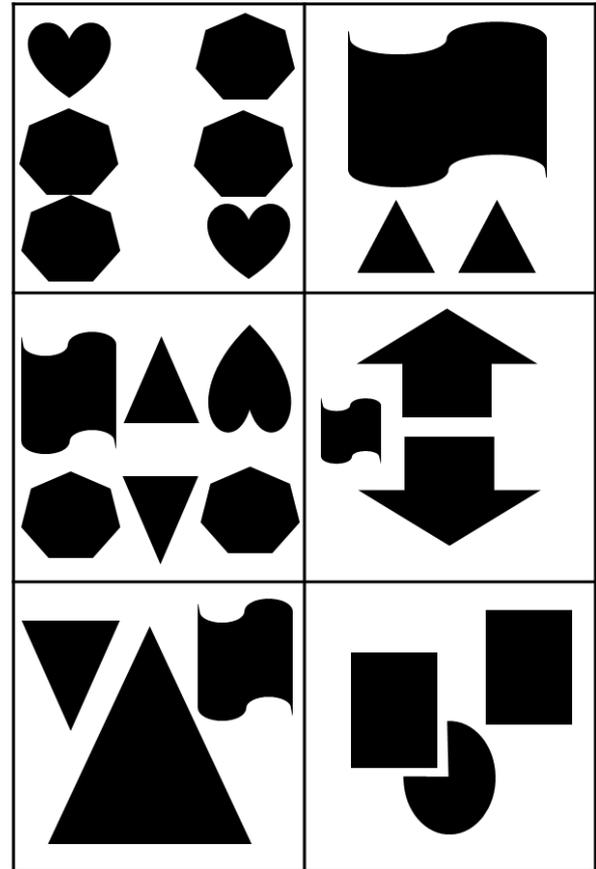
C.

D.

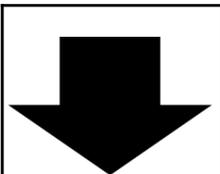
(ART10004) Set A



Set B

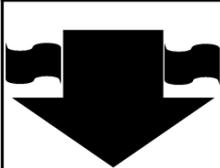


24.



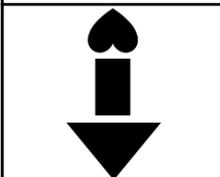
- Set A
- Set B
- Neither

25.



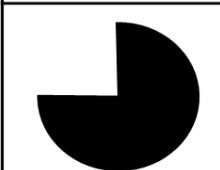
- Set A
- Set B
- Neither

26.



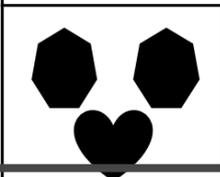
- Set A
- Set B
- Neither

27.



- Set A
- Set B
- Neither

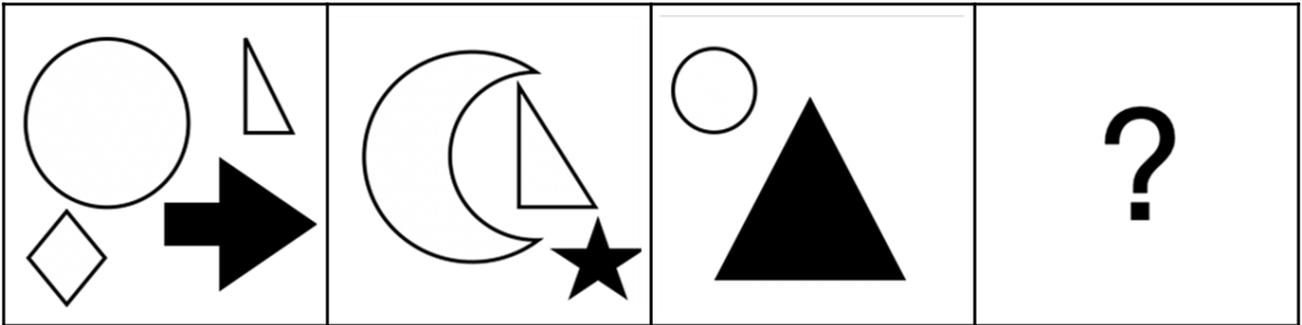
28.



- Set A
- Set B
- Neither



29. (ART20004) Which figure completes the series?

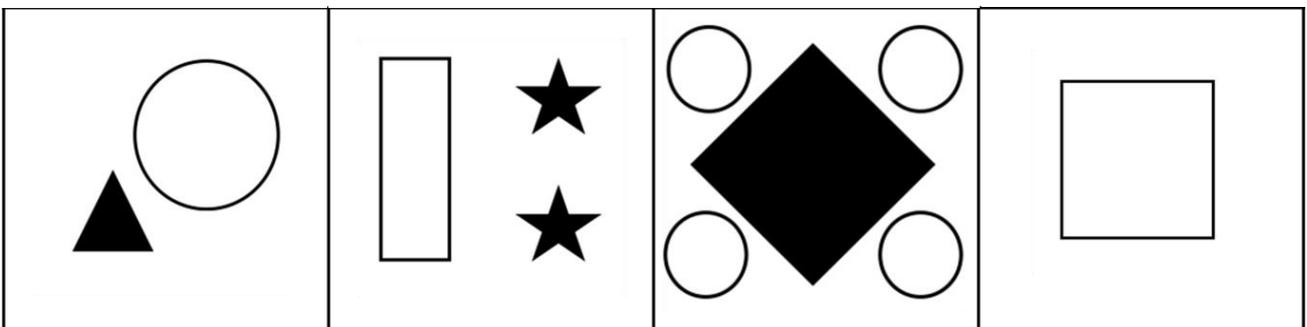


A.

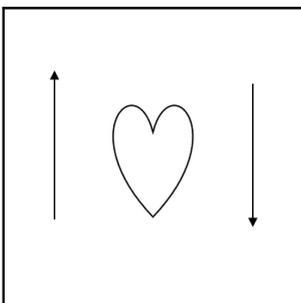
B.

C.

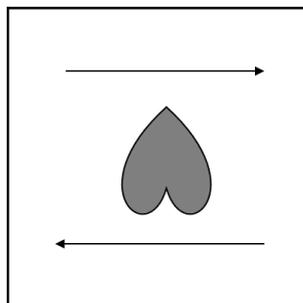
D.



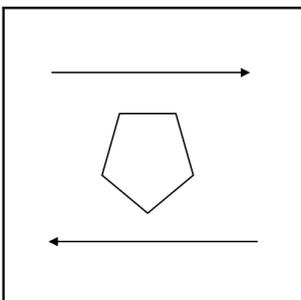
30. (ART30004) Which figure completes the statement?



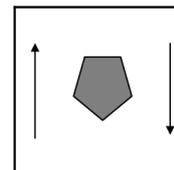
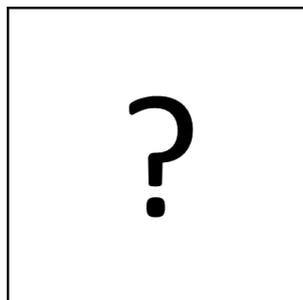
Is to



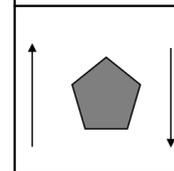
as



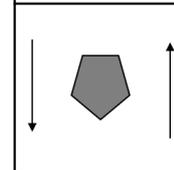
Is to



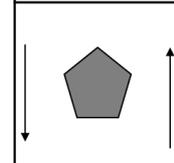
A.



B.

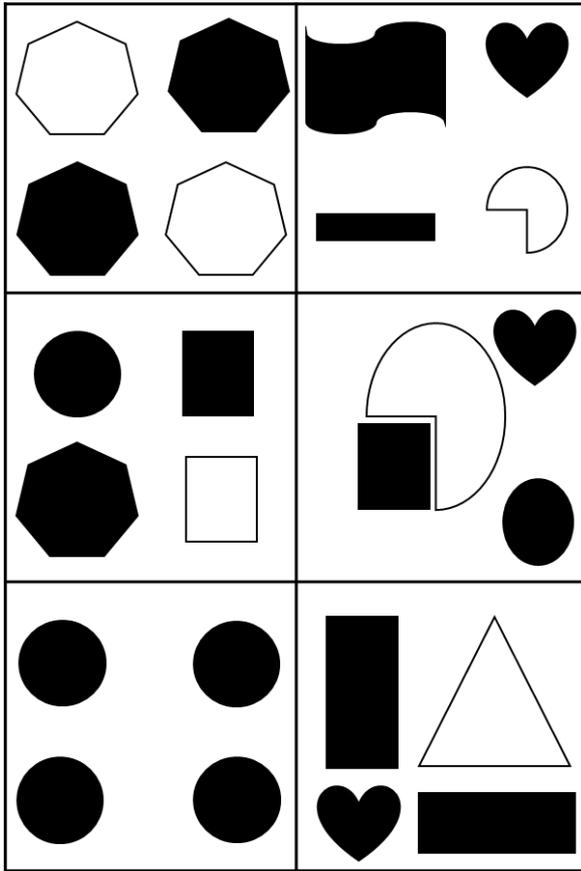


C.

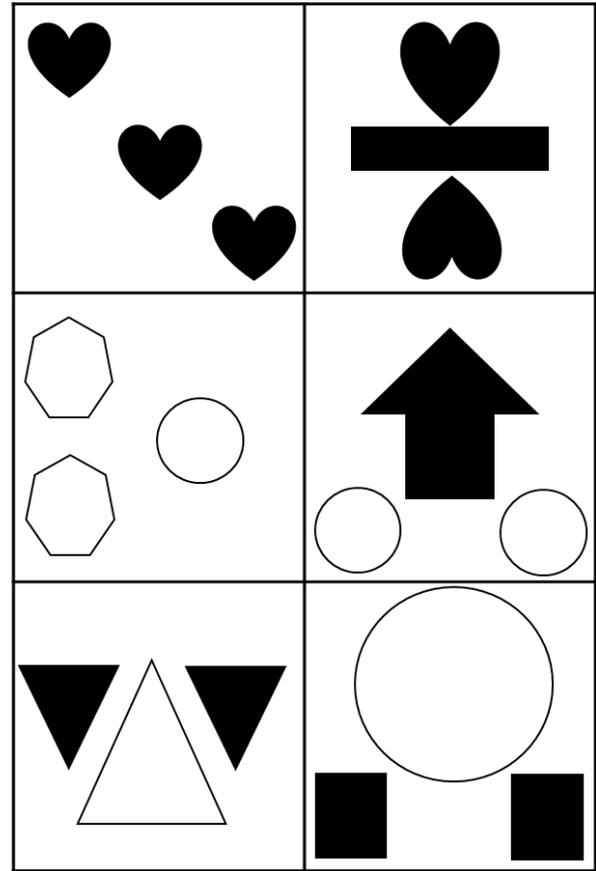


D.

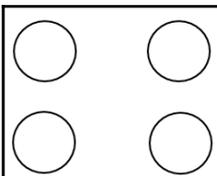
(ART10005) Set A



Set B



31.



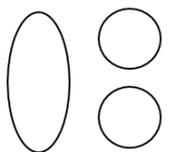
- Set A
- Set B
- Neither

32.



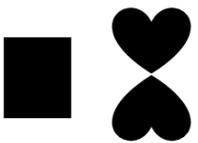
- Set A
- Set B
- Neither

33.



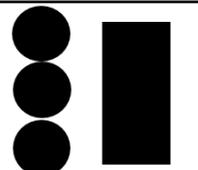
- Set A
- Set B
- Neither

34.



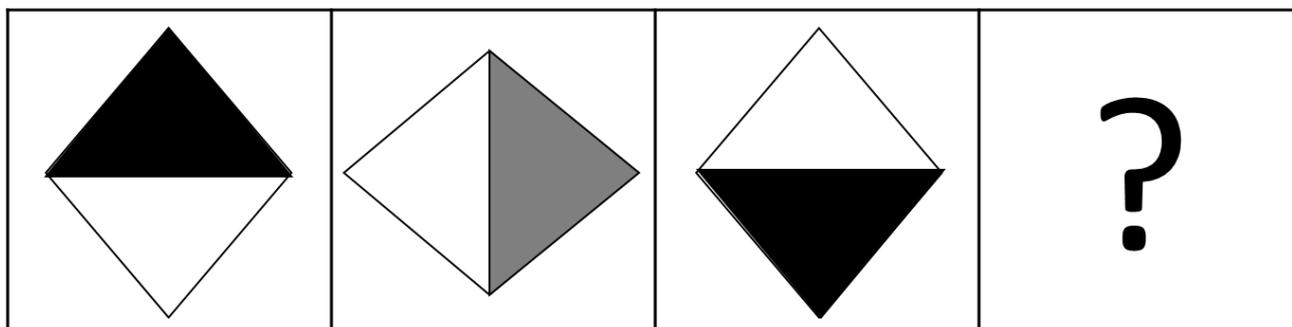
- Set A
- Set B
- Neither

35.



- Set A
- Set B
- Neither

36. (ART20005) Which figure completes the series?

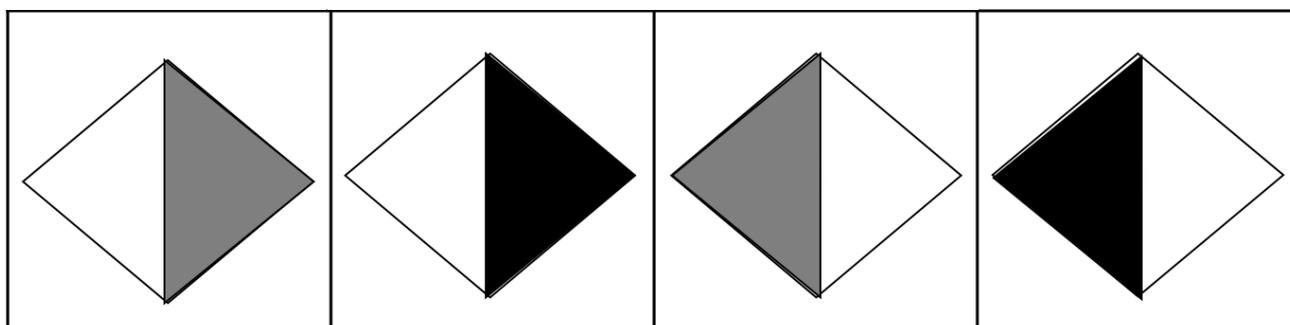


A.

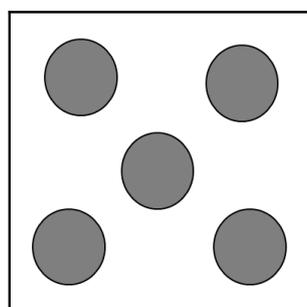
B.

C.

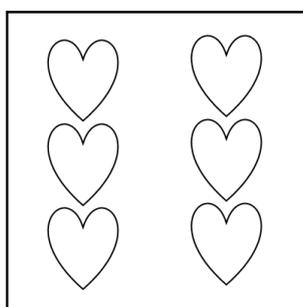
D.



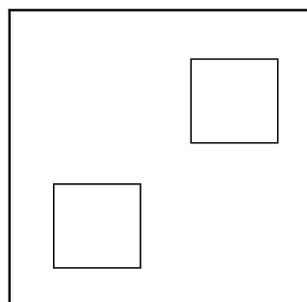
37. (ART30005) Which figure completes the statement?



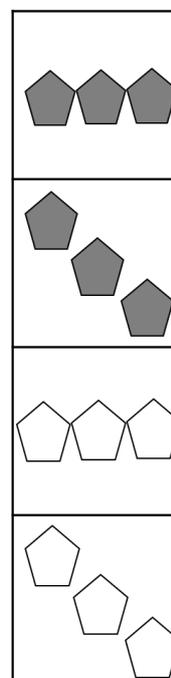
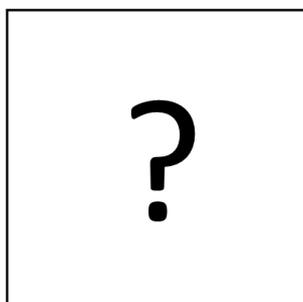
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to



as



Is
to



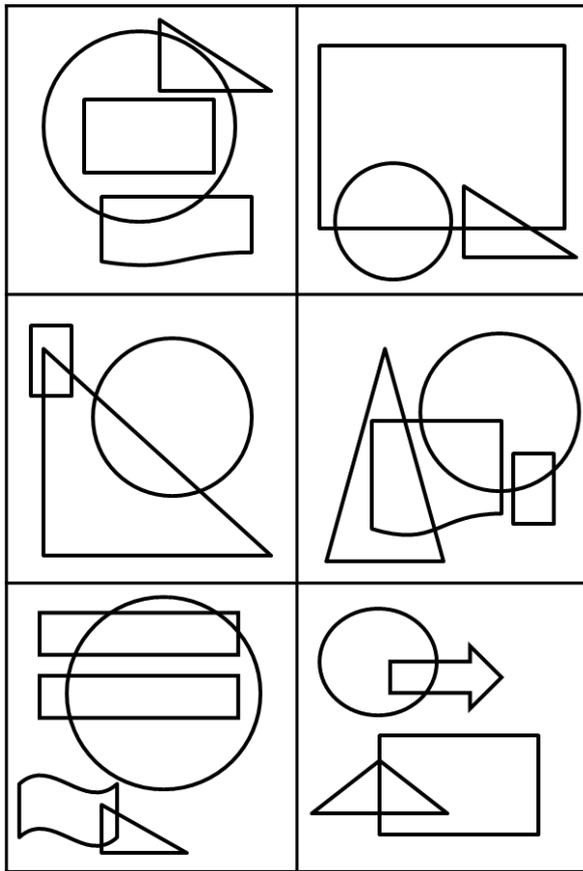
A.

B.

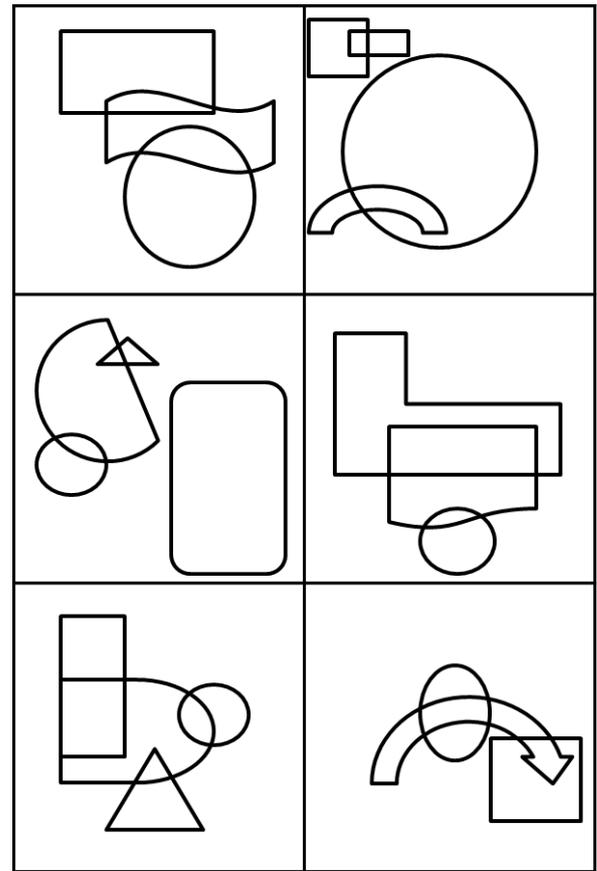
C.

D.

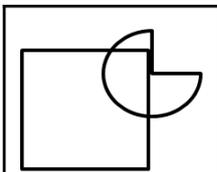
(ART10006) Set A



Set B

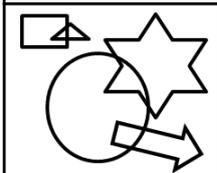


38.



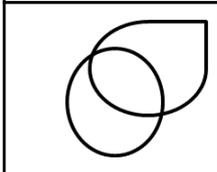
- Set A
- Set B
- Neither

39.



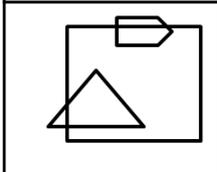
- Set A
- Set B
- Neither

40.



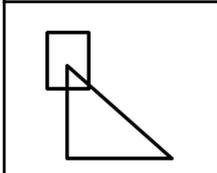
- Set A
- Set B
- Neither

41.



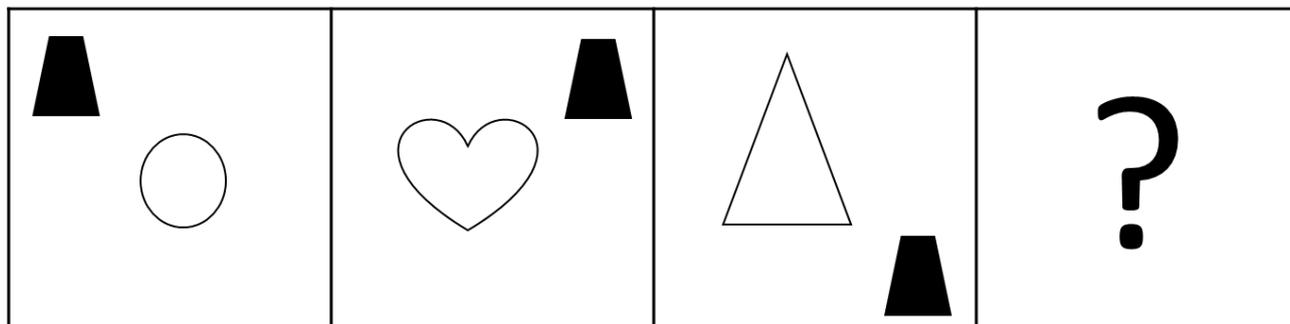
- Set A
- Set B
- Neither

42.



- Set A
- Set B
- Neither

43. (ART20006) Which figure completes the series?

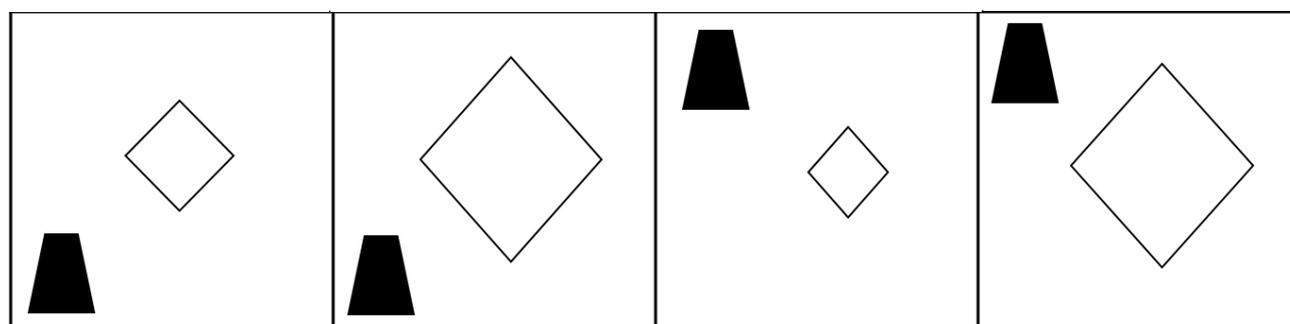


A.

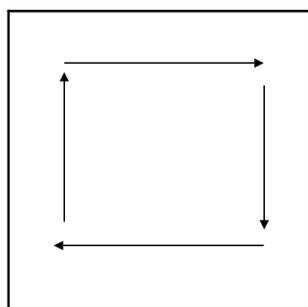
B.

C.

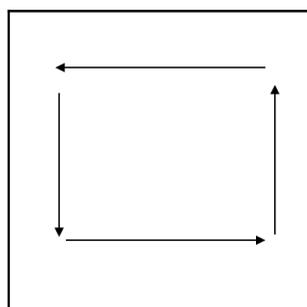
D.



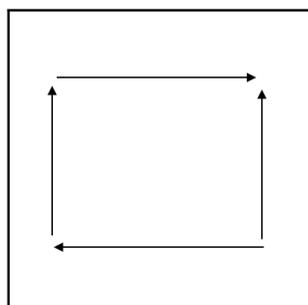
44. (ART30006) Which figure completes the statement?



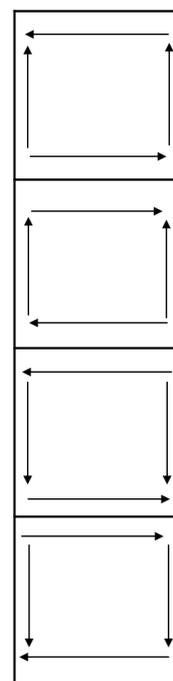
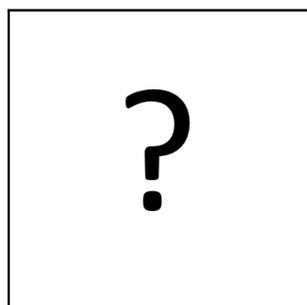
Is
to



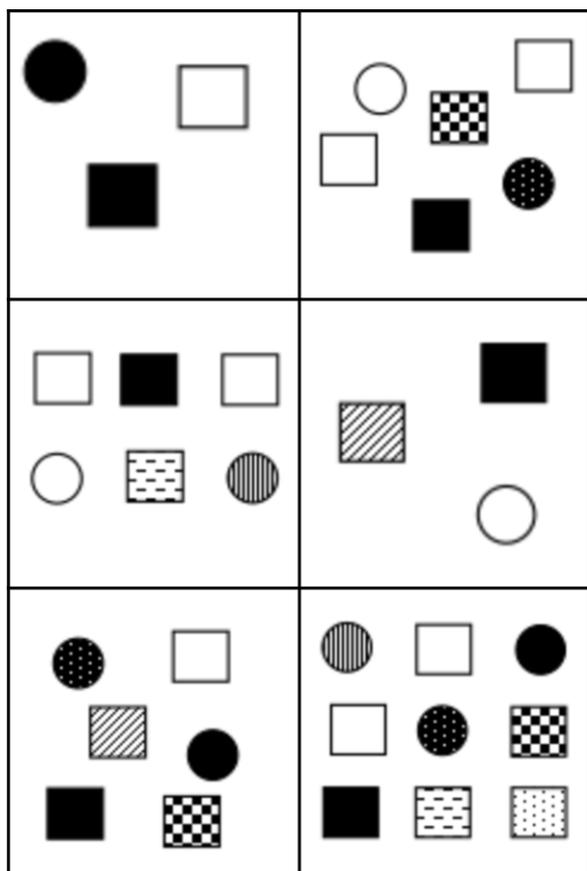
as



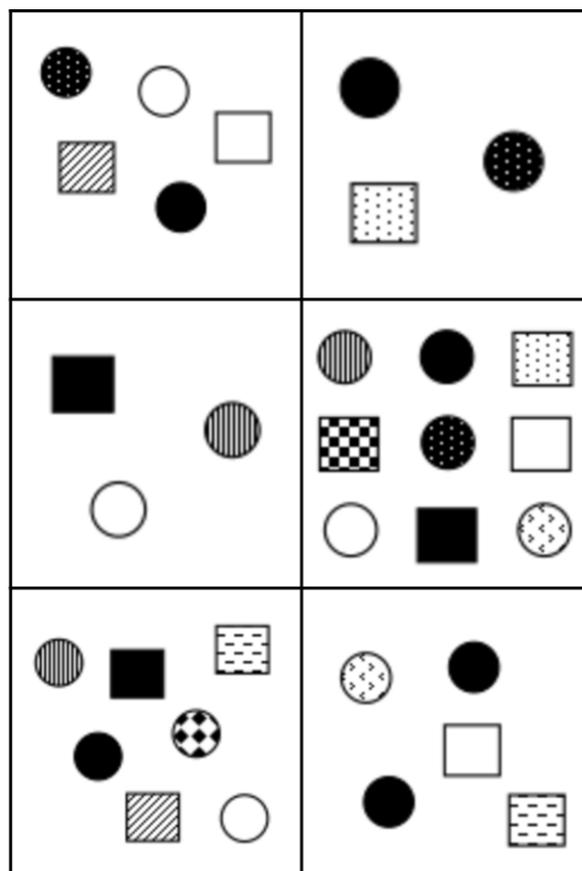
Is
to



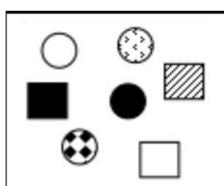
(ART10008) Set A



Set B

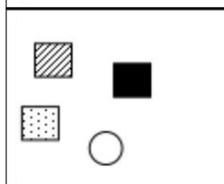


45.



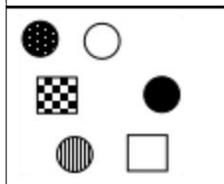
- Set A
- Set B
- Neither

46.



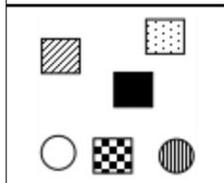
- Set A
- Set B
- Neither

47.



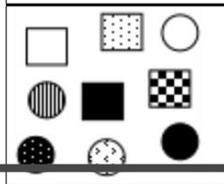
- Set A
- Set B
- Neither

48.



- Set A
- Set B
- Neither

49.

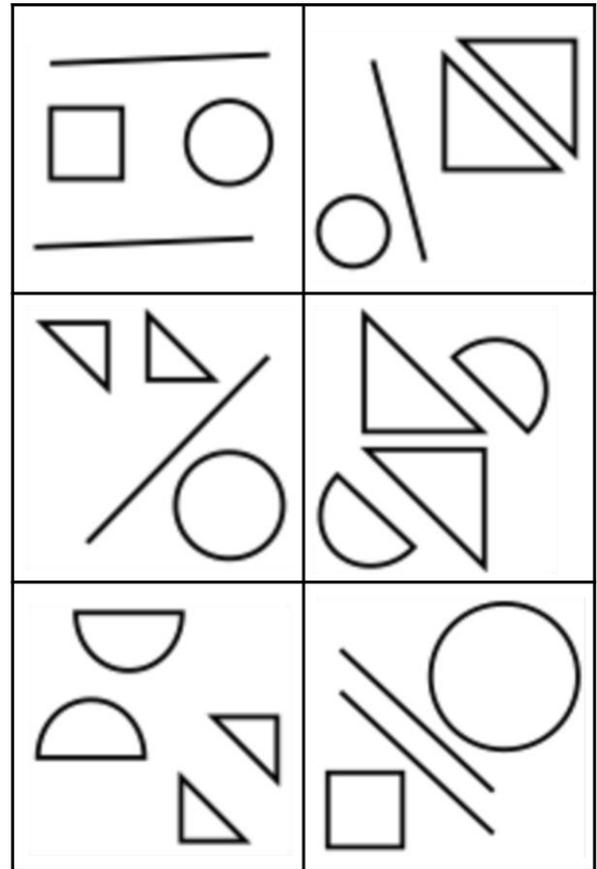
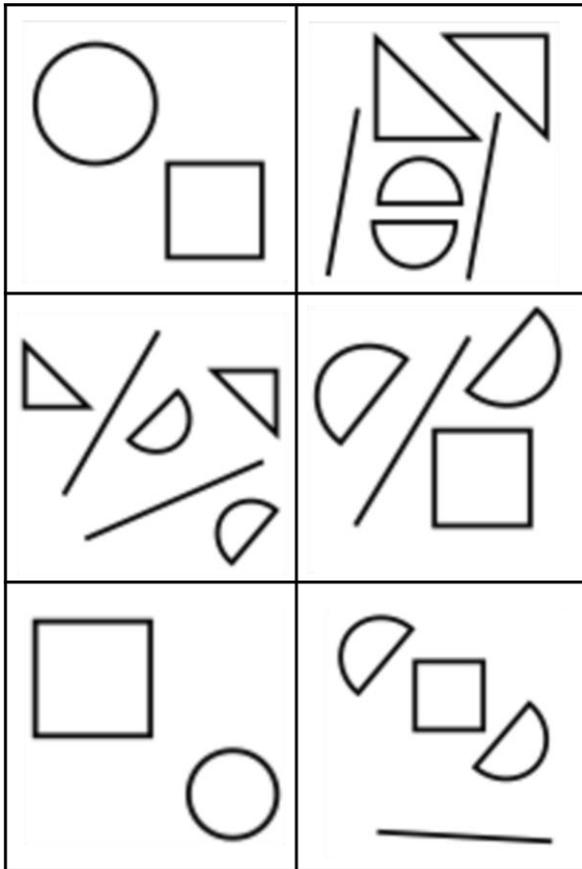


- Set A
- Set B
- Neither



(ART10009) Set A

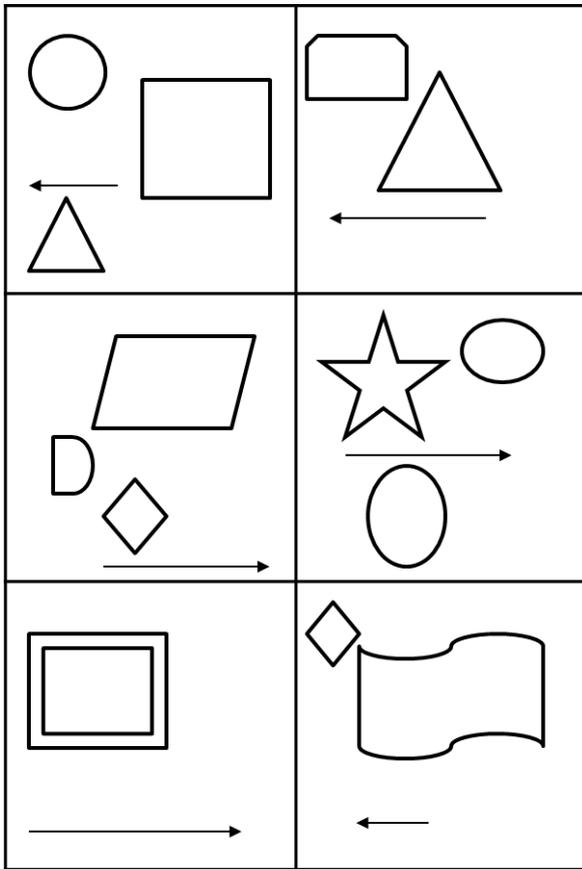
Set B



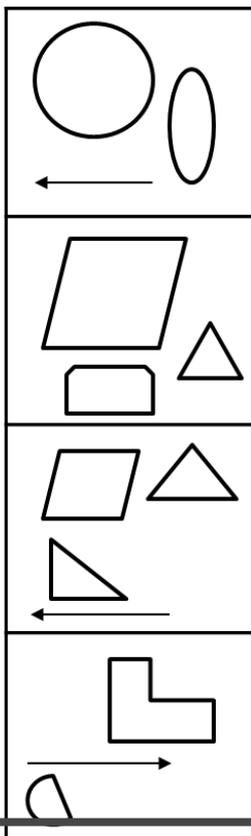
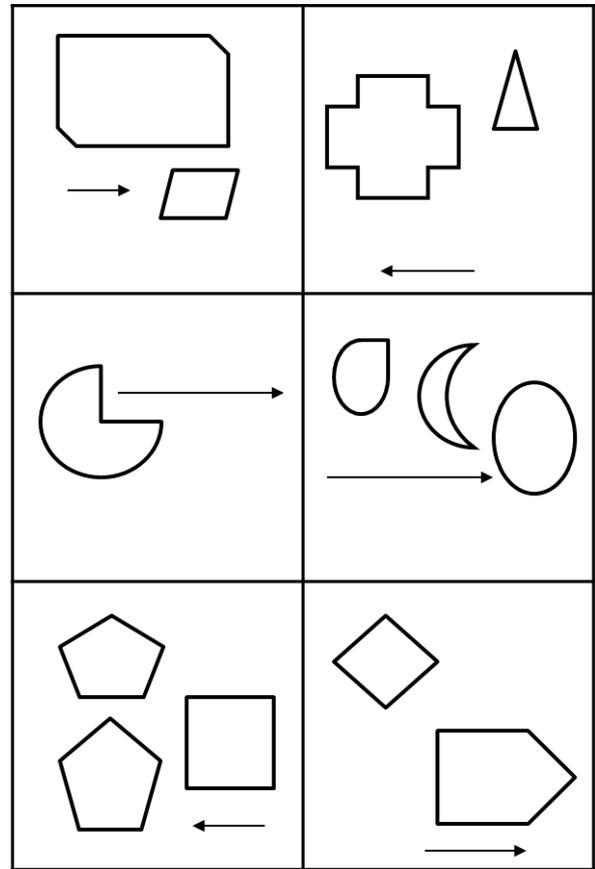
50. Set A
 Set B
 Neither
51. Set A
 Set B
 Neither
52. Set A
 Set B
 Neither
53. Set A
 Set B
 Neither
54. Set A
 Set B
 Neither

55. (ART10007) Which figure matches Set B?

Set A



Set B



A.

B.

C.

D.

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END OF SECTION - DO NOT TURN OVER UNTIL INSTRUCTED



Section 5 – Situational Judgment

In the exam you would have 1 minute to read these instructions.

You will be presented with a set of hypothetical scenarios based in a clinical setting or during educational training for a medical or dental career. These may involve a student or clinical at their centre.

This subtest consists of two parts. For Part One you will be asked to rate the importance of a series of statements in response to the scenario. For Part Two you will be asked to rate the appropriateness of a series of statements in response to the scenario.

Some of the questions will require that you rate each response from four possible options. Other questions will require you to choose the most and least appropriate action to take in response to the situation, from the three actions provided.

You have 26 minutes to answer 69 questions. It is in your best interest to answer all questions as there is no penalty for guessing. All unanswered questions will be scored as incorrect.



(SJ10001) **You are walking past the Care of the Elderly ward. You notice Sarah, a junior nurse shout at her patients and storm off the ward. You have not seen Sarah behave like this before. How important to take into account are the following considerations?**

1. You have not seen Sarah act like this before.

- Very important
- Important
- Of minor importance
- Not important at all

2. The patient was misbehaving and deserved it.

- Very important
- Important
- Of minor importance
- Not important at all

3. The patient is very distressed by the situation.

- Very important
- Important
- Of minor importance
- Not important at all

4. Sarah is a good nurse and is vital for the smooth running of the department.

- Very important
- Important
- Of minor importance
- Not important at all



(SJA0001) **John is a final year medical student. He has just observed the consultant diagnose Mrs Jones in bay 4 with breast cancer. As John is leaving for the day, Mrs Jones' husband approaches you and asks you about the results. How appropriate are the following actions in response to the situation?**

5. Inform Mrs Jones' husband that she is suffering from brain cancer.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.

6. Lie and tell Mrs Jones' husband that she is absolutely fine as you don't want to cause him distress.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.

7. Advice Mrs Jones' husband that it is best if he spoke to her.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.

8. Politely inform Mrs Jones' husband that you are a medical student and the consultant in charge would know best.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.



(SJ10002) **A patient has made an official complaint. Your name has been mentioned in the complaint. How important to take into account are the following when considering your next step?**

9. You are a member of a defence union.

- Very important
- Important
- Of minor importance
- Not important at all

10. You never liked the patient.

- Very important
- Important
- Of minor importance
- Not important at all

11. Your friend told you to just ignore the complaint.

- Very important
- Important
- Of minor importance
- Not important at all

12. It is hospital policy to discuss such complaints with a supervisor.

- Very important
- Important
- Of minor importance
- Not important at all



(SJA0002) **You are a medical student, shopping with your friends. A patient you saw last week approaches you and asks you to look at his foot ulcer. How appropriate are the following actions in response to the situation?**

13. Advise him to book an appointment with the GP.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.

14. Pretend you didn't hear him and carry on shopping.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.

15. Find a first aid room and examine his foot ulcer.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.

16. Advise him you are a medical student, so you aren't able to provide medical advice.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.



(SJ10003) **A nurse contacts you to inform you that you have incorrectly prescribed co-amoxiclav [penicillin-containing antibiotic] to a patient who is allergic to penicillin. How important to take into account are the following considerations?**

17. The patient did not suffer a reaction.

- Very important
- Important
- Of minor importance
- Not important at all

18. Ensure the patient understands what has happened.

- Very important
- Important
- Of minor importance
- Not important at all

19. Personally, apologise to the patient.

- Very important
- Important
- Of minor importance
- Not important at all

20. The patient has dementia and probably won't remember.

- Very important
- Important
- Of minor importance
- Not important at all



(SJA0003) **You are a medical student and accidentally suffer a needlestick injury whilst attempting to draw blood from a patient. How appropriate are the following actions in response to the situation?**

21. Immediately stop your attempt blood.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.

22. Ask the patient if you can have another try at drawing blood immediately after.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.

23. Inform the ward staff of the incident.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.

24. Contact occupational health.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.



(SJ10004) **You are working in the oncology unit. Mr Jones is refusing to take his chemotherapy tablets. You have explained the risks if he does not take the tablet. How important to take into account are the following considerations?**

25. Assess the patient's mental state.

- Very important
- Important
- Of minor importance
- Not important at all

26. Documentation of this encounter is vital.

- Very important
- Important
- Of minor importance
- Not important at all

27. The patient has capacity to make such decisions.

- Very important
- Important
- Of minor importance
- Not important at all

28. The patient probably wouldn't notice if you mix the tablet in his water jug.

- Very important
- Important
- Of minor importance
- Not important at all



(SJA0004) **A patient approaches you and explains that he is not happy with the care he has received. He does not like the hospital food and finds that the nurses are rude.**

29. Listen carefully to the patient's views and see if you can resolve the problems.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.

30. Apologise that the standard of care hasn't reached his expectations.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.

31. Ask the patient that you will only provide him with treatment if he is respectful.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.

32. Explain how stretched the NHS is.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.



(SJ10005) **A patient is rushed into the accident and emergency department. He is suspected to have appendicitis. The ambulance staff inform you that the patient is Indian and speaks very little English. How important to take into account are the following considerations?**

33. Your colleague speaks Indian and would be able to communicate.

- Very important
- Important
- Of minor importance
- Not important at all

34. The patient doesn't need to understand the procedure as he is too unwell.

- Very important
- Important
- Of minor importance
- Not important at all

35. The NHS translator services are on hand to help.

- Very important
- Important
- Of minor importance
- Not important at all

36. The patient's family may be able to translate.

- Very important
- Important
- Of minor importance
- Not important at all



(SJA0005) **You have downloaded patient data on to a USB stick. When you check your bag later on, it is no longer there. How appropriate are the following actions in response to the situation?**

37. You know that your USB is password protected so do nothing.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.

38. Tell your junior doctor colleagues to keep an eye out.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.

39. Discuss the situation with the information governance department.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.

40. Report the issue to your consultant.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.



(SJ10006) **You are a 5th year medical student. Whilst on placement at a general practice you notice another 5th year medical student, Jonathan, constantly putting down a 4th year medical student, Sophie, in front of patients. How important to take into account are the following considerations for Sophie?**

41. Jonathan is in the year above.

- Very important
- Important
- Of minor importance
- Not important at all

42. This may be a form of bullying.

- Very important
- Important
- Of minor importance
- Not important at all

43. It is best to do nothing as Jonathan is a very good medical student.

- Very important
- Important
- Of minor importance
- Not important at all

44. The supervisor of the placement offered to help in such situations.

- Very important
- Important
- Of minor importance
- Not important at all



(SJA0006) **Mrs Johnson's son would like to make an official complaint regarding the way his mother has been treated on your ward. How appropriate are the following actions in response to the situation?**

45. Discuss the reasoning for the complaint with the patient and the ward manager.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.

46. Advise the patient's son that he can contact the Patient Advice and Liaison Service to make his complaint.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.

47. Tell the patient's son that you are very busy and do not have time to deal with such small matters.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.

48. Ignore the patient's son and tell him that all the staff are wonderful and that the patient is in great hands.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.



(SJ10007) **You are a 3rd year medical student at a district general hospital. You notice that two of your colleagues sign the register for each other and are often absent for the teaching sessions. How important to take into account are the following considerations by Jacob?**

49. They both have many publications and are probably making better use of their time.

- Very important
- Important
- Of minor importance
- Not important at all

50. You think the teaching sessions are useless anyway.

- Very important
- Important
- Of minor importance
- Not important at all

51. It offers more teaching opportunities if many people are away.

- Very important
- Important
- Of minor importance
- Not important at all

52. You find the teaching.

- Very important
- Important
- Of minor importance
- Not important at all



(SJA0007) **You are working within a busy accident and emergency department. You see that a number of tasks you have assigned to the nurse have not been completed within the expected time. How appropriate are the following actions in response to the situation?**

53. Inform the nurse in charge.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.

54. Inform the nurse responsible.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.

55. Write the reason for the delay in the documents.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.

56. Contact the Medical Defence Union immediately.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.



(SJ10008) **You are a junior doctor working on a surgical ward. A female junior doctor, Sophie approaches you and says that the registrar in your firm has been making sexually inappropriate jokes. How important to take into account are the following considerations by Sophie?**

57. As the registrar is very senior, he may not offer you a role in the department if you mention anything.

- Very important
- Important
- Of minor importance
- Not important at all

58. You feel threatened by the situation.

- Very important
- Important
- Of minor importance
- Not important at all

59. It has only occurred once.

- Very important
- Important
- Of minor importance
- Not important at all

60. The registrar has acted this way to other female doctors.

- Very important
- Important
- Of minor importance
- Not important at all



(SJA0008) **There is an emergency on the ward and the nurse shouts for your help. She is requesting that you immediately perform a procedure you have seen only once before. How appropriate are the following actions in response to the situation?**

61. Call your supervisor for support.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.

62. Perform the procedure alone.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.

63. Ask the nurse to call for urgent help whilst you begin to prepare for and perform the procedure.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.

64. Ask the nurse to call for urgent help whilst you begin to prepare for the procedure.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.



(SJ10009) It is Monday morning on the acute medical unit. You have a stack of jobs waiting and your bleep is continuously ringing. You feel very overwhelmed. How important to take into account are the following considerations?

65. Prioritize the jobs.

- Very important
- Important
- Of minor importance
- Not important at all

66. Ask if another colleague is available to help as you feel flustered.

- Very important
- Important
- Of minor importance
- Not important at all

67. Taking a short break will let the department down.

- Very important
- Important
- Of minor importance
- Not important at all

68. The shift ends soon.

- Very important
- Important
- Of minor importance
- Not important at all



(SJA0009) **Your fellow junior doctor colleague asks you to prescribe some medication for his son. You are not aware of the medication and haven't ever met your colleague's son. How appropriate are the following actions in response to the situation?**

69. Refuse to prescribe the medication and suggest that he takes his son to their GP.

- A very appropriate thing to do.
- Appropriate, but not ideal.
- Inappropriate, but not awful.
- A very inappropriate thing to do.



END OF EXAM PAPER

And breathe! Take a break and then come back and mark this paper to see how you've done.

