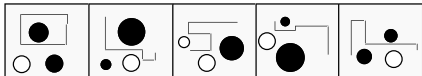


Which set does the figure belong to?

Set A

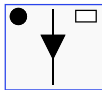
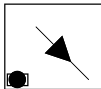
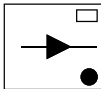
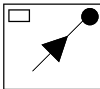
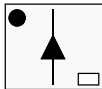


Set B

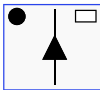


- (A) Set A
- (B) Set B
- (C) Neither

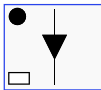
What is next in the sequence?



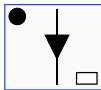
A



B



C



D

Complete



Is to



As



Is to



A



B



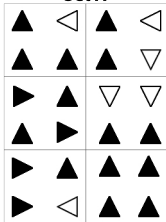
C



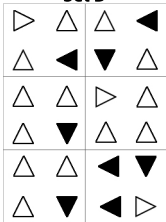
D

Which of these belong in Set B?

Set A



Set B



A



B



C



D

Verbal reasoning:

1. One of the main characteristics and features of birds is feathers. An exception to this is some species of dinosaurs, where some contain feathers but are not classified as true birds. Feathers have many uses including insulation, camouflage, flight and mating rituals. Different varieties of birds have different types of feathers, specific to the bird.

Feathers grow in specific tracts of the skin, called pteryla. The distribution of these are then used in taxonomy to differentiate species of birds. However, there are some species of birds that lose all of their flight feathers. These include ducks, and thus become flightless without these feathers.

Feathers need constant maintenance to prevent them from degrading. Degradation of feathers can be caused by numerous things, however one specific bacteria, the *Bacillus licheniformis*, has been linked with the degradation of a feather within 24 hours. These feather eating bacteria are known as pterophagia. To combat this, birds have come up with ingenious solutions to maintain their feathers including their uropygial gland secretions. There are some types of secretions from the bird's uropygial gland that disrupt the growth of these pterophagia's, and thus inhibit the degradation of their feathers through anti-microbial activity in the overwhelming majority of birds.

1. Feathers can be used to line nests:
 - A. True
 - B. False
 - C. Can't tell
2. All bacteria are pterophagia:
 - A. True
 - B. False
 - C. Can't tell
3. Which of the following is NOT supported by the passage:
 - A. *Bacillus licheniformis* is a problem for birds
 - B. In some areas of the world, birds do not have flight feathers
 - C. All dinosaurs had feathers but are not classified as birds
 - D. Birds need to regulate the state of the feathers
4. The goal of the uropygial gland in ALL birds is to:
 - A. Disrupt the growth of some bacteria
 - B. Maintain feathers to prevent degradation
 - C. Contain anti-microbial activity
 - D. Assist in flying
5. Feathers are found in pteryla:
 - A. True
 - B. False
 - C. Can't tell

2. There are many genres of video games that are played on PC. One of these are called MOBA's (Multiplayer Online Battle Arena) which is one of the most popular genres. DOTA 2 (Defence Of The Ancient 2) is a MOBA created by Valve, and consists of 2 teams of 5 battling it out to defend their own bases called Ancients.

Each player controls one unique hero from a pool of 117 heroes, with unique abilities to beat the enemy's team hero's and Ancient. Levelling up heroes through collecting experience, and building net worth through a currency, allows the purchasing of items to strengthen their hero. Each hero has at least 4 abilities, which when used, consume "mana", which is the games magic system which slowly regenerates over time. The winner of the match is the first to defeat the others team Ancient.

The International is one of the most famous Esports tournaments in the world. It gives a pedestal for which professional gamers could be shown in the spotlight in front of large audiences and amateur DOTA players. In the past, \$30 million US dollars have been generated per International Tournament, stemming from crowdfunding, advertising and large crowds at the venue, and thus attracts those not into gaming, into DOTA.

Whilst DOTA on paper seems straightforward, its considered one of the hardest games to master. It has an incredibly steep learning curve, however coupled with its high quality gameplay, has led to it receiving many accolades and awards including on the list of "Best Video Games of All Time".

1. Two heroes can be played in one game by one person:
 - A. True
 - B. False
 - C. Can't tell
2. There are many genres of video games on Xbox:
 - A. True
 - B. False
 - C. Can't tell
3. Which of these statements is NOT supported by the passage:
 - A. 10 heroes will be found in each game
 - B. Valve are a company that specialises in creating MOBA's
 - C. It is not easy for a beginner to start playing DOTA
 - D. Defeating the enemies Ancient wins you the game
4. Health and Mana regenerate over time:
 - A. True
 - B. False
 - C. Can't tell
5. The purpose of The International, was to:
 - A. Get those who are not gamers into the game
 - B. Increase the awareness of DOTA
 - C. Determine who the best DOTA team is in the world
 - D. Expose professional DOTA gamers to amateurs

Decision making:

1. "Maths is not Science" is written as "zeze lala se ba"
"Chemistry and molecular biology = maths" is written as "mimi wi pu zeze"
"Science makes new things" is written as "re lala fi ki"
"Chemistry makes molecular biology" is written as "re mimi zeze wi"

What is the code word for molecular?

- A. Only wi
 - B. Only mimi
 - C. Either pu or mimi
 - D. Either wi or mimi
2. A researcher is doing a study on birds and their behaviour by observing their mating strategies and dances. When the researcher sees a bird, she observes its movements, for all the birds that do mate she finds that only 40% of the birds who mate use this dance from her findings.

Can the researcher conclude that only 40% of the bird population do the dances and strategies to mate?

- A. Because the number of birds she observed are a representative example
 - B. Because that is the percentage of birds she has observed that do these strategies and dances
 - C. Because only the birds that were mating could do the dances and strategies
 - D. Because the amount of birds that were mating was only observed by the researcher.
3. Not all plumbers are professionally trained, but all plumbers who are professionally trained have excellent hand and arm skills. It is fair to say that some professionally trained plumbers do not know how to clean sewer lines.

Answer YES if the conclusion follows and NO if it does not.

- A. Some of the plumbers who know how to clean sewer lines also have excellent hand and arm skills.
- B. Some of the plumbers with good hand and arm skills are professionally trained plumbers who know how to clean sewer lines.
- C. All plumbers with good hand and arm skills are professionally trained plumbers or know how to clean sewers, or both.
- D. Not all plumbers with good hand and arm skills know how to clean sewers.
- E. All plumbers who know how to clean sewers and have excellent hand and arm skills are professionally trained.

4. Jake, Berry, Marcus, and Phoenix each practice a different activity from the list: sailing, javelin, diving and rope climbing.

Jake and Phoenix enjoy watching their friend practice javelin
The rope climber and the diver went to Phoenix's for dinner
Jake and Marcus don't live in the same town as the diver

Who does rope climbing?

- A. Jake
 - B. Berry
 - C. Marcus
 - D. Phoenix
5. Consider the following equations:
Square + square = 3 triangles
Diamond = rectangle + triangle
Diamond + rectangle = square

How many rectangles is one diamond equal to?

- A. -5
- B. -3
- C. 4
- D. 5

Quantitative reasoning

1. The amount of electric cars in Country A is 40% of the electric cars in Country B. The amount of electric cars in Country C is 50% of that in Country A which is 520.
- a. What is the number of electric cars in Country B?
 - A. 3,000
 - B. 2,200
 - C. 2,600
 - D. 1,500
 - E. 2,000
 - b. Country D has 650 cars. How many more cars represented as a % does country D have than country A?
 - A. 21%
 - B. 25%
 - C. 29%
 - D. 31%
 - E. 41%
 - c. What is the average number of cars between country A, B and C?
 - A. 1202
 - B. 1420
 - C. 1474
 - D. 1543
 - E. 1550

2. A square paper, P, has an area greater than 2.50 cm^2 . Its length is increased by 1 cm and its width decreased by 1 cm to give a rectangular paper, R.

Which one of the following is true

- A. Area $P >$ area R and perimeter $P =$ perimeter R
 - B. Area $P =$ area R and perimeter $P =$ perimeter R
 - C. Area $P =$ area R and perimeter $P <$ perimeter R
 - D. Area $P <$ area R and perimeter $P <$ perimeter R
 - E. Area $P >$ area R and perimeter $P >$ perimeter R
3. The graph shows respondents' responses when asked what colour they use to paint the walls of their home.
- Multiple colours = 52
 - Green = 63
 - Green and orange mix = 58
 - Orange = 65
- a. Among all the respondents, only 40% of those who said "orange" and 50% of those who said "multiple colour" were professional painters. How many respondents were professional painters?
- A. 42
 - B. 52
 - C. 75
 - D. 128
 - E. 110
- b. What % of the painters painted their walls only green?
- A. 26.47 %
 - B. 32.00%
 - C. 12.72%
 - D. 22.73%
 - E. 25.00%
- c. What is the total number of painters?
- A. 235
 - B. 236
 - C. 237
 - D. 238

4. The table shows the characters damage levels and the maximum damage they can output. For example, a character with a Damage level of 600 dps will have a 60 increase from the 10% plus 89.5 base damage. The maximum damage would be the total.

Damage per second levels as gaming characters levels increase (Dps)	Extra damage added on top %	Baseline damage added after calculation
0-895	10	89.5
895-3625	15	499
3625-8785	25	1789
8785-18,325	28	4460.2
18,325-40,000	33	11612.9
40,000 and over	39.6	11612.9

- a. Ryan's character has a damage level of 2895 dps. What is his maximum damage output to the nearest 1d.p?
 - A. 3,120
 - B. 3,148
 - C. 3,274
 - D. 3,302
 - E. 3,594
- b. Jade has a character with a Damage level of 56,250. What is his maximum damage output to the nearest 1d.p?
 - A. 69740.5
 - B. 70082.3
 - C. 72101.5
 - D. 76201.5
 - E. 78231.9
- c. Megan's maximum character output was 44862.9. She wants to calculate her original dps of her character before the % add on and the base line damage was added what was it?
 - A. 20000
 - B. 24000
 - C. 25000
 - D. 26000
 - E. 30000

- d. Jamal has a damage per second level of 0 . What is the maximum damage output that Jamal's character can output?
- A. 0.0
 - B. 8.95
 - C. 89.5
 - D. 189.0
 - E. 499.5
- e. Stevens is at the max level with his extra damage % = 4,000. What is his damage per second level value?
- A. 12121.21
 - B. 21221.21
 - C. 24560.09
 - D. 26731.19
 - E. 30534.86

Situational judgement

Ellie and Jake are both working on a Gynaecology ward as junior doctors. They are good friends but recently Jake has been wondering off quite a bit, although there are a lot of jobs to do in the ward. Jake admits that he finds the gynaecology ward boring and makes use of his time by visiting theatre sessions because he wants to become a surgeon. Ellie becomes frustrated because she feels under pressure being the only junior doctor on the ward.

How important to take into account are the following considerations for Ellie when deciding how to deal with the situation?

- A. That Ellie and Jake are good friends outside of work.
 - a) Very important
 - b) Important
 - c) Of minor convenience
 - d) Not important at all
- B. That Jake is going to become a surgeon and probably won't work in gynaecology.
 - a) Very important
 - b) Important
 - c) Of minor convenience
 - d) Not important at all
- C. Although Ellie feels under pressure, she is doing a great job without Jake.
 - a) Very important
 - b) Important
 - c) Of minor convenience
 - d) Not important at all
- D. That Jake may fail his Gynaecology attachments if Ellie reports his absences.
 - a) Very important
 - b) Important
 - c) Of minor convenience
 - d) Not important at all

- E. That Jake is very much liked by his senior colleagues.
 - a) Very important
 - b) Important
 - c) Of minor convenience
 - d) Not important at all

Answers explained

Abstract reasoning:

1. **Neither.** Looking at set A, the common pattern is that it has a line and two shapes: either two balls or a ball and an octagon. Set B, on the other hand, has a line and three balls in each figure. Looking at the figure in the question, there is a line, a ball and an octagon. This may fool into choosing A. However, looking at the shapes again, each line in set A is made of 6 smaller lines; each line in set B is made of 5 smaller lines. Looking at the figure in the question again, the line it has is made of 5 smaller lines which is the same of set B's. This means overall the figure fits both sets, therefore it is a neither.
2. **D.** The arrow is moving by 45 degrees every time. So in the answer, the arrow should be pointing down. This eliminates B. The circle is the same across all shapes so there is no point looking at it. Given that the rectangle had been on all four corners, it will be back where it started from. This matches D.
3. **C.** So there are a few things going on here. To avoid confusion, we will refer to the shapes as: the biggest shape, the middle shape; the smaller shapes; the shapes outside the biggest shape. Looking at the transformation, the biggest shape becomes the shapes outside the biggest shape; the middle shapes become the biggest shapes; the smallest shapes become the middle shape; the shapes outside the box become the smallest shapes. Applying this transformation to the second figure, the answer is C.
4. **A.** The colouring in these sets is a key. You notice that triangles pointing up and right in set A are coloured; triangles pointing down and left in set B are coloured. This figure fits in set A.

Verbal reasoning

Passage one:

1. **C.** Having read the question you know that you are looking for information on the use of feathers. After scanning the text you notice that half way through the first paragraph there is mention of the use of feathers. Despite the many uses listed, 'line nests' is not one of the options. At this point it is too tempting to choose 'false' since it is not mentioned in the text. However, you should only choose 'false' if the text directly contradicts the question. In this case, however, there is no mention of line nesting all together and, therefore, we cannot tell, according to the text, if feathers can be used to line nests or not.
2. **B.** The word 'All' in this question should give you a warning that they are trying to trick you here because it is a generalised statement. The key word 'pterophagia' takes you to the middle of the third paragraph. However the same paragraph states that it is the specific bacteria *Bacillus licheniformis* that is pterophagic and not all bacteria.
3. **C.** Even though this sort of question is more time consuming, it is relatively easier to tackle because it is the case where you read a statement and then find out its context (by looking at keywords in the statement) and determine whether or not there is evidence to support the statement. A is explored in the last paragraph which also mentions that birds need to combat this bacteria which further proves its harm to the birds. B is supported by the penultimate sentence in paragraph 2. D is supported by the opening of the last paragraph. After you've eliminated A, B and D since they are supported by the passage you can

conclude that C is the right answer. In addition, the opening of the first paragraph states some species of dinosaurs do not have feathers which is another clue that C is the right answer.

4. **B.** The keyword in this question is 'uropygial'. A might seem appealing to put as your answer, however, the paragraph is specific to pterophagic, *Bacillus licheniformis*, bacteria and not some bacteria. C is not the answer because antimicrobial activity is present in the overwhelming majority of the bird population and not ALL birds. D is incorrect because there is no mention of the glands and their role in flying. Even though when you first read the paragraph it may seem that B is not the answer, but the context of the sentence where the gland is mentioned is concerned with the mechanisms that birds use to maintain their feathers and combat the degradation by that bacteria.
5. **A.** The keyword here is pteryla. Once you spot this word in the opening sentence of the second paragraph you will recognise that the statement is true after reading the sentence.

Passage two:

1. **B.** The word 'hero' gives us a clue to what we are after. This takes us to the first sentence of the second paragraph where it says that only one hero is played by a player, the person.
2. **C.** This was hopefully easy to work out. This is because there is no mention of Xbox in the passage. Therefore, even though according to our own knowledge we know that there are many genres of video games on Xbox, according to the text we cannot tell.
3. **B.** The number '10' in A is of good help to orientate us where to go. This takes us to the end of the first paragraph where it is explained that there are two teams of five players each, this translates to 10 players each. We know from the start of the passage that each player has one hero, therefore 10 players translate to 10 heroes. For C, the word 'easy' may be the best clue to use, however, given that we cannot find the word in the text we should look for alternatives such as 'hard', 'difficult', 'straightforward' ...etc. This takes us to the last paragraph that explains how difficult DOTA is which supports the statement. For D, the word 'wins' is the clue that takes us to the last sentence of the second paragraph where it explains that defeating the other team's Ancient wins you the game. This is what the statement says. For B, 'Valve' is our clue which takes us to the first paragraph. Nevertheless, there is no mention of the specialisation of Valve meaning it is not supported by the passage what the specialisation of Valve is.
4. **C.** The word 'mana' takes us towards the end of the third paragraph where it explains that mana regenerates slowly over time which is true and matches the statement. However, the text does not say that Health regenerates over time and so it is too ambiguous to decide whether or not Health regenerates over time.
5. **D.** The word 'international' takes us to the penultimate paragraph. After reading the question we know that we need to find out what the purpose of the international is. According to the third paragraph the international puts professional gamers in front of large audiences and amateur gamers. This best matches D.

Decision making

1. After reading the question we know that we are after the code for the word “molecular”. This word is mentioned in the second and last statements. Looking at the common words between these statements it is either “mimi”, “wi” or “zeze”. However, looking at the first sentence “zeze” is present but there is no mention of the word “molecular. Therefore, the answer is either one of the remaining two words.
Note that in this question the third statement is just a distraction. Also don’t attempt to decode singular words on questions like these since we didn’t even need to do that for this question.
2. First of all decide whether it’s a yes or a no. Since this is just one case rather than a randomised experiment the answer is no. The fact that the birds have been observed by the researcher doesn’t change things given that she is the one doing the experiment. Therefore, C is the answer. This question relies heavily on elimination of the wrong answers rather than finding the right answer.
3. Here are the statements broken down individually. Some people find it easy to draw diagrams to demonstrate the statements given in the question and ensure that they understand these statements.
 - A. Some plumbers who know how to sewer lines are also professionals. All professionals have excellent hand skills.
 - B. This is essentially paraphrasing the last statement
 - C. Just because all professionally trained plumbers have excellent hand skills, it doesn’t mean we can assume the opposite is true. We already know that some professional plumbers don’t know how to sewer lines.
 - D. If professional = excellent hand skills. When not all professionally trained plumbers have the ability to clean sewers, then not all plumbers with excellent hand skills can sewer lines.
 - E. All professionally trained ones have excellent skills but we can’t assume the reverse is true.
4. Jake and phoenix don’t do javelin so it may be them. However, it is not phoenix since the rope climber went to his for dinner. So far, Jake can be the rope climber, the sailer or diver. Jake is not the diver as well as can be worked out from the last statement. We cannot deduce who is the sailor from the information given. Therefore, Jake is the rock climber.
5. You can solve this by rearranging and manipulating the given equations.
Square = S
Triangle = T
Diamond = D
Rectangle = R
Then,
 $T = D - R$
 $3T = 3D - 3R$
 $2S = 3D - 3R$
 $3D = 2S + 3R$
 $3D = 2(D + R) + 3R$
 $3D = 2D + 2R + 3R$
 $D = 5R$

Quantitative reasoning

1.
 - A. **C.** Country A has twice as many cars as country C. Country A, therefore, has 520×2 cars which is 1040. Let X is the number of cars in country B. 1040 is 40% of X. X is 2600.
 - B. **B.** Taking the number of cars in country D, 650, and subtracting it from the number of cars in country A, 520. This gives 130. 130 divided by 520 multiplied by 100 is 25%.
 - C. **C.** Adding the number of cars in A, B & C all together and dividing it by 3 since we have 3 countries here.
2. **A.** It would be helpful for this to sketch a quick diagram showing the information given. There's will be some elimination for this one. You may find different methods that work without elimination, however, eliminations make it a lot easier to solve this problem. First of all the options discuss the areas of P and R. Given that 2.5 is rather a tricky number to work with we will be looking at an easier number, 20 to work out a principle. If we have a square with the area of 16 this means it has a side length of 4. If we make it a rectangle by adding 1 to two sides and subtracting 1 from two sides we will have 15 (5×3) as its area. Therefore, we can generalise that the area of the square is always bigger than that of the triangle if the perimeter is the same. Given that overall we've added 2 and subtracted 2 from the overall side length, the perimeter stays the same. Don't be put off by this it is very simple once you get it, and if you feel like you should choose simpler numbers to work with such as whole numbers instead of decimal places then do so!
3.
 - a) **B.** 40% of 65 is 26. 50% of 52 is also 26. $26 + 26 = 52$.
 - b) **A.** This is a simple division. 63 divided by 238 which is the total number of people who painted.
 - c) **D.** This is a simple matter of adding all the number of painters together.
4.
 - A. **C.** The character has a base damage of 2895 which falls under the dps scale of 895-3625, this means it will get a 15% increase. Added onto that it will get the 499 damage on top totalling to a maximum damage of 3,274
 - B. **C.** The character has a base damage of 56,250 which falls under the dps scale of 40,000 and over, this means it will get a 39.6% increase. Added onto that it will get the 11612.9 damage on top totalling to a maximum damage of 72101.5
 - C. **C.** Maximum damage output is 44862.9, do you have to work backwards and start by subtracting 11612.9 and this will give you 33,250 this is then equal to 133% with the damage added on top. You can divide this number by 133 and then multiply it by 100 giving you the original value of 25,000
 - D. **C.** look at the table, 10% of 0 is 0 and $89.5 + 0 = 89.5$

- E. **A.** 4000 is equivalent to 33% of extra damage, if you divide 4000 by 33 it gives you 1% of the base value which is 121.21212 and if you multiply this by 100 you get 12121.121.

Situational judgement

- A. **D.** Personal friendships should never affect how members of the multidisciplinary team communicate with each other. Therefore, whether Ellie and Jake are very good friends or fierce enemies, this should not be considered when they talk to each other about work-related issues.
- B. **D.** It does not matter what Jake is going to become. There is a serious problem at hand which may lead to Ellie undergoing too much pressure due to the accumulated work and it is Jake's responsibility to share the workload with his colleague.
- C. **D.** Even though she is doing a good job, Jake is still ignoring his main duty. The main problem of this scenario is the fact that Jake is avoiding doing what he's supposed to be doing which in itself is something dangerous to do as a doctor. It is great that Ellie is managing, nevertheless, Jake might be missing some essential skills that he needs to learn as a trainee doctor. Moreover, the workload on the gynaecology ward may suddenly increase even more in which case there are more chances that Ellie will make mistakes which adds risk to the patients' lives.
- D. **D.** This may seem "mean" to do. However, if Ellie asks Jake to take up the responsibilities he's supposed to be taking and he refuses to comply, it is only fair that one of the options for Ellie is to report him. Ellie does not need to work the extra hours just because Jake doesn't enjoy what he does.
- E. **D.** This still doesn't change anything since being liked by senior members of the team does not do the work that Jake does and it does not reduce the compromise Jake caused on patient safety.