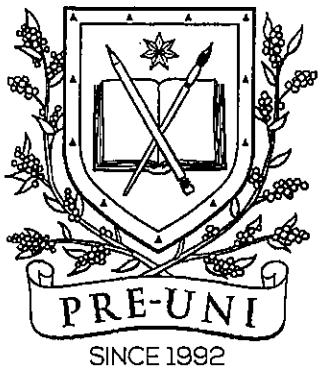


Pre-Uni
New College

Term 4

Thinking Skills
Advanced

Week 4

Thinking Skills Advanced – Term 4 Week 4

Name: _____

Class: _____ **Room:** _____

Branch: _____

Detect Reasoning Errors: Analysing Arguments

Sample Questions

1 A school policy dictates that the principal can only be contacted directly by parents if there is an urgent matter concerning the health and safety of their child. All other matters must be addressed with the class teacher or school counsellor first.

Emma: "My child's grades have been slipping recently. According to the school's policy, I should contact the principal directly to discuss my child's academic performance."

Which one of the following sentences shows the mistake Emma has made?

A Emma should contact the class teacher or school counsellor first for academic-related concerns.

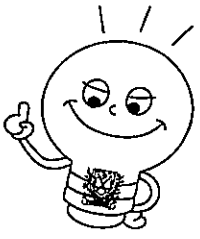
B Emma might be thinking that she would get an exception as matter is urgent.

C Emma did not consider discussing the matter with her child before contacting the principal.

D Emma wrongly assumes that the principal can resolve her child's academic issues.

Tips for This Question

In order to identify Emma's mistake, consider the school policy's specific instructions about when and whom to contact in given scenarios. Focus on what the policy stipulates about bringing up different matters – like academic concerns – with the principal. Discard options that are not directly related to Emma's misunderstanding of the school policy.



Your Answer:

Write Your Solution:

2

Coach Graham wanted to investigate whether wearing new athletic shoes makes a difference to his players' performances in a basketball match. He decided to conduct an experiment.

He divided his team into two groups according to their jersey numbers. For a month, players with jersey numbers between 1 and 12 were given new athletic shoes, and players with jersey numbers between 13 and 24 wore their old shoes.

After one month, he observed the scores of all the matches played. On average, the players who wore new athletic shoes scored five points more than the players who wore old shoes.

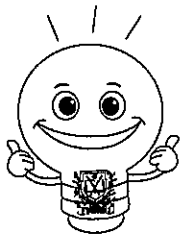
Coach Graham: "So it's clear then – wearing new athletic shoes improves players' performance in basketball matches!"

Which one of the following sentences shows the mistake Coach Graham has made?

A Some of the players might have practised extra outside the team's training hours.
B The players who wore new shoes may have been better at basketball before the experiment started.
C The players who wore old shoes might perform better in other kinds of sports.
D More players may have had jersey numbers between 1 and 12 than between 13 and 24.

Tips for this Question

To identify Coach Graham's mistake, look for options highlighting issues with the experiment design, like potential biases affecting the two groups or other factors influencing performance. Exclude options that stray from the main argument about the association between new athletic shoes and basketball performance. Focus on the critical experimental flaw.



Your Answer:

Write Your Solution:

☞ You can check the answer with solution on Page 22.

Practice Questions

3

In the Animal Kingdom, the Council of Elders has a long-standing tradition. Any animal group that manages to successfully organise the annual "Great Gathering", a festival to celebrate unity and diversity among different species, and execute the best parade performance, is honoured with the "Pride Stone", a symbol of leadership and respect.

Alice: "Our group, the 'Agile Antelopes', has been practising hard for the parade performance at the Great Gathering. We are the best performers this year, which will surely earn us the Pride Stone."

If the information in the box is true, which of the following sentences shows the mistake that Alice has made?

A Alice didn't realise that the group which organises the Great Gathering successfully, along with the best parade performance, is eligible for the Pride Stone.

B Alice's group is not recognised by the Council of Elders; hence, they won't be eligible for the Pride Stone.

C Alice's group hasn't coordinated with other animal groups, so they can't be the best performers.

D The Agile Antelopes aren't experienced performers, so they won't receive the Pride Stone.

4 Dr Baxter is a reputable virologist who studies the spreading patterns of different viruses. In the past, whenever there has been a significant increase in the average temperature, the spread of the flu virus has reduced. Recently, there has been a decrease in reported flu cases.

Dr Baxter: "The number of flu cases has dropped, so the average temperature must have significantly increased."

Which of the following statements best indicates the mistake in Dr Baxter's reasoning?

A Flu viruses can mutate and adapt to different temperatures.
B The average temperature is the sole reason for the decrease in flu cases.
C There could be various other factors contributing to the decrease in flu cases.
D The decrease in flu cases is unrelated to the temperature.

5 To be eligible for the Advanced Tech Innovation Grant, an organisation must have at least three years of operation in the tech sector, must have an annual turnover exceeding $2 million, and must have a full-time staff of no fewer than 50 employees.

Jacob: "Our organisation has been operating in the tech sector for five years, and our annual turnover is $2.5 million. We currently have 35 full-time employees. However, I believe our significant turnover should make us eligible for the Advanced Tech Innovation Grant."

Which of the following sentences shows the mistake Jacob has made?

A Jacob is failing to acknowledge the staff number prerequisite for the grant.
B Jacob underestimates the importance of meeting all eligibility requirements.
C Jacob is mistakenly considering the criteria to be individually sufficient rather than collectively necessary.
D Jacob has not properly assessed the mandatory nature of all three criteria for the grant.

6

Social analyst Prof Connolly asserts that if a city witnesses a significant increase in protests and a consistent decline in socio-economic conditions, then that city's crime rate will either increase or remain steady, reflecting a strain on social cohesion.

John: "I observed that Melbourne has seen a steady crime rate. This must mean the city has experienced a significant increase in protests."

Which of the following sentences shows the mistake John has made?

A John assumes that a steady crime rate is solely a result of an increase in protests, disregarding other possible factors.

B John should not use the social status of Melbourne as an example because it could lead to panic and fear among the public.

C John has not considered that an effective law enforcement strategy can also keep the crime rate steady, even with an increase in protests and socio-economic decline.

D John did not consider that the steady crime rate could be due to an increase in community programs and social services, without any significant increase in protests or socio-economic decline.

7

Child psychologist Dr Sinclair posits that if a toddler is consistently cared for and provided with safety measures, then the toddler will develop a sense of trust. If a toddler develops a sense of trust, they are likely to have better emotional regulation and enhanced social skills, both crucial for overall development.

Joseph: "My 13-month-old niece was cared for consistently and provided with safety measures most of the time. So, my niece's emotional regulation and social skills will be good."

Which of the following sentences shows the mistake Joseph has made?

A Joseph didn't consider that different toddlers might respond to similar care and safety measures in different ways.

B Joseph has assumed that the toddler's development can be predicted solely based on Dr Sinclair's theory without considering other variables.

C Joseph hasn't considered that the child's development might also be influenced by factors like genetics and their surrounding environment.

D Joseph has assumed that the mere presence of consistent care and safety measures will lead to good emotional regulation and social skills.

8

In the dynamic world of fashion, the impact of modernisation can be seen quite clearly. If a person embraces modernisation, it is quite likely they would incorporate contemporary trends into their style. Subsequently, if they incorporate these trends into their style, it suggests that they are in tune with the latest fashion movements. Being attuned to the latest fashion movements generally implies that they frequently shop for new clothes to update their wardrobe. And if they frequently shop for new clothes, they're helping to stimulate the fashion industry and the economy as a whole.

Peter: "If someone is in tune with the latest fashion, it means they can only help to stimulate the fashion industry but not the economy."

Which of the following sentences shows the mistake Peter has made?

A Peter hasn't taken into account the possibility that someone can be in tune with the latest fashion through means other than frequent shopping, such as by engaging with fashion media or attending fashion events.

B Peter didn't consider that a person in tune with the latest fashion might prefer second-hand or vintage clothing, which could also stimulate the economy.

C Peter assumes that someone stimulating the fashion industry does not simultaneously stimulate the economy.

D Peter has assumed that being in tune with the latest fashion directly implies frequent shopping, which may not be the case for every fashion-conscious individual.

9

Many people with disabilities have talents and skills that are overlooked due to societal biases. In the workplace, these biases manifest as hesitation to hire individuals with disabilities, even when they're qualified. Employers, driven by misconceptions, often fail to recognise the value and perspectives that these individuals bring. This not only limits opportunities for those with disabilities but also stifles the diversity and potential innovation of the workplace.

Ms Jensen: "One of our top managers, who has a disability, faced many challenges yet succeeded brilliantly. This proves that every individual with a disability will overcome challenges and excel in their roles."

Which of the following sentences shows the mistake Ms Jensen has made?

A Not every disability is the same; while some might not impact work performance, others might require specific accommodations.

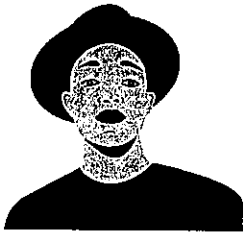
B Ms Jensen is committing a hasty generalisation by basing the capabilities of all people with disabilities on the success of one individual.

C There might be many employees without disabilities who have faced challenges and have also excelled in their roles.

D Focusing on success stories is inspiring, but Ms Jensen should also advocate for better workplace accommodations and support.

10

Dietary fat is more calorie-dense than proteins and carbohydrates, containing 9 calories per gram compared to 4 calories per gram for the latter two. However, this doesn't inherently make fat "bad". Fats are essential for various bodily functions, including nutrient absorption and hormone production. A balanced diet should incorporate a certain amount of fats, but it's the type and quantity of fat that matters.



Alex: "Since fats contain more than double the calories per gram compared to proteins and carbohydrates, cutting out all sources of dietary fat is the most effective way to lose weight."

Which of the following sentences shows the mistake Alex has made?

A Proteins and carbohydrates, when consumed in excess, can also contribute to weight gain, regardless of their lower calorie content per gram.

B Alex assumed that while fats are calorie-dense, they also provide satiety and can help in reducing overall calorie consumption by making one feel fuller for longer.

C Alex overlooks the role of fats in essential bodily functions and suggests an overly simplistic approach to weight loss based solely on calorie content.

D Some sources of dietary fat, like fish oils and nuts, provide essential fatty acids that cannot be synthesised by the human body.

11

Ever since the industrial revolution, humankind's reliance on fossil fuels has skyrocketed. This has resulted in massive amounts of greenhouse gases being released into the atmosphere. If these emissions don't decline, the consequences will be dire. Not only will the global temperatures soar, but hurricanes, droughts, and other extreme weather events will also become commonplace.

Dr Greene: "The recent increase in the frequency of hurricanes clearly shows that greenhouse gas emissions are rising."

Which of the following sentences shows the mistake Dr Greene has made?

A Dr Greene assumes that an increase in the frequency of hurricanes can only be because of an increase in greenhouse gas emissions.

B Dr Greene assumes there could be short-term variations or other factors influencing the frequency of hurricanes that are directly related to the current levels of greenhouse gas emissions.

C While the frequency of hurricanes might have decreased, their intensity or duration might have increased due to changing climatic conditions.

D Scientists have discovered new feedback loops in the Earth's climate system that can influence global temperatures and extreme weather events in complex ways.

12

To become a featured artist at the Central City Art Gallery, artists must first be part of the Local Artist Development Program. To join this program, artists need to have held at least three solo exhibitions and also have received at least one grant or award for their work.

Orlando: "I have held four solo exhibitions in the past two years and recently won the prestigious Central City Art Award. This means I will definitely be a featured artist at the Central City Art Gallery."

Which of the following sentences shows the mistake Orlando has made?

A Orlando did not hold enough solo exhibitions.
B Orlando did not receive any grants or awards for his work.
C Orlando may be accepted into another art gallery.
D Orlando being accepted into the Local Artist Development Program doesn't guarantee that Orlando will be a featured artist at the Central City Art Gallery.

13

To qualify for the Elite Space Exploration Mission, astronauts must meet at least one of three criteria: completing 100 hours or more in spaceflight training, passing the Advanced Space Navigation test or receiving a recommendation from a Senior Astronaut for exceptional performance.

Commander Gray is reviewing the qualifications of the astronauts and planning the final crew selection for the mission.

Commander Gray: "We have 10 astronauts who completed over 100 hours of spaceflight training. 8 astronauts passed the Advanced Space Navigation test. And, of course, one astronaut received a recommendation from a Senior Astronaut. So, I should be looking at 19 astronauts for the mission."

Which one of the following sentences shows the mistake Commander Gray has made?

A The astronaut who received the Senior Astronaut's recommendation might have completed fewer than 100 hours of spaceflight training.

B Some astronauts may have met more than one of the criteria, so there will be more than 19 astronauts.

C Some astronauts may have completed way more than 100 hours of spaceflight training.

D Some astronauts may have met more than one of the criteria, so there will be fewer than 19 astronauts.

14

5G technology is a revolutionary advancement in the field of telecommunications. It offers high-speed data transfer, low latency, and the ability to connect a multitude of devices simultaneously. However, for a region to fully utilise 5G technology, it must have a well-developed infrastructure, including a dense network of small cells and fibre optic cables. Additionally, the region's regulatory environment must be conducive to the deployment of 5G technology, with policies that encourage investment and innovation in the telecommunications sector.

Zachary: "Our city has recently seen a surge in high-speed data transfer and an increase in the number of devices connected to the internet. This must mean that our city has a well-developed infrastructure and a regulatory environment conducive to the deployment of 5G technology."

Which one of the following sentences shows the mistake Zachary has made?

A Zachary assumes that the surge in high-speed data transfer and the increase in the number of devices connected to the internet is solely due to the deployment of 5G technology, neglecting other possible factors like the improvement of existing 4G networks or the proliferation of Wi-Fi hotspots.

B Zachary overlooks the possibility that the surge in high-speed data transfer could also result from factors other than the deployment of 5G technology, such as the introduction of new data compression techniques.

C Zachary does not consider the fact that an increase in the number of devices connected to the internet can result from causes other than the deployment of 5G technology, such as the widespread adoption of smart devices.

D Zachary should have referred to official reports or data before making assumptions about the deployment of 5G technology in the city.

15 In the verdant world of Daleshire, the market for enchanted herbs is constantly fluctuating. The average price of enchanted herbs in Daleshire has risen by 7% annually over the past five years. Moreover, Moonshade herbs, found only in the moonlit groves of the kingdom, have witnessed a price surge of 12% annually due to their rare magical properties.

Byron: "Considering the average price of enchanted herbs in Daleshire has risen by 7% annually, it's clear that Moonshade herbs have also increased by 7% annually."

Which of the following sentences shows the mistake Byron has made?

A Byron hasn't recognised that the average price increase of enchanted herbs was more than the price surge of Moonshade herbs.

B The position of Daleshire near the mystical ley lines makes its enchanted herbs more potent and desirable.

C Moonshade herbs, due to their exclusive magical attributes, might have a different pricing dynamic compared to the average enchanted herb.

D Byron assumes that the average price rise of enchanted herbs and the price surge of Moonshade herbs would be identical.

16

Many scholars argue that if a society reads a diverse range of books, it will surely foster a culture of critical thinking and empathy. This culture, in turn, can lead to an inclusive society, which will ultimately result in a decrease in social conflicts or an increase in societal progress.

Professor Malcolm: "Our society is witnessing an increase in inclusiveness. This must mean our society has been reading a diverse range of books."

Which of the following sentences shows the mistake Professor Malcolm has made?

A Professor Malcolm assumes that an increase in inclusiveness is solely due to society's reading of a diverse range of books, neglecting other possible contributing factors such as a change in education policies or public awareness campaigns.

B Professor Malcolm doesn't consider that the impact of reading a diverse range of books might vary across different sections of society.

C Professor Malcolm did not take into account that access to a diverse range of books may be limited in some sections of society, affecting the overall impact on inclusiveness.

D Professor Malcolm overlooks the fact that the increase in inclusiveness could be a result of a natural evolution of societal norms over time.

17

At Greenwood High School, the annual sports assembly is underway. Parents, students, and faculty have gathered in the auditorium, eagerly listening to the achievements of their teams. The basketball season has been particularly successful this year. Mr Joseph, the school's athletic director, takes the stage to celebrate the school's sports successes. He starts speaking about the basketball team's performance. He is especially proud of the team captain, a left-handed player who has demonstrated outstanding skills throughout the season.

Mr Thompson: "Our school's basketball team captain, who is left-handed, consistently outperforms many right-handed players. This proves that all left-handed players have a natural advantage in basketball."

Which of the following sentences shows the mistake Mr Thompson has made?

A Not every left-handed person has the same athletic ability; some might be naturally gifted, while others might require more training.

B Mr Thompson is committing a hasty generalisation by basing the capabilities of all left-handed players on the success of one individual.

C There might be many right-handed players who, given the right training and opportunities, could outperform left-handed players.

D Highlighting the achievements of the left-handed captain is commendable, but Mr Thompson should also ensure equal training and opportunities for all players.

18

In the annual Floral City Cooking Contest, participants can qualify in one of two ways: by winning the 'Dish of the Month' title at least twice during the year, or by creating a dish that gets a five-star rating from all judges.

This year, 12 chefs from Paul's culinary school have made it to the final round.

Paul: "I know that a total of eight dishes received a five-star rating from all judges this year from our school. That means most of our finalists got through due to their five-star dishes!"

Which one of the following sentences shows the mistake Paul has made?

A Some chefs from Paul's culinary school might have received a five-star rating for more than one dish.

B Some dishes might have received a five-star rating multiple times from different events.

C The number of five-star ratings this year from Paul's school might be a record high.

D Some chefs who received a five-star rating might also have won the 'Dish of the Month' title twice or more.

19

In the construction of skyscrapers, certain rules must be followed. For instance, the building must have a solid foundation, the materials used must be of high quality, the design must be structurally sound, and safety measures must be in place. Additionally, the construction process must adhere to a specific sequence: the foundation is laid first, followed by the building of the structure, and finally, the interior is completed.

Smith: "The construction of our new skyscraper is taking longer than expected. It must be because the foundation was not laid properly."

Which one of the following sentences shows the mistake Smith has made?

A Smith assumes that the delay in construction is solely due to the foundation not being laid properly, neglecting other possible factors such as supply chain issues, weather conditions, or labour disputes.

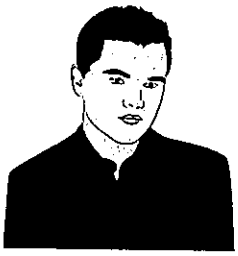
B Smith does not consider that the quality of materials used can also affect the construction timeline.

C Smith overlooks the fact that construction delays can also be due to changes in the design or safety concerns.

D Smith did not consider that the sequence of construction could be altered to speed up the process.

20

Coach Parker wishes to investigate whether listening to classical music before a game enhances his football team's performance. He decides to conduct an experiment. He divides the team into two equal groups based on their jersey numbers. For a series of games, players with even jersey numbers listen to classical music before the game, while players with odd jersey numbers listen to rock music. After several games, he observes that players who listened to classical music scored more goals on average than those who listened to rock music.



Coach Parker: "It's clear then – listening to classical music before a game boosts a player's goal-scoring abilities!"

Which one of the following sentences shows the mistake Coach Parker has made?

A Some of the players might already be listening to different genres of music before games at home.

B Players with even jersey numbers might have been better goal scorers before the experiment began.

C The players who listened to rock music might have performed better in defensive roles rather than scoring.

D There might be more players with even jersey numbers than those with odd jersey numbers.

Answer Solution of Sample Questions

1 The mistake Emma has made in her argument is to be identified based on the school's policy.

The key concept used here is detecting reasoning errors.

Emma's argument, in this case, relies on her interpretation of the school policy that allows parents to contact the principal directly in urgent matters concerning the health and safety of their child.

Option **A** correctly identifies the flaw in Emma's reasoning. The school policy clearly states that only urgent matters concerning the health and safety of a child warrant direct contact with the principal. Academic performance, in this case, should be addressed with the class teacher or school counsellor first.

Option B highlights that Emma might think of her as exception, but it is not supported by the argument thus it is not pointing out the flaw in her reasoning.

Option C is irrelevant to Emma's argument. Emma's decision to discuss the matter with her child or not does not impact her interpretation of the school policy.

Option D does not accurately identify the flaw in Emma's argument. While it might be true that the principal may not be able to resolve her child's academic issues, Emma's mistake lies in her misunderstanding of when she can contact the principal directly.

Therefore, Option **A** is the correct answer.

2 The error in Coach Graham's reasoning is to be identified based on the information given.

The key concept used here is detecting reasoning errors.

Option A suggests that some of the players might have practised extra outside the team's training hours. This introduces a confounding variable. If some players practised more than others, regardless of the type of shoes they wore, they could potentially perform better, which could skew the results.

Option **B** points out that Coach Graham had failed to consider the players' initial skill level before the experiment started. This error could lead to a misinterpretation of the results, falsely attributing the improvement to the new shoes when it could be due to the players' inherent skill.

Option C suggests that the players who wore old shoes might perform better in other kinds of sports. While this could be true, it doesn't relate directly to the basketball performance being studied, making it less relevant to the error in Coach Graham's conclusion.

Option D proposes that more players may have had jersey numbers between 1 and 12 than between 13 and 24. If there were an uneven number of players in each group, this could affect the averages calculated, potentially leading to incorrect conclusions.

Therefore, Option **B** is the correct answer.

Challenging Questions

1

Business owner: "Cupcakes have been our main focus in sales. As customer retention rates have been steadily increasing, this suggests that we should move on from cupcakes and onto another product to regain those lost customers."

Which one of the following sentences shows the main mistake the business owner has made?

A If retention rates are increasing, there is no need to regain lost customers.
B The owner assumes that it is the products that are causing a loss in customers rather than service.
C The owner assumes that only one product can be the main focus of sales.
D The owner has not linked an increase in customer retention to the sales of cupcakes.

2

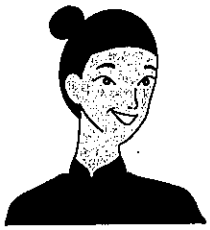
The town of Springfield is holding the annual mayor election in the upcoming weeks.

Jeffery: "I believe I should be the next mayor. If I get elected, my new policies will ensure that the economy will steadily grow, and we'll see a rise in environmental degradation. I will guarantee a cleaner, more prosperous future for Springfield!"

Which one of the following sentences shows the mistake Jeffery has made?

A It is not known whether Jeffery is running for mayor in the next election.
B Jeffery cannot guarantee that these policies would create such effects.
C Jeffery bases a conclusion on claims that are inconsistent with one another.
D Jeffery's new policies are not guaranteed to be implemented.

3 In the whale-watching seasons, the reasons given as to why no whales were seen are: less than ideal weather conditions, migration of whales to other places in the ocean and time during the day when whales are less likely to be seen.



Reece: "I saw a whale the other day, so the weather conditions must have been ideal, and I was there at a good time during the day, according to the cruise guide."

Which of the following sentences shows the mistake Reece has made?

A The weather conditions were ideal, but Reece might not have been there at the time most likely to see whales that day.

B The cruise guide made a mistake regarding the time of day.

C Reece has assumed good weather conditions and time during the day to see the whales.

D The whales could have been seen because they were migrating to other places in the ocean.

Finding Procedures: Table

Practice Questions

1 A railway service operates between two Australian towns, Darwin and Adelaide. A snippet of the train timetable is provided below:

Darwin – Adelaide	
Depart	**Arrive**
8:35	10:55
9:25	11:45
10:15	12:35
11:10	13:30

Adelaide – Darwin	
Depart	**Arrive**
9:50	12:10
12:40	13:00
13:30	13:50
14:20	15:40

A tourist named Steve resides in Darwin. He has a lunch appointment at a famous Adelaide bistro, which is scheduled to start at 12:00 noon and is expected to last 45 minutes.

If Steve wishes to minimise his total waiting time for the appointment and the return train back to Darwin, what would be that total waiting time in minutes?

A 35 minutes
B 45 minutes
C 50 minutes
D 60 minutes

2 Envision "Silver Screen Studios" is a dynamic player in the global film industry, navigating its way through the nuances of movie production for five years. The table below elegantly captures the studio's expenditures during this period, distributed among actor salaries and set construction in thousands of dollars.

Year	Actor Salaries	Set Construction
2018	2 800	900
2019	3 400	1 100
2020	3 200	1 000
2021	3 300	1 300
2022	4 400	1 514

What is the total expenditure on set construction for five years as a percentage of the total expenditure on actor salaries for the same period?

A 25%
B 30%
C 34%
D 40%

3 Three prestigious space research centres welcomed thousands of passionate researchers over six years. Together, they explored the wonders of space, discovering new secrets and expanding our understanding of the universe.

Year	NASA	ISRO	SpaceX
2017	3.4	4.2	0.6
2018	1.7	5.1	0.9
2019	3.9	7.7	1.2
2020	5.4	5.1	1.9
2021	4.3	6.5	2.9
2022	5.7	7.9	3.6

What is the ratio of the average number of researchers joining SpaceX during the years 2020, 2021 and 2022 to the average number of researchers joining NASA during the years 2017, 2018, 2019 and 2020?

A 7 : 9
B 9 : 7
C 7 : 12
D 12 : 7

4 In a realm of health and knowledge, four prominent hospitals stood as pillars of hope. The ratio of males to females varied, shaping the dynamics of each hospital. Within these esteemed hospitals, the percentage of doctors who showcased a commitment to exceptional healthcare is tabulated below.

Hospitals	Total Population	Male : Female	Percentage of doctors
A	525	4 : 3	60%
B	640	5 : 3	75%
C	600	5 : 7	72%
D	720	5 : 4	65%

What percentage greater is the population of doctors in Hospital C than the male population in Hospital D?

A 5%
B 7%
C 8%
D 20%

5 In the small town of Sweetville, there's a popular ice cream parlour that offers a variety of flavours. The owner, Mr Swirl, conducted a survey to determine the customers' favourite ice cream flavours. Mr Swirl noticed that vanilla and chocolate were the most popular, while strawberry, mint chocolate, and other flavours were less preferred. The results of the survey are presented in the following table:

Ice Cream Flavour	Number of People
Vanilla	16
Strawberry	4
Chocolate	12
Mint Chocolate	3
Other Flavours	5

What is the percentage difference between the total preferences for the top two flavours and the bottom three flavours?

A 25%
B 30%
C 35%
D 40%

6 In four different companies, the ratios of men to women employees are as follows:

Company	Men : Women	Difference
TechGlobe	5 : 3	240
InnoCorp	8 : 7	100
EcoSolutions	12 : 9	360
GlobalTech	20 : 14	660

The "difference" column indicates the numerical difference between the number of men and women in each company.

Calculate the percentage by which the number of men exceed the number of women across these four companies (round off to nearest integer).

A 20%
B 33%
C 35%
D 37%

7 Over the course of several years, a dynamic company specialised in the creation of various types of batteries, each unique and powering different devices. Their success was chronicled meticulously, capturing the number of each type of battery sold annually. This ongoing story of the company's growth and evolution is represented in the table given below, illustrating its journey through the years in the ever-changing world of battery technology.

Year	Types of Batteries (Numbers in thousands)				
	4AH	7AH	32AH	35AH	55AH
2015	75	144	114	102	108
2016	90	126	102	84	126
2017	96	114	75	105	135
2018	105	90	150	90	75
2019	90	75	135	75	90
2020	105	60	165	45	120
2021	115	85	160	100	145

Which battery is the company's best seller over the past 7 years?

A 4AH
B 7AH
C 32AH
D 35AH

8 A group of students participated in a maths competition. The following table shows the scores achieved by each student in different rounds:

	Round 1	Round 2	Round 3	Round 4
Lisa	23	23	20	25
Grace	22	20	21	20
Henry	21	25	23	21
Ava	25	20	23	18

Calculate the total of the best student's score as a percentage of the total score of all 4 students.

A 26%
B 27%
C 28%
D 29%

9 At a running tournament, eight players are competing for the championship. The following table shows the time (in seconds) taken by each player for every round:

	Round 1	Round 2	Round 3
Alice	15	14	12
Bob	12	13	13
Charlie	13	13	13
David	14	12	15
Emma	15	13	14
Frank	11	14	13
Grace	17	15	14
Henry	16	14	12

A prize will be awarded to the player with the least total time. In case of a tie, the player with the highest number of wins between those who tied will win the prize. If there is still a tie, the prize will be shared among the tied players.

Based on the current standings, which player(s) will win the prize?

A Henry
B Bob
C Henry and Grace
D Bob and Frank

10 Consider the current populations of five cities:

City	Population
City A	1 000 000
City B	1 500 000
City C	2 200 000
City D	800 000
City E	1 300 000

What is the difference between the average population of all the cities and the average population of the three most populated cities (to the nearest integer)?

A 306 667
B 307 467
C 524 667
D 554 677

11 At a baking competition of two rounds, five contestants participated and received points from the judges. The following table shows the points (out of 10) each contestant received:

	Judge 1		Judge 2		Judge 3	
	Round 1	Round 2	Round 1	Round 2	Round 1	Round 2
Alex	9.1	9.5	8.7	8.9	9.6	9.1
Beth	8.5	8.7	9.3	9.0	7.9	8.5
Carla	7.6	8.1	9.5	9.3	9.7	9.6
Dylan	8.2	8.8	9.4	9.6	9.1	8.5
Eva	8.9	9.3	8.7	9.5	9.7	9.1

A prize will be awarded to the contestant with the highest average score. In case of a tie, the prize will be shared among the tied contestants. Based on the given information, which contestant(s) will win the prize?

A Beth
B Carla and Eva
C Eva
D Alex and Dylan

12 In the bustling town of Melbourne, various manufacturers produce bottles. Two of the most coveted bottle brands, "Nikel Bott" and "Addee Tops", are produced by each company. The table illustrates the percentage distribution of the production of bottles out of the total number of bottles produced by all the companies combined. It also provides the ratio of Nikel Bott to Addee Tops manufactured by each company. In one year, a total of 40 000 bottles are crafted in Melbourne.

Name of company	Percentage of bottles produced out of the total number of bottles produced by all the companies combined	Nikel Bott : Addee Tops
A	15%	3 : 2
B	23%	12 : 13
C	25%	19 : 21
D	27%	20 : 7
E	10%	13 : 27

What is the number of Addee tops made by manufacturer A as percentage of number of nickel bott produced by manufacturer D?

A 25%
B 30%
C 35%
D 40%

13 In the bustling markets of Melbourne, toy sellers showcase a variety of products. Among the most popular are robot figurines made of either metal or wood. The table depicts the total number of robot figurines sold (metal and wood) and also provides the number of metal robots sold by four different sellers, namely ToyTronix, RoboRealm, MechMakers, and GigaGear.

Sellers	Total number of robot figurines sold	Number of metal robots sold
ToyTronix	920	714
RoboRealm	840	480
MechMakers	950	620
GigaGear	720	490

10% of the metal robots and 20% of the wooden robots sold by seller RoboRealm are defective pieces. How many non-defective robot figurines were sold by seller RoboRealm?

A 700
B 710
C 720
D 790

14 A health-conscious individual is planning a meal and wants to make the best choice for a low-calorie option. They are considering three different food types, with nutritional values provided per 100 grams. In addition to protein, carbohydrates, and fat, they are also taking into account the quantity they plan to consume. The nutritional values and quantities (per 100 g) for each food type are as follows:

Food Type	Protein (g)	Carbohydrates (g)	Fat (g)	Quantity (g)
Cake	10	30	5	150
Pizza	15	20	8	120
Burger	12	25	6	130

Considering the formula to find the total calorie for each food type is:

Total Calories = (Protein × 4) + (Carbohydrates × 4) + (Fat × 9)

Considering the nutritional values provided per 100 grams and the specified quantities, which food type should the health-conscious individual choose for the lowest calorie intake, taking into account protein, carbohydrates, fat, and the overall quantity?

A Cake
B Pizza
C Burger
D Both pizza and cake have the same calorie intake.

15 The table below represents the sales data of three different products (Product A, Product B, and Product C) for a company over a span of 5 years:

Year	Product A	Product B	Product C
2019	1 100	1 650	2 300
2020	950	1 800	2 250
2021	1 200	1 350	2 300
2022	1 250	1 150	2 550
2023	1 250	1 450	2 450

Based on the given information, what is the total sales of all products in the year 2020 as a percentage of the total number of sales of all products in the years 2021 and 2023 together?

A 30%
B 45%
C 50%
D 65%

16 Imagine you are living in a city where the temperature varies throughout the day. The table below represents the temperature data for the upcoming week in your city:

Day	8:00 am	12:00 pm	4:00 pm	8:00 pm
Monday	24	29	32	28
Tuesday	23	31	30	27
Wednesday	25	29	30	27
Thursday	25	30	32	28
Friday	26	31	30	29
Saturday	25	32	31	29
Sunday	23	30	29	31

Based on the temperature data for the week, which time period of all days has the highest average temperature?

A 8:00 am
B 12:00 pm
C 4:00 pm
D 8:00 pm

17 In the lively town of Marketville, four popular shops - Bargain Bazaar, Discount Den, Thrifty Trio, and Economart – are well-known for their competitive prices. Recently, a new resident, Mr Green, is looking to buy a new table lamp for his study.

He checks out the prices at all four shops, and here is what he finds in a comparative table:

Shop	Base Price	Discount %	Additional costs
Bargain Bazaar	$500	10%	$50
Discount Den	$450	15%	$75
Economart	$600	20%	$30
Thrifty Trio	$550	12%	$60

Mr Green wants to spend as little as possible on the table lamp.

Based on the information provided, which shop should he choose to get the cheapest deal?

A Bargain Bazaar
B Economart
C Discount Den
D Thrifty Trio

18 In the picturesque town of Artisanville, a spirited wildlife photography competition is unfolding. Eight photographers, each an expert in their own right, are pitted against each other. The competition spans three rounds, and the maximum number of photos a participant can click in the 3rd round is 50.

Here's a snapshot of how many photos each participant managed to capture in the first two rounds:

Photographer	**Round 1**	**Round 2**
Leo	60	65
Maria	65	60
Noah	70	60
Olivia	60	70
Parker	75	70
Quinn	50	70
Ryan	70	65
Stella	60	70

The person who has clicked the most number of photos till round 2 is keen to ensure his/her victory in the final round. Determine the minimum number of different animal photos he/she must capture in the last round to ensure his/her victory.

A 41
B 45
C 47
D 50

19 In the bustling city of Gastroville, four popular restaurants - Noodle Nirvana, Biryani Bistro, Taco Town, and Pasta Place – are renowned for their culinary delights. A recent arrival, Mrs Ruby, is organising a gathering for her book club and is on the hunt for the most cost-effective catering option. She evaluates the prices at all four restaurants for her guest count, and this is what she finds in a comparative table:

Restaurant	Base Price (for 20 guests)	Discount %	Service Charge
Noodle Nirvana	$400	20%	$30
Biryani Bistro	$350	15%	$45
Taco Town	$450	25%	$20
Pasta Place	$375	18%	$40

Mrs Ruby wants to minimise her expenditure on catering. Based on the information provided, which restaurant should she select to secure the most affordable deal?

A Noodle Nirvana
B Biryani Bistro
C Taco Town
D Pasta Place

20 In the cosmopolitan city of Grand Metropolis, four direct trains serve the route to the picturesque town of Vista View each day. A traveller named Theodore has an important meeting scheduled in Vista View and wishes to reach his destination as quickly as possible. The timetable he refers to displays the following information:

Train	Departure Time (Grand Metropolis)	Arrival Time (Vista View)	Expected Delay (min)
P	09:00 am	11:00 am	15
Q	10:00 am	12:10 pm	20
R	10:30 am	12:30 pm	10
S	11:00 am	1:10 pm	25

Based on the given information, determine which train will get Theodore to Vista View with the shortest amount of travel time.

A Train P
B Train Q
C Train S
D Train R

Challenging Questions

1 Ten students of the class get driven to school. The speed of each person's car, and the distance from their house to the school is shown below.

	Speed	Distance
George	23 km/h	10 km
Kayla	30 km/h	12 km
Caitlyn	28 km/h	5 km
Tamiya	25 km/h	12 km
Logan	28 km/h	14 km
Nathan	24 km/h	8 km
Harrison	20 km/h	10 km
Peter	20 km/h	13 km
Celine	22 km/h	6 km
Michael	26 km/h	5 km

The school starts at 9:00 am.

There is a person who takes the longest and shortest amount of time to get to school.

What is the difference between the latest time that they both can leave the house to reach school just in time (round everything to 2 decimal points)?

A 12 minutes
B 20 minutes
C 26 minutes
D 29 minutes

2 Six people are participating in a 100 m running race. The participants and their running speeds for the first half of the track are shown in the table below.

Participants	Running Speed
Jordan	5 m/s
Kayla	3 m/s
Timmy	4.5 m/s
Vanessa	4 m/s
Ryan	5.5 m/s
Omar	3 m/s

The prize is awarded to the student who comes first. At the moment, there is a person who is in first place with their speed. After running half the distance, the person coming in second place wants to come first.

Assuming everyone else maintains the same speed, what is the difference between the old and new speeds that this person has to run to come first by a second? (Round the time to whole numbers)

A 1.5 m/s
B 2.14 m/s
C 2.2 m/s
D 3.25 m/s

3 Pamela is performing a science experiment to see how much copper can be extracted. She performed three experiments, and recorded how long each one took.

Experiment	Time (mins)	Copper (g)
1	3.4	10
2	2.8	26
3	3.0	24

Pamela is about to perform her final experiment. She wants to give herself only 2.5 minutes to do this experiment.

If Pamela wants her overall average of the copper she makes per second to be 0.2 g/s over the four experiments, then how much copper should she produce in the final experiment?

A 15.0 g
B 34.5 g
C 68.6 g
D 80.4 g

More Practice questions are available for HOMEWORK on the Cyberschool.

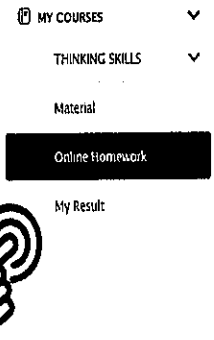
Step 1.

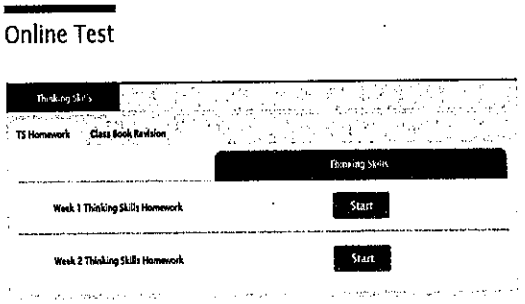
Log in to Cyberschool website.

www.cyberschool.com.au

Step 2.

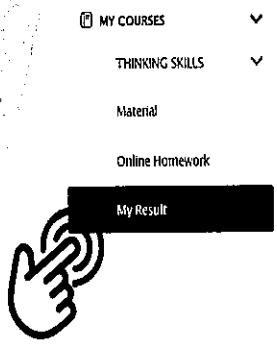
TS Homework will be found at MY COURSES > THINKING SKILLS > Online Homework > TS Homework. Each module test will open every Saturday. Click 'Start' button to begin the test.

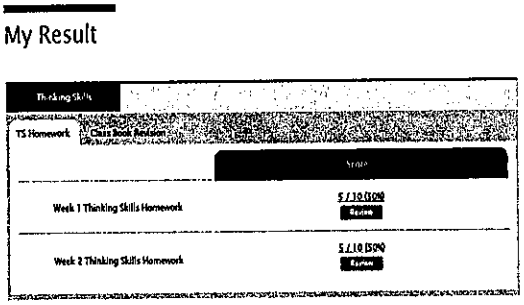




Step 3.

Results will be found at MY COURSES > THINKING SKILLS > My Result > TS Homework. After the test, you will be able to check your score and review the questions.





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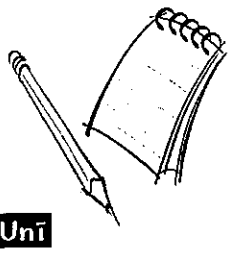

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