



ENGLISH ASSIGNMENT FOR SUMMER HOLIDAYS IBDP YEAR-1 (2021-22)

- 1) Using a padlet or other relative app prepare mind map of Content Analysis.
- 2) This summer how did you contribute in supporting a life? Prepare a collage and share your views on what was your experience and how did it change one thing about you?
- 3) Your school recently conducted Environment Conservation activity. Write an article detailing how you conceived, planned and executed the activity successfully. Mention your inspiration behind the entire efforts and also analyze how you achieved the desired results and success. If not then why?
- 4) Read the novel Twelfth Night. Try your hand on other reading titles also.

संस्कार स्कूल जयपुर

आई .बी .डीपी परियोजना कार्य कक्षा - प्रथम वर्ष

1----परियोजना -कार्य --

उद्देश्य --- जिज्ञासा जागृत करते हुए जानकारी एकत्रित करते हुए विद्यार्थियों के ज्ञान में वृद्धि करना ।
विश्व में प्राचीन काल में जल को संचय करने के साधन क्या थे ? उन जल स्रोत से क्या एक गाँव या शहर की प्यास तृप्त की जा सकती थी ? क्या स्वास्थ्य की दृष्टि से वे साफ और स्वच्छ जल देने के अच्छे माध्यम कहे जा सकते हैं ? आज उनके विलुप्त होने के क्या कारण हैं ? इन प्रश्नों को मध्य नजर रखते हुए प्राचीन कुएं , तालाब , बावड़ी या कोई अन्य प्राचीन जल संचयन माध्यमों पर आधारित 15 स्लाइड की एक सम्पूर्ण जानकारी देने वाली पीपीटी तैयार कर अंत में इस विषय को स्पष्ट करते हुए एक विडियो में अपने विचार स्पष्ट करने का प्रयास कीजिए ।

परियोजना कार्य ----2 https://youtu.be/yl_TwSlwq7I

उद्देश्य ----- मुहावरों के माध्यम से भाषा विकास करना ।

उपरोक्त दिए गए गाने के लिंक को सुनकर , इस गाने में आए मुहावरों पर आधारित मुहावरों को सुनकर उनके अर्थ को स्पष्ट करते हुए सचित्र वाक्य निर्माण करते हुए 10 स्लाइड की पीपीटी बनाने का प्रयास कीजिए ।

परियोजना कार्य --- 3 <https://youtu.be/juwrOKPVj5Y>

उद्देश्य - शब्द भंडार बढ़ते हुए रचनात्मकता के साथ भाषा विकास करना
उपरोक्त दी गई कविता के लिंक को सुनकर इस कविता के 80 से सौ शब्द लिख कर उनके अर्थ के साथ एक भाषा बोर्ड तैयार करते हुए उन शब्दों को समझाते हुए अपना एक विडियो तैयार कीजिए ।

Facilitator - sangeeta vyas

SANSKAR SCHOOL
IBDP YEAR- 01
SESSION 2021-2022

FRENCH
HOLIDAY ASSIGNMENT

Prepare a comic on each theme and make and answer 10 questions on your comics.

The themes are:

1. Organisation sociale
2. Experiences
3. Identities
4. ingeniosite humaine
5. partage de la planete.

1. Vous êtes végétarien (ne) et vous venez de passer un séjour dans un pays francophone. Ecrivez un texte dans lequel vous offrez vos pensées sur le végétarisme et racontez vos expériences (bonnes ou mauvaises !).

Interview, Lettre, Blog, Journal intime, Article, Discours, Dépliant

2. Vous avez été témoin d'un accident de voiture dans lequel une personne a été blessée. Ecrivez un texte dans lequel vous racontez ce que vous avez vu et suggérez comment de tels accidents pourraient être évités.

Interview, Lettre, Blog, Journal intime, Article, Discours, Dépliant

3. Vous avez déménagé et vous voulez informer vos copains. Écrivez un texte dans lequel vous décrivez la nouvelle maison et expliquez ce qui vous plaît le plus. Mentionnez aussi les inconvénients

Interview, Lettre, Blog, Journal intime, Article, Discours, Dépliant

4. Vos parents ont passé le weekend chez vos grands-parents et vous avez gardé votre frère cadet / votre sœur cadette à la maison. Il y avait de grands problèmes ! Écrivez un texte dans lequel vous expliquez ce qui s'est passé et comment vos parents ont réagi.

Interview, Lettre, Blog, Journal intime, Article, Discours, Dépliant

5. Vous avez gagné le grand prix dans un concours national et vous voulez partager votre succès avec vos meilleurs copains. Écrivez un texte dans lequel vous expliquez comment, où et quand vous allez célébrer et leur proposez de vous joindre

Interview, Lettre , Blog , Journal intime , Article ,Discours ,Dépliant

6. Votre chat a disparu et vous voulez savoir si les voisins l'ont vu. Écrivez un texte dans lequel vous décrivez le chat et quand vous l'avez vu la dernière fois. Mentionnez aussi la récompense que vous offrez et comment vous contacter

Interview, Lettre , Blog , Journal intime , Article ,Discours ,Dépliant



ECONOMICS
HOLIDAY ASSIGNMENT

Worksheet 1
2.1 Demand (1)

1) Explain the *law of demand*. [2 marks]

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2) State **one** difference between a movement along a demand curve and a shift in the demand curve. [1 mark]

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3) State **four** factors that can cause a shift in the demand curve for a product. [4 marks]

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4) Complete the missing words in the following statements. [12 marks]

(a) The demand curve can be derived by calculating the sum of the
..... by all of the buyers (or consumers) at each price.

(b) An demand curve illustrates the quantity a buyer / consumer is
..... and to buy at each price within a given period of time.

(c) The demand curve is; it shows that the higher
the charged, the lower the quantity demanded, vice versa.

(d) are interested in paying the lowest possible price for a good or service.
Thus, when a firm its prices, the quantity demanded for that
good/service will

5) Complete the following table to determine the individual and market demands. [5 marks]

Price of oranges (per kg)	Individual 1	Individual 2	Individual 3	Market demand
5	10		20	35
10	8	4	16	
20		3		21
30	4		8	14

6) Indicate whether the following statements are true or false. [2 marks]

(a) "The demand for normal goods usually increases when income increases."

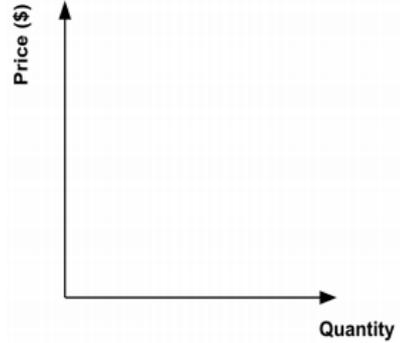
(b) "When the price of Good A, which is a substitute to Good B, increases then the demand for Good B decreases."

Worksheet 2
2.1 Demand diagrams

For each of the following situations, explain the impact on demand and illustrate this in the diagram to the right. Each question is worth [4 marks].

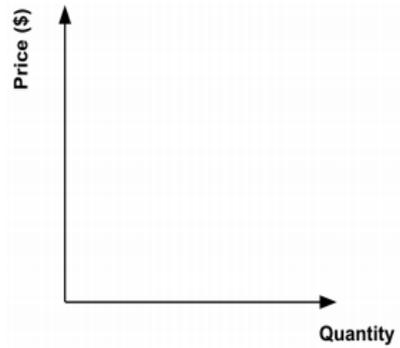
- 1) Apple slashed the price of the new MacBook Air in April 2020 by \$200.

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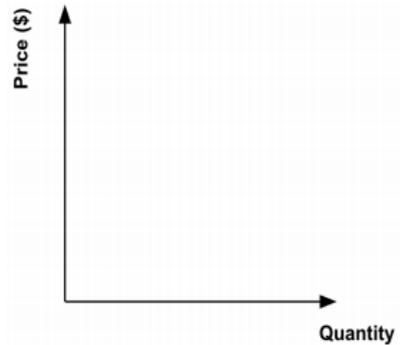
- 2) The average annual income in a country has increased, where beef is regarded as a normal good.

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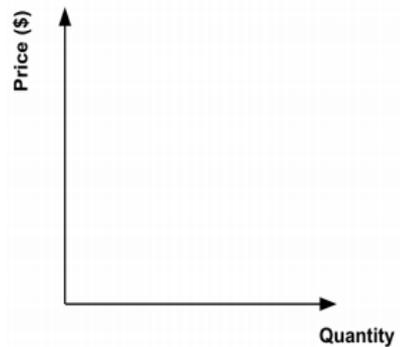
- 3) In 2020, world oil prices fell as a result of a price war between oil producers, impacting the market for new cars.

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- 4) McDonald's announces an average 5% price increase for its Extra Value Meals[®].

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Worksheet 3
2.1 Assumptions Underlying the Law of Demand (HL)

- 1) State **two** causes of the downward sloping demand curve. [2 marks]

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- 2) Using **each** of the causes you have identified in **Question 1**, explain the effect of an increase in the price of a good or service. [4 marks]

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- 3) Define the term *marginal utility*. [2 marks]

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- 4) "The law of diminishing marginal utility can be used to explain the law of demand." Explain whether this statement is true or false. [3 marks]

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- 5) "The law of diminishing marginal utility explains a decrease in the total satisfaction of an individual in the consumption of pizzas." Explain whether this statement is true or false. [3 marks]

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Use the data in the table below to guide your answer to the Question 6.

Slices of pizza consumed	Price per slice of pizza	Total utility (TU)	Marginal utility (MU)
1	\$15	30	30
2	\$14	90	60
3	\$9	150	60
4	\$9	180	30
5	\$7	200	20
6	\$5	210	10

- 6) Explain how the law of diminishing marginal utility helps explain the downward sloping nature of a demand curve. [4 marks]

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Worksheet 4
2.2 Supply (Short answer questions)

1) Define the term *supply*. [2 marks]

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2) Explain the *law of supply*. [2 marks]

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3) Describe how each of the following non-price factors affects the supply curve and indicate by placing a check-mark (✓) whether the supply curve will shift to the right or to the left. [12 marks]

	Non-price factor	Description	Supply curve will ...	
			Shift left	Shift right
(a)	Subsidies given to firms by the government			
(b)	Natural disasters, such as earthquakes			
(c)	An increase in the prices of factor inputs			
(d)	Improvements in technology			
(e)	New firms enter the market			
(f)	The price of a factor input is expected to increase in the future			

4) A producer of mutton jointly supplies wool. Explain how an increase in the price of mutton is likely to impact the supply of wool. [2 marks]

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5) A farmer produces both corn and wheat on the same plot of land. Explain how an increase in the price of wheat is likely to impact the supply of corn. [2 marks]

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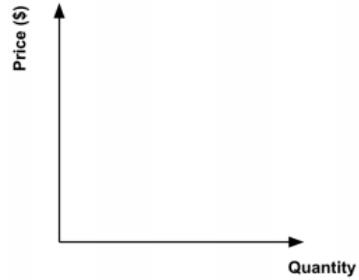
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Worksheet 5
2.2 Supply Diagrams

Read the statement for each of the following situations. Explain the impact on supply and illustrate this in the diagram to the right. Each question is worth [4 marks]. [20 marks]

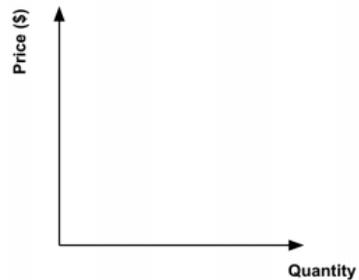
1) In 2017, Hurricane Irma hit the state of Florida in the USA. This caused significant damage to avocado crops. Explain the impact on the supply of avocados.

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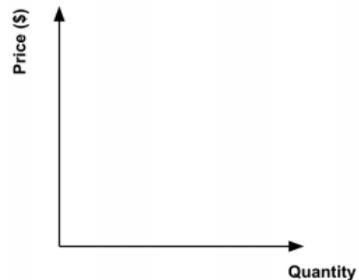
2) The price of a fertilizer used for growing tomatoes falls by \$0.20 per kilo. Explain the impact of this change on the supply of tomatoes.

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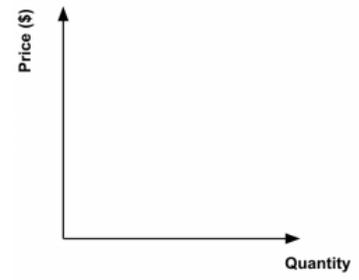
3) There has been an increase in the supply of cows during the past year. Explain the impact of this on the supply of fresh cow's milk.

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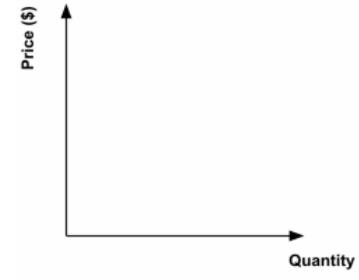
4) "Devolved Parliament" by Banksy, was expected to sell for \$2m but was sold for over \$12m at a Sotheby's auction in October 2019. Explain this using a supply curve diagram.

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5) The Hong Kong SAR government provided subsidies of HK\$3m (around US\$387,096) for producers of face masks due to the shortage during the coronavirus pandemic. Explain the impact of this on the supply of face masks in Hong Kong.

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Worksheet 6
2.2 Supply (HL) (Short answer questions)

1) Define the *law of diminishing marginal returns*. [2 marks]

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2) Define the term *marginal cost*. [2 marks]

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3) The following table indicates the relationship between the number of bakers and the total output of cookies in a bakery shop. Use the data in the table to answer the following questions.

Number of ovens used	Number of bakers	Number of cookies produced
2	0	0
2	1	10
2	2	25
2	3	35
2	4	35
2	5	28

(a) Identify which factor of production is variable and which is fixed. [2 marks]

Variable factor: Fixed factor:

(b) Outline, at which number of bakers, the law of diminishing marginal returns sets in. [2 marks]

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(c) Using the law of diminishing marginal returns, describe what is happening at the bakery when the 5th baker is added. [2 marks]

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4) Explain whether the law of diminishing marginal returns holds in the long run. [2 marks]

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5) Explain why higher marginal costs attribute to the upward sloping supply curve. [2 marks]

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IB DIPLOMA PROGRAMME YEAR I

SESSION 2021-22

BUSINESS MANAGEMENT

HIGHER LEVEL / STANDARD LEVEL

Read the case study and then answer the questions that follow.

A. RECESSION SPARKS NEW BUSINESS IDEAS

Disney, McDonald's, Burger King, Procter & Gamble, Johnson & Johnson, Microsoft – what do they all have in common? They all started during a recession or depression. The message, delivered to around 40 would-be entrepreneurs at a workshop in Stratford, east London is clear: don't let bad economic headlines put you off. Most of the people at this session are not aiming to create new multinational corporations. But during the coffee break, they seem pretty confident that their ideas can prosper even in the current climate. 'I'm here to find out about starting up a business providing CVs to school leavers,' says Jessica Lyons, wearing a lapel badge with My First CV, the name of the future business, written on it. 'For my particular business idea I think this is the ideal time, because there are more people than ever out there looking for work.' The recession is causing a spike in interest in setting up small businesses. Another interesting example was from a gym instructor who wants to take his equipment to companies around London, giving people a lunchtime workout without them having to leave their offices. Most of the would-be entrepreneurs in Stratford are looking at potential opportunities in the tertiary sector which don't require large amounts of start-up finance to purchase capital equipment and rely more on their own skills and interests.

1. Explain the following terms in the text:
 - a. Entrepreneur
 - b. Tertiary sector
 - c. Start-up finance
 - d. Capital equipment.

Ans:

2. Outline the factors of production needed to set up the business providing CVs to school leavers.

Ans:

3. Using the gym instructor's business as an example, list the business functions involved in this business.

Ans:

4. Explain the reasons why most of the would-be entrepreneurs were choosing to set up businesses in the tertiary sector.

Ans:

B. Footie Ltd to stay private after ruling out float

Footie Ltd, the shoemaker and retailer, is to remain a private limited company. The directors received overwhelming advice against converting it to a plc. The company has no need of further capital to fund further expansion, and is now one of the world's largest private limited companies. In 2004, after a decade of declining fortunes, it came within five votes of opting for a takeover by Shoe-works plc. But in April this year, it announced annual profits up from \$42.7 million to \$50.8 million on sales of \$825 million. That was its third year of record profits, reflecting its strategy of reducing its reliance on own manufacture and investing in its brands and shops.

Footie Ltd is now more of a retailer and wholesaler than manufacturer, owning or franchising 650 shops and importing shoes from abroad. Five years ago, 75% of its shoes were manufactured in Footie's European factories. Now it is just 25%, with 40% of the business based in Asia. Jim Parker, chief executive, has claimed that Footie is the largest conventional shoe brand in the world, having sold 48 million pairs last year. He said the business was

expanding rapidly in nearly all markets and this growth strategy requires a lot of capital. ‘We can continue to build the business with benefits of moving to lower-cost countries and with investment in our brand and retailing operations.’ Despite ruling out a float for now, the company said it would continue to examine ‘the most appropriate legal structure to meet shareholders’ interests on the basis of its strategy for future growth and the conditions in the footwear market’.

1. Explain two differences between a private limited company and a public limited company.

Ans:

2. Is Footie Ltd in the private sector or public sector? Explain your answer.

Ans:

3. Which industrial sector(s) does Footie Ltd operate in? Explain your answer.

Ans:

4. Examine possible reasons for the directors deciding to keep Footie Ltd a private limited company.

Ans:

5. Analyse the main benefits to the business and to existing shareholders if the company did ‘go public’.

Ans:



IB DIPLOMA PROGRAMME YEAR I

SESSION 2021-22

BUSINESS MANAGEMENT

HIGHER LEVEL / STANDARD LEVEL

BUSINESS PLAN ACTIVITY

Make a Business Plan of any product (Goods/ Services) of your choice.

Submit your work in the form of PPT.



A **business plan** is an official document with details of an organization and the proposals for reaching its aims and objectives (goals). The business plan is also likely to include background information about the organization, the key personnel (staff), market research findings, competitor analysis, its planned marketing strategy and details of its financial position.

Most small businesses, especially start-ups, have very limited resources. Market research can be both time consuming and costly, so is avoided or done poorly. Having an effective, well-thought out business plan helps to improve planning and analysis, so that entrepreneurs do not have to rely on their gut instincts. Poor planning, or a lack of it, is a major cause of business failure.

Other reasons for producing a business plan include:

- The relative strengths and weaknesses of a proposal can be inferred from a business plan.
- It adds substance to a business proposal, so supports strategic thinking and decision-making.
- Entrepreneurs are more likely to succeed if their business strategy is carefully planned.
- It helps to reassure investors and financiers, especially if the business is seeking external sources of finance to fund its operations.

Elements of a typical business plan include the following:



- *Executive summary* – The first part of a typical business plan provides an overview of the organization, its objectives and intended business strategy. It provides a summary of the business plan.
- *Introduction / Overview* – This section contains an introduction to the business, its legal status (type of organization), its vision and mission statement, and intended aims and objectives. It will also include a brief about key personnel in the organization, and may include an organizational chart.
- *Market analysis* – This part of the business plan includes details of the market or industry in which the organization operates. It will usually include a **competitor analysis**, outlining the main rivals in the industry and their respective market share. It should include projected sales figures and marketing opportunities.
- *Product analysis* – This important section describes the planned product being offered. For example, authors need to convince publishers that their idea for a book will be commercially viable. Ideally, the business plan should show the unique or distinctive selling points of the proposed product or idea.
- *Financial analysis* – This section of the business plan contains details of the finances of the business. Detailed financial analysis can help the business to secure external sources of finance from investors and financiers.
- *Marketing strategy* – The market analysis and other parts of the business plan should steer the firm's marketing strategy. It should include details of the firm's marketing mix, e.g. pricing strategies, distribution networks, promotional campaigns and product strategy.

Consider all the above given elements for your business plan. Also, include following points in your presentation:

1. What is your business idea?
2. Describe your product: is it a goods or service
3. Describe the type of organization you are planning for your business
4. How will your product stand out from the competition?
5. What is the name of your business, your product: try to make it unique, memorable and easy to pronounce
6. Who will be your target customers?
7. Why will people buy your product? Mention its unique features.
8. What will be the selling price of your product? And why?
9. List out the various resources required for your business: number of employees and their positions in the organization, machinery, technology, furniture, equipment, tools etc.
10. How much finance is required for your business? How will you use it?
11. How will you promote your product in the market?
12. How will you deliver your product to the customers?
13. How much profit you are expecting in the first year of your start-up?
14. Is there any risk factor for your business? If yes, what is your mitigation plan?
15. How will you contribute in CSR?



IB DIPLOMA PROGRAMME YEAR I

SESSION 2021-22

BUSINESS MANAGEMENT

HIGHER LEVEL / STANDARD LEVEL

Research Based Activity

Coronavirus and how it changed the corporate world

The coronavirus pandemic of 2019 - 2022 caused the world's deepest recession in living memory, with business closures and job losses in literally every industry in every country in the world.



Investigate the changing aims, objectives, strategies and tactics for an organization of your choice that faced issues during the coronavirus pandemic of 2019 - 2022.

For any organization of your choice, investigate how the coronavirus pandemic of 2019 - 2020 caused changes to its organizational objectives and its business operations.

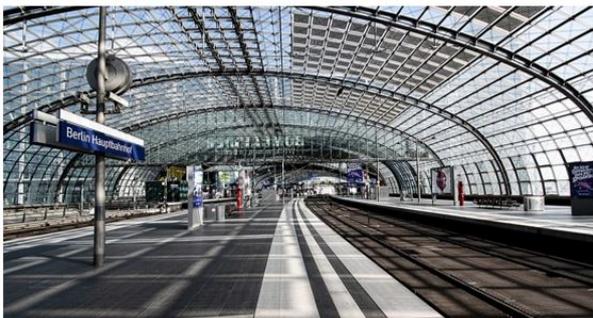
Corporate Social Responsibility during the Coronavirus Pandemic



Investigate examples of both unethical and ethical business practices during the coronavirus (Covid 19) pandemic of 2019 - 2022. To what extent did the coronavirus crisis act as a catalyst for businesses to embrace corporate social responsibility (CSR)?

This link is a good starting point to think - "50 ways companies are giving back during the coronavirus pandemic", published by Forbes.

<https://www.forbes.com/sites/blakemorgan/2020/03/17/50-ways-companies-are-giving-back-during-the-corona-pandemic/?sh=3eb1323c4723>



Present your research work in the form of PPT.

					
Grade	XI	Subject	ITGS	Date	17 th May 2021
Worksheet number	5	Worksheet topic	Social and Ethical Significance		
SUMMER HOLIDAYS HOME WORK					

1. Worksheet-1 -“Language Development”

Under the theme Students are supposed to design a crossword puzzle using an automated tool to develop the jargons of the topic “Social and ethical significance”.

Following are the rules to work for this assignment:

- Collect all the technical terminologies as much as you can from the topic discussed.
- Frame a small description of them under the permissible context.
- Search on web to find out online mode to develop crossword puzzle.
- Save the template and the responses filled in it with appropriate key attached
- Put all the files together under one folder and attach them through classroom.

2. Worksheet-2 -“Assignment to enhance Research Skills”

To develop research skills, students are supposed to write an essay of 2000 words to express their knowledge about the topic which they have learnt and further researched to examine the pros and cons.

Employer Perspective-

RQ¹- “To what extent employee surveillance is important to judge performance of an individual in an IT organization?”

OR

Employee Perspective-

“To what extent surveillance of an employee effects the performance of an individual in an IT organization?”

Two researches needed are:

- Primary research- Can be done through the development of google forms and circulating them to at least 5 individuals to collect their responses.

¹ Research Question

- Secondary research- Can be done through web with the reliable resources (blogs, research paper published under some universities, authors view published in the books etc.)

Essay should have the following headings:

- Introduction
- Background of the topic
- Technology involved for surveillance
- Primary and Secondary data analysis
- Pros and Cons
- Conclusion
- Bibliography-Sources of the fact taken from the web
- Appendix- Google form/Interview taken to collect primary data.

IBDP YEAR-I PSYCHOLOGY ASSIGNMENT

- From the following research questions pick one that you find interesting and work on it.
 1. Do children who watch more violent TV shows become more violent?
 2. Does extrasensory perception exist?
 3. Are women attracted to men by the smell of their body?
 4. Is abuse experienced differently in heterosexual and gay relationship?
 5. Are breathing exercises effective for reducing test anxiety?
 6. What emotions do people experience when watching horror movies in a cinema?
 7. Are people in arranged marriages happier than people who married by choice?
- Work on Clever Hans & give important suggestions about this research work.
- What is your opinion on scientific psychology?
- Difference between qualitative and quantitative research



IB DIPLOMA PROGRAMME YEAR-1
ENVIRONMENTAL SYSTEMS AND SOCIETIES
(SL) PRACTICE WORKSHEET (2021-22)

STUDENT’S NAME:.....

1. (a) Is the spraying of pesticides on a field an example of point or non-point source pollution? Explain your answer.

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(2)

- (b) The table below shows the abundance of bird species feeding on different food sources in an ecosystem. They were observed both before and after extensive spraying of insecticides. The data are expressed in values relative to the abundance observed before spraying.

Feeding habit of bird species	Relative abundance before spraying	Relative abundance after spraying
Herbivorous	100	103
Carnivorous	100	78
Insect-eating	100	26

- (i) Explain why the relative abundance of carnivorous birds has decreased more than

the relative abundance of herbivorous birds.

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(2)

(ii) Explain why the insect-eating birds have been most affected.

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(1)

(c) (i) Explain how a biotic index uses the presence or absence of organisms to quantify levels of pollution.

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(3)

(ii) Organic waste is discharged into a river from a sewage treatment facility. Describe the procedures you would use to assess this pollution by means of a biotic index.

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..... (4)

(iii) Name **one** physical (abiotic) variable in the river that could be measured as a part of an assessment of this pollution.

..... (1)

(d) Describe **one** alternative to petrol (gasoline) and diesel as a transport fuel and comment on its limitations.

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(2)
(Total 15 marks)

2. The table below gives the percentage of world energy supplied from various sources, in 1900 and in 1998.

Source of Energy	1900	1998
Coal	94	30
Oil	4	41
Natural gas	1.5	26
Hydro-electric and nuclear sources	0.5	3

(a) Explain the significance of the data in the table for the environment.

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(3)

(b) Discuss **two** advantages and **two** disadvantages of **one** of the sources of energy named in the table. (Hydro-electric and nuclear power may be considered separately.)

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(4)

(c) Name and evaluate **one** sustainable source of energy not listed above.

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(3)

(d) It has been calculated that the ecological footprint of the population of Singapore is 264 times greater than the area of Singapore. Explain what this means.

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(3)

(e) Assume that in a large city with a stable population, the proportion of the population that has a vegetarian diet increases. Explain how this change might affect the city's ecological footprint.

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(2)
(Total 15 marks)

3. Most members of the group of insects known as bark beetles infest dead or severely weakened trees. A few species will attack and kill living, apparently healthy trees. An area of healthy trees was sprayed with a pesticide (DDT) to control the bark beetle.

(a) State whether the spraying of pesticides is an example of point **or** non-point source pollution.
Explain your answer.

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(2)

(b) Outline **one** direct method that could be used to monitor the level of pollution from spraying pesticides as shown above.

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(2)

(c) Suggest and evaluate a strategy that might reduce the impact of pesticides in the environment.

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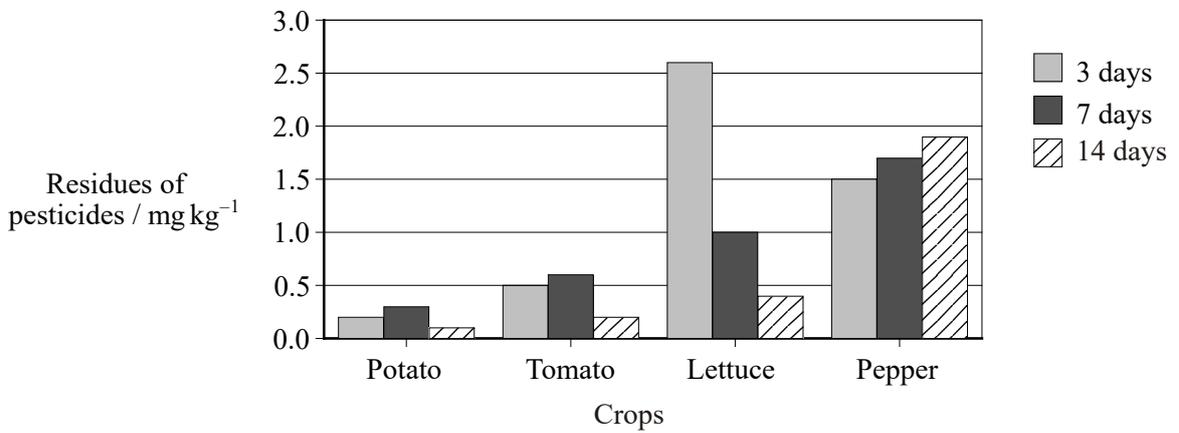
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(3)

The graph below shows the residues of pesticides in four different crops, 3 days, 7 days and 14 days after application.



[Source: Modified from R Frank and D Ripley (1990), *Food Residues from Pesticides and Environmental Pollutants in Ontario*, John Wiley & Sons Inc, page 488]

(d) (i) Describe the data shown in the graph.

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(3)

(ii) Suggest **one** implication of the data shown in the graph for the human consumption

of these foods.

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.....

(1)
(Total 11 marks)

4. (a) (i) Define the term *point source pollution*.

.....
.....

(1)

(ii) State **one** human activity that may cause eutrophication and is an example of a point source of pollution.

.....
.....

(1)

(iii) State **one** human activity that may cause eutrophication and is an example of non-point source pollution.

.....
.....

(1)

(b) State and explain which type of pollution, point source or non-point source, is easier to identify, control and eliminate.

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(1)

(c) Outline **one** method of direct measurement that would indicate that a lake is becoming eutrophic.

.....
.....
.....

..... (2)

(d) Outline **one** method of indirect measurement using a biotic index, that would indicate that a lake is becoming eutrophic.

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..... (2)

(e) Describe and evaluate management strategies to restore a eutrophic lake.

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..... (4)

(f) Development of a tourist resort near a lake is proposed. Outline strategies for determining the environmental impact of the development on the lake.

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..... (2)
(Total 14 marks)

5. The table below shows the different types of domestic waste and the amounts produced *per capita* each year in a city in a developed country.

Material type	Examples	Waste produced <i>per capita</i> / kg yr ⁻¹
Organic material	garden waste, food/kitchen waste, wood	188
Paper	newspaper, writing paper, packaging, cardboard, milk cartons	91.2
Plastics	soft drink bottles, plastic bags, plastic containers	25.1
Glass	jars, bottles, plate glass	23.9
Metals	steel cans, aluminium packaging and cans, copper pipes	14.4
Household hazardous	paint, dry cell batteries, car batteries, fluorescent light bulbs	1.9
Miscellaneous	ceramics (bricks, tiles <i>etc.</i>) rock, ash, soil	10.2
Total		354.7

[Based on Australian Bureau of Statistics data]

- (a) Calculate the proportion of paper, glass, plastics and organic material combined as a percentage of total waste.

.....

(1)

- (b) Outline and evaluate strategies for the management of the domestic waste in the table above.

.....

(3)

(Total 4 marks)



BIOLOGY ASSIGNMENT

- ✚ MAKE A WORDLE ON THE TOPIC BIOMOLECULES and CELL.
- ✚ MAKE A POWERPOINT PRESENTATION ON ORGANELLES.
- ✚ MAKE A VIDEO ON YOU YOURSELF POSING AS A MOLECULE OF YOUR CHOICE AND DESCRIBING THE MOLECULE.
- ✚ DRAW A WELL LABELLED DIAGRAM OF A CELL AND MAKE ALL ITS ORGANELLES AS DIFFERENT COMPONENT THAT DESCRIBE LIFE ACTIVITIES.

For eg. Mitochondria is described as electricity powerhouse as it also produces energy. So make a diagram or paste picture of electric powerhouse on its place in the diagram of a cell. Suppose if we want to signify chloroplast we call it as kitchen of a cell and paste a picture of a kitchen signifying it as chloroplast. MAKE THE DIAGRAM OF A CELL ON A A4 SHEET.

Sanskar School
Holiday Homework_Gr11_Physics_2021

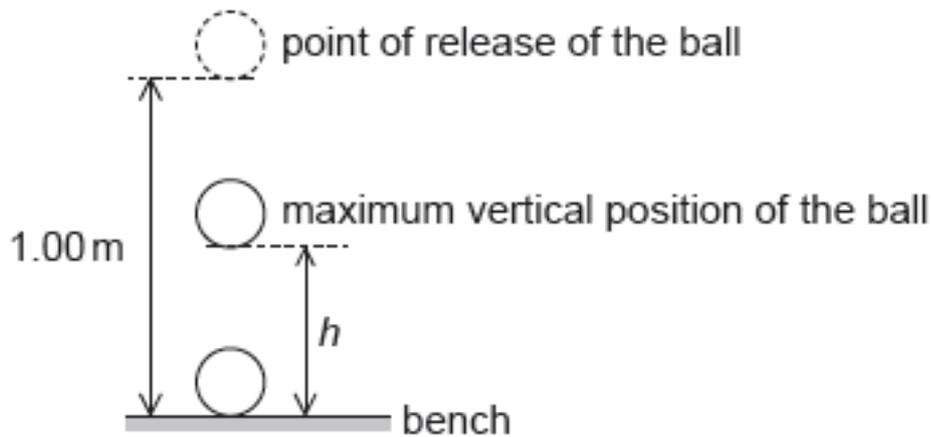
Extended Response Questions

1a. [1 mark]

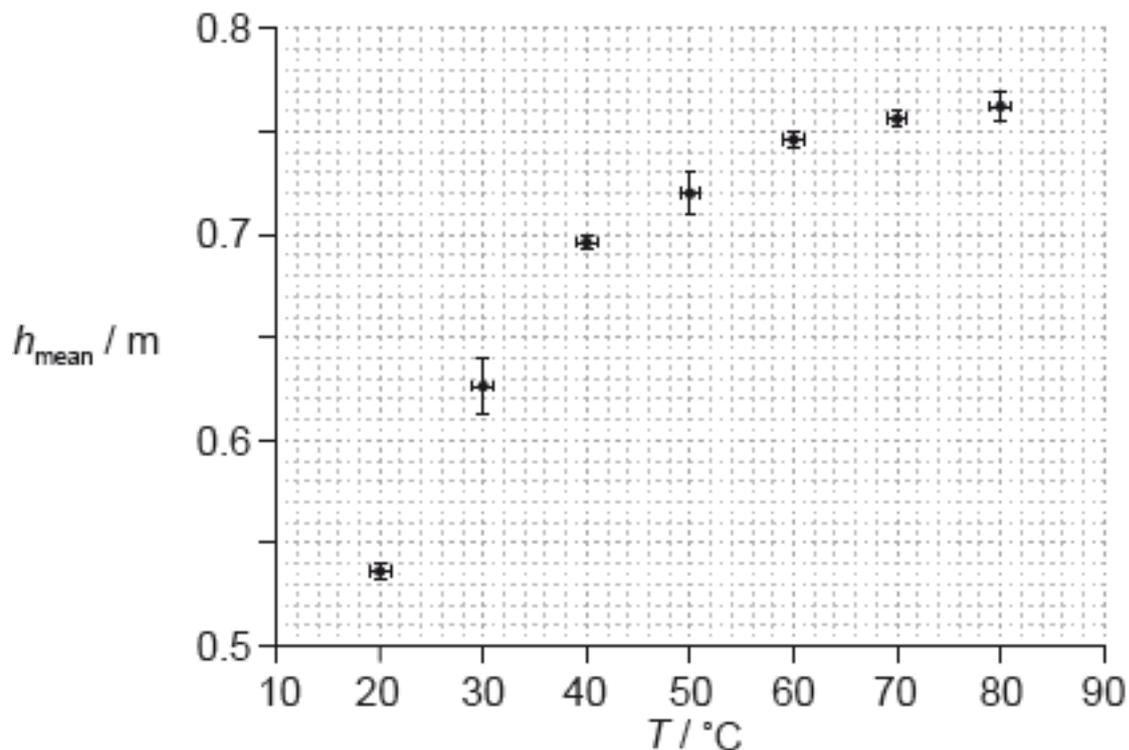
Data analysis question.

An experiment is undertaken to investigate the relationship between the temperature of a ball and the height of its first bounce.

A ball is placed in a beaker of water until the ball and the water are at the same temperature. The ball is released from a height of 1.00 m above a bench. The maximum vertical height h from the bottom of the ball above the bench is measured for the first bounce. This procedure is repeated twice and an average h_{mean} is calculated from the three measurements.



The procedure is repeated for a range of temperatures. The graph shows the variation of h_{mean} with temperature T .



Draw the line of best-fit for the data.

1b. [1 mark]

State why the line of best-fit suggests that h_{mean} is not proportional to T .

1c. [1 mark]

State the uncertainty in each value of T .

1d. [1 mark]

The temperature is measured using a liquid in glass thermometer. State what physical characteristic of the thermometer suggests that the change in the liquid's length is proportional to the change in temperature.

1e. [4 marks]

Another hypothesis is that $h_{\text{mean}} = KT^3$ where K is a constant. Using the graph on page 2, calculate the absolute uncertainty in K corresponding to $T = 50^\circ\text{C}$.

2a. [4 marks]

The period of oscillations of a simple pendulum is $T = 2\pi\sqrt{\frac{l}{g}}$. Measured value of l is 20.0 cm known to 1 mm accuracy and time for 100 oscillations of the pendulum is 90 s using a wrist watch of 1 s resolution. What is the accuracy in the determination of g ?

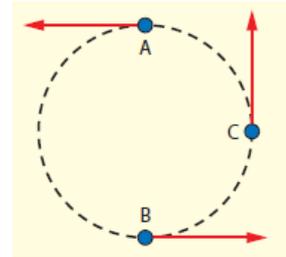
3a [4 marks]

In a certain collision, the momentum vector of a particle changes direction but not magnitude. Let p be the momentum vector of a particle suffering an elastic collision and changing direction by 30° . Find, in terms of p ($= |p|$), the magnitude of the vector representing the change in the momentum vector.

4a [6 marks]

If the speed (magnitude of velocity) is constant at 4.0 m/s , find the change in the velocity vector as the object moves:

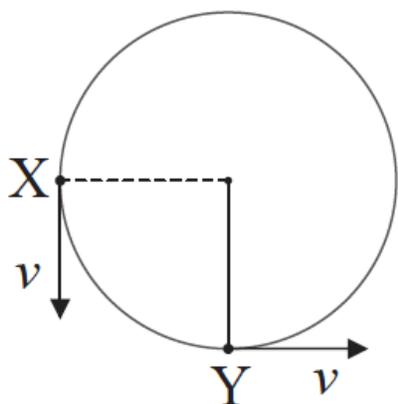
- from A to B
- from B to C.
- What is the change in the velocity vector? from A to C? How is this related to your answers to a and b?



MCQs_Attempt any 50 questions

1. Which of the following will reduce random errors in an experiment? *[1 mark]*
- A. Using an instrument having a greater precision
 - B. Checking the calibration of the instrument used
 - C. Checking for zero error on the instrument used
 - D. Repeating readings
-
2. A body accelerates from rest with a uniform acceleration a for a time t . *[1 mark]*
The uncertainty in a is 8% and the uncertainty in t is 4%. The uncertainty in the speed is
- 1. 32%.
 - 2. 12%.
 - 3. 8%.
 - 4. 2%.
-
3. Which of the following lists **two** scalar quantities? *[1 mark]*
- 1. emf, momentum
 - 2. emf, weight
 - 3. impulse, kinetic energy
 - 4. temperature, kinetic energy
-

4. A stone attached to a string is moving in a horizontal circle. The constant [1 mark] speed of the stone is v . The diagram below shows the stone in two different positions, X and Y.



Which of the following shows the direction of the change of velocity of the stone when moving from position X to position Y?



5. Which of the following is equivalent to the joule?

[1 mark]

- A. N m^2
- B. N m^{-2}
- C. kg m s^{-2}
- D. $\text{kg m}^2\text{s}^{-2}$

6. An object falls for a time of 0.25 s. The acceleration of free fall is 9.81 m s^{-2} . The displacement is calculated. Which of the following gives the correct number of significant digits for the calculated value of the displacement of the object? [1 mark]

- A. 1
- B. 2
- C. 3
- D. 4

7. Two lengths, a and b , are measured to be $51 \pm 1 \text{ cm}$ and $49 \pm 1 \text{ cm}$ respectively. In which of the following quantities is the percentage uncertainty the largest? [1 mark]

- A. $a + b$
- B. $a - b$
- C. $a \times b$
- D. $\frac{a}{b}$

8. The best estimate for the time it takes light to cross the nucleus of the hydrogen atom is [1 mark]

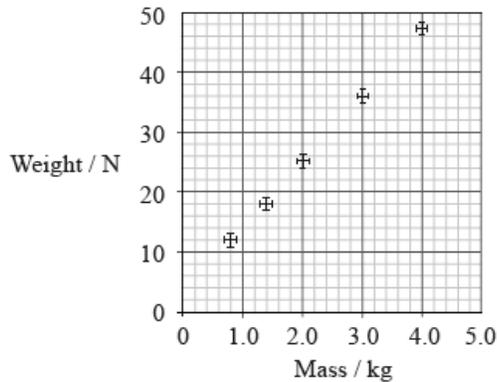
- A. 10^{-23} s .
- B. 10^{-20} s .
- C. 10^{-15} s .
- D. 10^{-7} s .

9. The length of each side of a sugar cube is measured as 10 mm with an uncertainty of $\pm 2 \text{ mm}$. Which of the following is the absolute uncertainty in the volume of the sugar cube? [1 mark]

- A. $\pm 6 \text{ mm}^3$
- B. $\pm 8 \text{ mm}^3$
- C. $\pm 400 \text{ mm}^3$
- D. $\pm 600 \text{ mm}^3$

10. A volume is measured to be 52 mm^3 . This volume in m^3 is [1 mark]
- A. $5.2 \times 10^3 \text{ m}^3$.
 - B. $5.2 \times 10^1 \text{ m}^3$.
 - C. $5.2 \times 10^{-1} \text{ m}^3$.
 - D. $5.2 \times 10^{-8} \text{ m}^3$.

11. The masses and weights of different objects are independently measured. [1 mark]
The graph is a plot of weight versus mass that includes error bars.



These experimental results suggest that the

- A. measurements show a significant systematic error but small random error.
 - B. measurements show a significant random error but small systematic error.
 - C. measurements are precise but not accurate.
 - D. weight of an object is proportional to its mass.
12. A student wants to determine the angular speed ω of a rotating object. [1 mark]
The period T is $0.50 \text{ s} \pm 5 \%$. The angular speed ω is

$$\omega = \frac{2\pi}{T}$$

What is the percentage uncertainty of ω ?

- A. 0.2 %
- B. 2.5 %
- C. 5 %
- D. 10 %

13. A student models the relationship between the pressure p of a gas and its [1 mark]
temperature T as $p = x + yT$.

The units of p are pascal and the units of T are kelvin. What are the fundamental SI units of x and y ?

	x	y
A.	$\text{kgm}^{-1}\text{s}^{-2}$	$\text{kgm}^{-1}\text{s}^{-2}\text{K}^{-1}$
B.	$\text{kgm}^{-1}\text{s}^{-2}$	K^{-1}
C.	K	$\text{kg}^{-1}\text{ms}^{-2}\text{K}^{-1}$
D.	K	K^{-1}

14. A student measures the radius R of a circular plate to determine its area. [1 mark]
The absolute uncertainty in R is ΔR .

What is the **fractional** uncertainty in the area of the plate?

- A. $\frac{2\Delta R}{R}$
B. $\left(\frac{\Delta R}{R}\right)^2$
C. $\frac{2\pi\Delta R}{R}$
D. $\pi\left(\frac{\Delta R}{R}\right)^2$

15. What is the unit of electrical potential difference expressed in [1 mark]
fundamental SI units?

- A. $\text{kg m s}^{-1} \text{C}^{-1}$
B. $\text{kg m}^2 \text{s}^{-2} \text{C}^{-1}$
C. $\text{kg m}^2 \text{s}^{-3} \text{A}^{-1}$
D. $\text{kg m}^2 \text{s}^{-1} \text{A}$

16. An object has a weight of $6.10 \times 10^2 \text{ N}$. What is the change in [1 mark]
gravitational potential energy of the object when it moves through 8.0 m
vertically?

- A. 5 kJ
B. 4.9 kJ
C. 4.88 kJ
D. 4.880 kJ

17. A student is verifying the equation

[1 mark]

$$x = \frac{2\lambda Y}{z}$$

The percentage uncertainties are:

Quantity	Uncertainty
λ	$\pm 10\%$
Y	$\pm 0.05\%$
z	$\pm 5\%$

What is the percentage uncertainty in x ?

- A. 5 %
- B. 15 %
- C. 25 %
- D. 30 %

18. A proton has momentum 10^{-20} N s and the uncertainty in the position of the proton is 10^{-10} m. What is the minimum **fractional** uncertainty in the momentum of this proton? [1 mark]

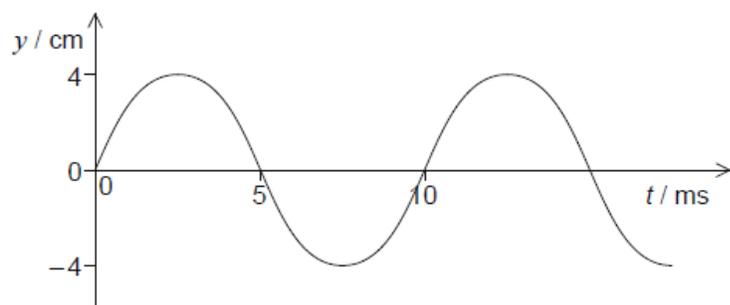
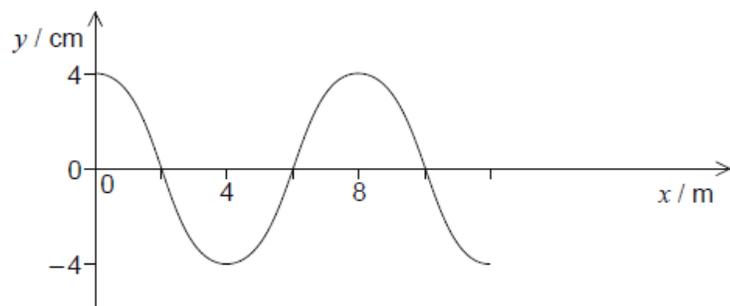
- A. 5×10^{-25}
- B. 5×10^{-15}
- C. 5×10^{-5}
- D. 2×10^4

19. What is the unit of power expressed in fundamental SI units?

[1 mark]

- A. kg m s^{-2}
- B. $\text{kg m}^2 \text{s}^{-2}$
- C. kg m s^{-3}
- D. $\text{kg m}^2 \text{s}^{-3}$

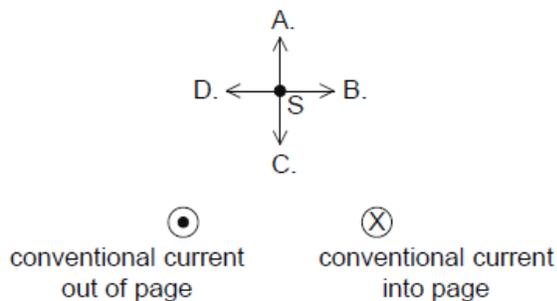
20. The graphs show the variation of the displacement y of a medium with distance x and with time t for a travelling wave. [1 mark]



What is the speed of the wave?

- A. 0.6 m s^{-1}
 - B. 0.8 m s^{-1}
 - C. 600 m s^{-1}
 - D. 800 m s^{-1}
-
21. The length of the side of a cube is $2.0 \text{ cm} \pm 4\%$. The mass of the cube is $24.0 \text{ g} \pm 8\%$. What is the percentage uncertainty of the density of the cube? [1 mark]
- A. $\pm 2\%$
 - B. $\pm 8\%$
 - C. $\pm 12\%$
 - D. $\pm 20\%$

22. Two parallel wires are perpendicular to the page. The wires carry equal currents in opposite directions. Point S is at the same distance from both wires. What is the direction of the magnetic field at point S? [1 mark]

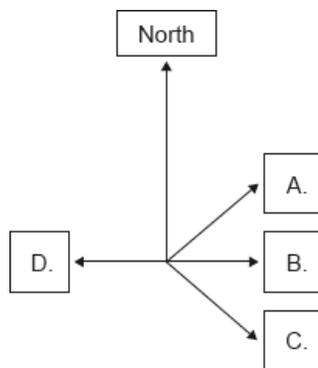


23. A student measures the radius r of a sphere with an absolute uncertainty Δr . What is the fractional uncertainty in the volume of the sphere? [1 mark]

- A. $\left(\frac{\Delta r}{r}\right)^3$
 B. $3\frac{\Delta r}{r}$
 C. $4\pi\frac{\Delta r}{r}$
 D. $4\pi\left(\frac{\Delta r}{r}\right)^3$

24. A river flows north. A boat crosses the river so that it only moves in the direction east of its starting point. [1 mark]

What is the direction in which the boat must be steered?



25. What is the best estimate for the diameter of a helium nucleus? [1 mark]

- A. 10^{-21} m
 B. 10^{-18} m
 C. 10^{-15} m
 D. 10^{-10} m

26. Which is a unit of force?

[1 mark]

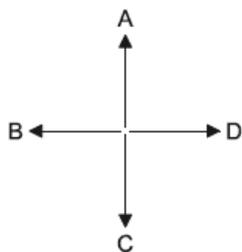
- A. J m
- B. J m⁻¹
- C. J m s⁻¹
- D. J m⁻¹ s

27. The velocities v_X and v_Y of two boats, X and Y, are shown.

[1 mark]



Which arrow represents the direction of the vector $v_X - v_Y$?



28. How many significant figures are there in the number 0.0450?

[1 mark]

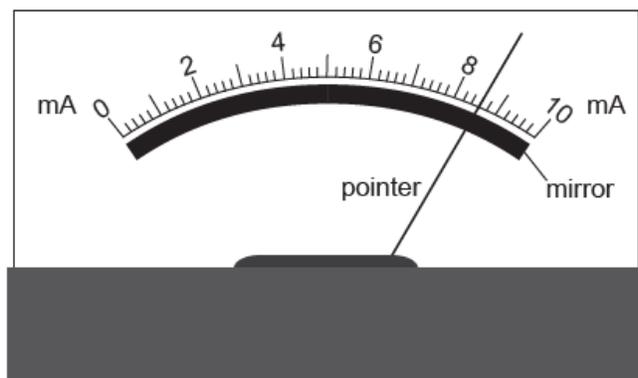
- A. 2
- B. 3
- C. 4
- D. 5

29. An object is positioned in a gravitational field. The measurement of gravitational force acting on the object has an uncertainty of 3 % and the uncertainty in the mass of the object is 9 %. What is the uncertainty in the gravitational field strength of the field?

[1 mark]

- A. 3 %
- B. 6 %
- C. 12 %
- D. 27 %

30. The diagram shows an analogue meter with a mirror behind the pointer. [1 mark]



What is the main purpose of the mirror?

- A. To provide extra light when reading the scale
- B. To reduce the risk of parallax error when reading the scale
- C. To enable the pointer to be seen from different angles
- D. To magnify the image of the pointer

31. What is a correct value for the charge on an electron?

[1 mark]

- A. $1.60 \times 10^{-12} \mu\text{C}$
- B. $1.60 \times 10^{-15} \text{mC}$
- C. $1.60 \times 10^{-22} \text{kC}$
- D. $1.60 \times 10^{-24} \text{MC}$

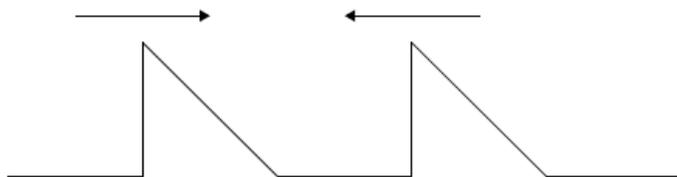
32. What is the unit of electrical energy in fundamental SI units?

[1 mark]

- A. $\text{kg m}^2 \text{C}^{-1} \text{s}$
- B. kg m s^{-2}
- C. $\text{kg m}^2 \text{s}^{-2}$
- D. $\text{kg m}^2 \text{s}^{-1} \text{A}$

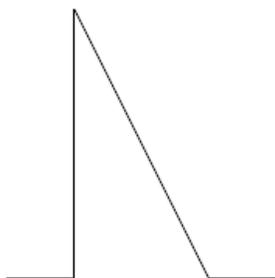
33. Two pulses are travelling towards each other.

[1 mark]

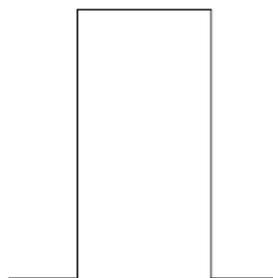


What is a possible pulse shape when the pulses overlap?

A.



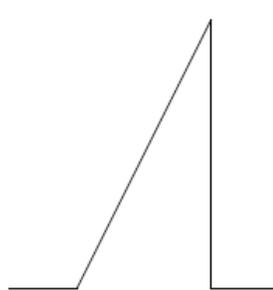
B.



C.



D.



34. Which of the following is a scalar quantity?

[1 mark]

- A. Velocity
- B. Momentum
- C. Kinetic energy
- D. Acceleration

35. A stone falls from rest to the bottom of a water well of depth d . The time t [1 mark]

taken to fall is 2.0 ± 0.2 s. The depth of the well is calculated to be 20 m

using $d = \frac{1}{2}at^2$. The uncertainty in a is negligible.

What is the absolute uncertainty in d ?

- A. ± 0.2 m
- B. ± 1 m
- C. ± 2 m
- D. ± 4 m

36. Which is a vector quantity?

[1 mark]

- A. Pressure
- B. Electric current
- C. Temperature
- D. Magnetic field

37. A boy jumps from a wall 3m high. What is an estimate of the change in momentum of the boy when he lands without rebounding? [1 mark]

- A. $5 \times 10^0 \text{ kg m s}^{-1}$
- B. $5 \times 10^1 \text{ kg m s}^{-1}$
- C. $5 \times 10^2 \text{ kg m s}^{-1}$
- D. $5 \times 10^3 \text{ kg m s}^{-1}$

38. Light of wavelength 400nm is incident on two slits separated by $1000\mu\text{m}$. [1 mark]
The interference pattern from the slits is observed from a satellite orbiting 0.4Mm above the Earth. The distance between interference maxima as detected at the satellite is

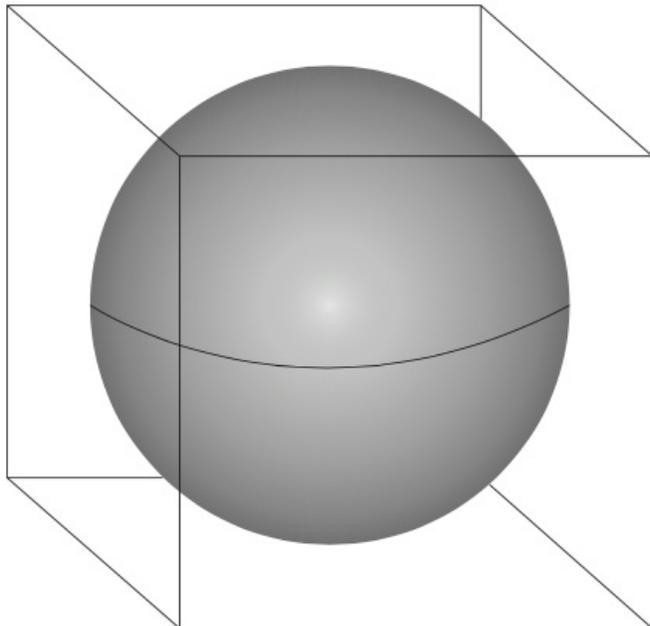
- A. 0.16Mm.
- B. 0.16km.
- C. 0.16m.
- D. 0.16mm.

39. A car moves north at a constant speed of 3m s^{-1} for 20s and then east at a constant speed of 4m s^{-1} for 20s. What is the average speed of the car during this motion? [1 mark]

- A. 7.0m s^{-1}
- B. 5.0m s^{-1}
- C. 3.5m s^{-1}
- D. 2.5m s^{-1}

40. A sphere fits inside a cube.

[1 mark]



The length of the cube and the diameter of the sphere are 10.0 ± 0.2 cm.

What is the ratio $\frac{\text{percentage uncertainty of the volume of the sphere}}{\text{percentage uncertainty of the volume of the cube}}$?

- A. $\frac{3}{4\pi}$
- B. 1
- C. 2
- D. 8

41. A swimming pool contains 18×10^6 kg of pure water. The molar mass of water is 18 g mol^{-1} . What is the correct estimate of the number of water molecules in the swimming pool?

[1 mark]

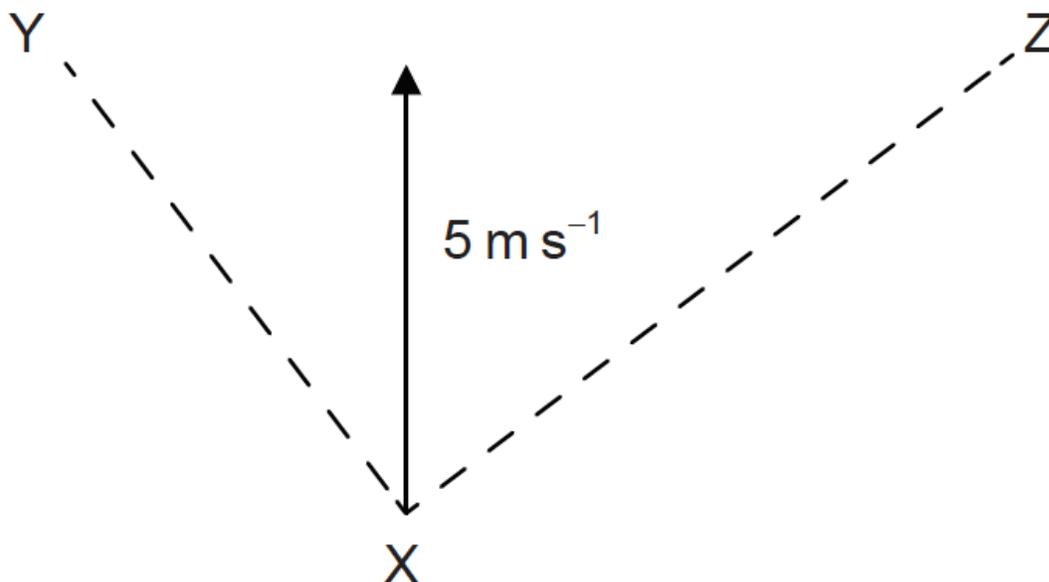
- A. 10^4
- B. 10^{24}
- C. 10^{25}
- D. 10^{33}

42. Which of the following is a derived unit?

[1 mark]

- A. Mole
- B. Kelvin
- C. Coulomb
- D. Ampere

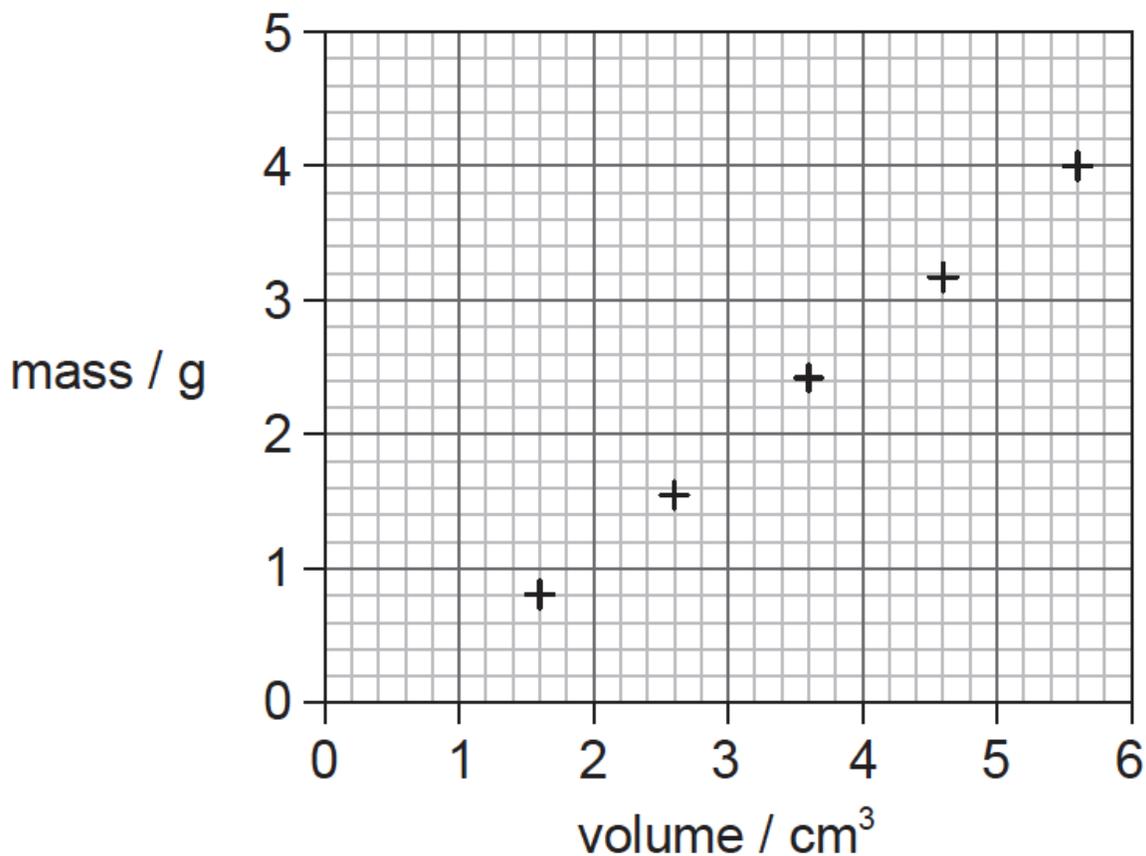
43. A velocity of 5 m s^{-1} can be resolved along perpendicular directions XY and XZ. [1 mark]
and XZ.



The component of the velocity in the direction XY is of magnitude 4 m s^{-1} . What is the magnitude of the component in the direction XZ?

- A. 4 m s^{-1}
B. 3 m s^{-1}
C. 2 m s^{-1}
D. 1 m s^{-1}
-
44. What is the unit of energy density? [1 mark]
A. J kg^{-1}
B. $\text{J kg}^{-1} \text{ m}^3$
C. J mol^{-1}
D. J K^{-1}
-
45. Which of the following expresses the watt in terms of fundamental units? [1 mark]
A. $\text{kg m}^2 \text{ s}$
B. $\text{kg m}^2 \text{ s}^{-1}$
C. $\text{kg m}^2 \text{ s}^{-2}$
D. $\text{kg m}^2 \text{ s}^{-3}$

46. The graph shows a set of experimental results to determine the density of [1 mark] oil. The results have systematic errors and random errors.



Using the information on the graph, what can be said about the measurements used to find the density of oil?

	Systematic errors	Random errors
A.	small	small
B.	small	large
C.	large	small
D.	large	large

47. Which of the following expresses the units of capacitance in terms of fundamental units? [1 mark]
- A. $\text{s}^4\text{A}^2\text{m}^{-2}\text{kg}^{-1}$
 - B. $\text{s}^2\text{Am}^{-2}\text{kg}^{-1}$
 - C. $\text{s}^4\text{A}^2\text{m}^{-2}$
 - D. s^2Am^{-2}
-
48. Which of the following is a fundamental unit? [1 mark]
- A. Ampere
 - B. Coulomb
 - C. Ohm
 - D. Volt
-
49. The maximum acceleration a_{max} of an oscillator undergoing simple harmonic motion (SHM) has a percentage uncertainty of 12%. The amplitude x_0 of the oscillation has a percentage uncertainty of 20%. If $k = \sqrt{\frac{a_{\text{max}}}{x_0}}$ what is the percentage uncertainty in the constant k ? [1 mark]
- A. 4%
 - B. 8%
 - C. 16%
 - D. 32%
-
50. The radius of a sphere is measured with an uncertainty of 2%. What is the uncertainty in the volume of the sphere? [1 mark]
- A. 2%
 - B. 4%
 - C. 6%
 - D. 8%
-
51. The force of air resistance F that acts on a car moving at speed v is given by $F = kv^2$ where k is a constant. What is the unit of k ? [1 mark]
- A. kg m^{-1}
 - B. $\text{kg m}^{-2}\text{s}^2$
 - C. kg m^{-2}
 - D. $\text{kg m}^{-2}\text{s}^{-2}$

52. Which of the following is a unit of energy? [1 mark]

- A. $\text{kg m}^{-1} \text{s}^{-1}$
- B. $\text{kg m}^2 \text{s}^{-2}$
- C. kg m s^{-2}
- D. $\text{kg m}^2 \text{s}^{-1}$

53. The volume V of a cylinder of radius R and height H is given by $V = \pi R^2 H$. [1 mark]
The volume of the cylinder was measured with an uncertainty of 10% and the height was measured with an uncertainty of 6%. What is the uncertainty in the radius of the cylinder?

- A. 1%
- B. 2%
- C. 4%
- D. 8%

54. The sides of a square are measured to be 5.0 ± 0.2 cm. Which of the following gives the area of the square and its uncertainty? [1 mark]

- A. $25.0 \pm 0.2 \text{ cm}^2$
- B. $25.0 \pm 0.4 \text{ cm}^2$
- C. $25 \pm 2 \text{ cm}^2$
- D. $25 \pm 4 \text{ cm}^2$

55. Which of the following lists two vector quantities and one scalar quantity? [1 mark]

- A. force, mass, time
- B. acceleration, energy, momentum
- C. distance, impulse, power
- D. density, pressure, temperature

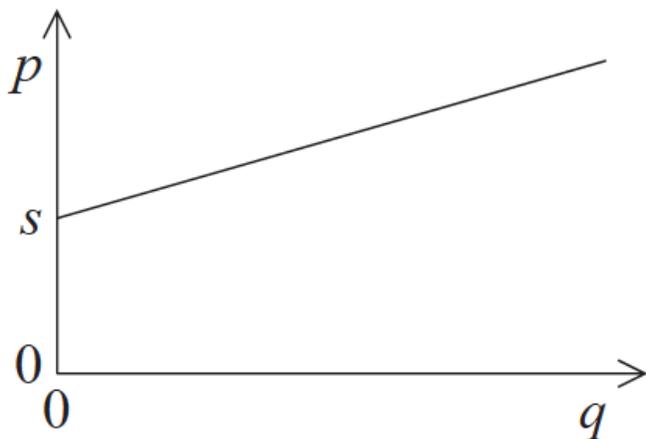
56. The length of the side of a cube is 10.0 ± 0.3 cm. What is the uncertainty in the volume of the cube? [1 mark]

- A. $\pm 0.027 \text{ cm}^3$
- B. $\pm 2.7 \text{ cm}^3$
- C. $\pm 9.0 \text{ cm}^3$
- D. $\pm 90 \text{ cm}^3$

57. Which of the following lists three vector quantities? [1 mark]

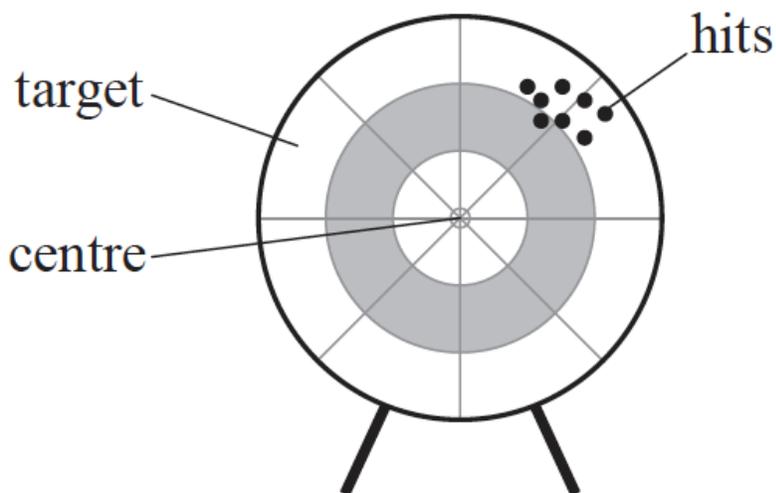
- A. momentum, electric field strength, displacement
- B. momentum, displacement, pressure
- C. pressure, electric current, displacement
- D. electric current, electric field strength, impulse

58. The graph shows the relationship between two quantities p and q . The gradient of the graph is r and the intercept on the p axis is s . [1 mark]



Which of the following is the correct relationship between p and q ?

- A. $p = sq+r$
 - B. $p = rq+s$
 - C. $p = rq-s$
 - D. $p = rs+q$
59. Aiming for the centre of a target, an archer fires arrows which produces a [1 mark] pattern of hits as shown below.



The pattern suggests the presence of

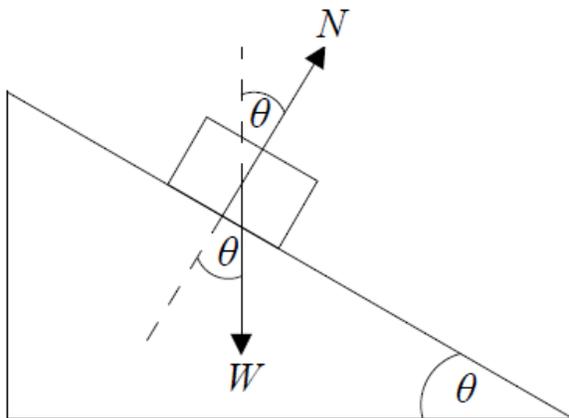
- A. random and systematic uncertainties.
- B. random uncertainties but no systematic uncertainties.
- C. systematic uncertainties but no random uncertainties.
- D. neither random nor systematic uncertainties.

60. The acceleration of free fall g is determined by the relationship $g = \frac{4\pi^2 l}{t^2}$. [1 mark]
The uncertainty in the value of l is 2% and the uncertainty in the value of t is 5%.
What is the uncertainty in g ?
- A. 3%
 - B. 7%
 - C. 8%
 - D. 12%

61. What is the correct SI unit for momentum? [1 mark]
- A. $\text{kg m}^{-1}\text{s}^{-1}$
 - B. $\text{kg m}^2\text{s}^{-1}$
 - C. kg ms^{-1}
 - D. kg ms^{-2}

62. What is the order of magnitude of the mass, in kg, of an apple? [1 mark]
- A. 10^{-3}
 - B. 10^{-1}
 - C. 10^{+1}
 - D. 10^{+3}

63. The diagram below shows the forces acting on a block of weight W as it slides down a slope. The angle between the slope and the horizontal is θ , the normal reaction force on the block from the slope is N and friction is negligible. [1 mark]



Which of the following gives the resultant force on the block?

- A. $W \sin \theta$
- B. $W \cos \theta$
- C. $N \sin \theta$
- D. $N \cos \theta$

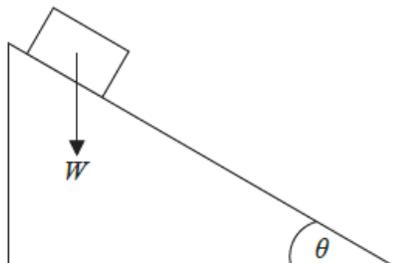
64. Which of the following is a fundamental SI unit?

[1 mark]

- A. Ampere
- B. Joule
- C. Newton
- D. Volt

65. An object slides down an inclined plane that makes an angle θ with the horizontal. The weight of the object is W .

[1 mark]



Which of the following is the magnitude of the component of the weight parallel to the plane?

- A. $W \sin \theta$
- B. $\frac{W}{\sin \theta}$
- C. $W \cos \theta$
- D. $\frac{W}{\cos \theta}$

66. A ball is thrown with velocity u at an angle of 55° above the horizontal. Which of the following is the magnitude of the horizontal component of velocity?

[1 mark]

- A. $u \cos 55^\circ$
- B. $u \sin 55^\circ$
- C. u
- D. $u \tan 55^\circ$

67. The resistive force F acting on a sphere of radius r travelling with speed v through a liquid is given by the equation

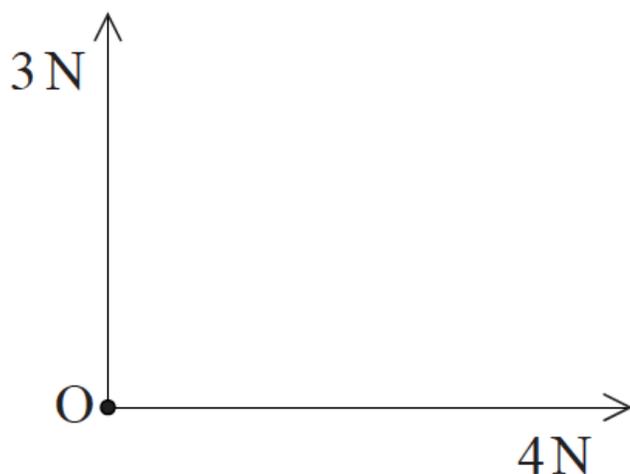
$$F = 6\pi\eta r v$$

where η is a constant. What are the SI units of η ?

- A. $\text{kgm}^{-1}\text{s}^{-2}$
- B. $\text{kgm}^2\text{s}^{-1}$
- C. $\text{kgm}^{-1}\text{s}^{-1}$
- D. $\text{kg}^{-1}\text{s}^{-3}$

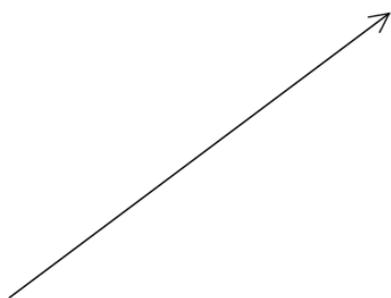
68. A small object is attached to a string and rotated in a circle of constant radius in a horizontal plane. The tension T in the string is measured for different speeds v . Which of the following plots should give a straight-line graph? [1 mark]
- A. T against v
 - B. T^2 against v
 - C. T against v^2
 - D. T^2 against v^2

69. The vector diagram shows two forces acting on a point object O. The forces are in the plane of the page. [1 mark]

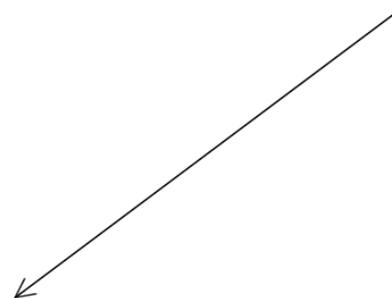


Another 5 N force is applied to O in the plane of the page. Which of the following gives the direction of this force to ensure that O is in equilibrium?

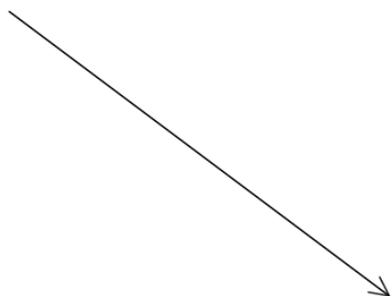
A.



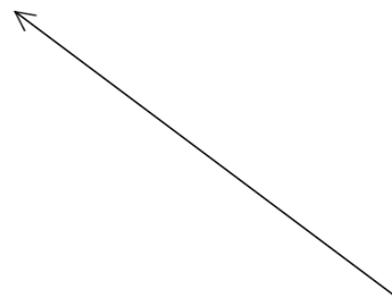
B.



C.



D.



70. Which of the following contains one fundamental and one derived unit? [1 mark]

A.	ampere	kilogram
B.	ampere	coulomb
C.	joule	newton
D.	joule	coulomb

71. The current I through a resistor is measured with a digital ammeter to be 0.10 A. The uncertainty in the calculated value of I^2 will be [1 mark]

- A. 1 %.
- B. 2 %.
- C. 5 %.
- D. 20 %.

SANSKAR SCHOOL
IBDP YEAR I (2021-22)
COMPUTER SCIENCE
HOLIDAY WORK-SHEET

1. DECIMAL TO BINARY

41	
30	
5	
10	
99	
123	
244	
13	
78	
143	
94	
58	
190	
202	
6	

BINARY TO DECIMAL

1111	
1101	
100101	
10	
00111100	
100	
110	
11111101	
1000100	
100001	
11010	
10101011	
10011001	
1110111	
11111	

2. Convert the following binary numbers to equivalent decimal numbers.

- (a) $(1101)_2$

- (b) $(11101)_2$

- (c) $(0101\ 1101)_2$

- (d) $(1101\ 1101)_2$

- (e) $(1111\ 1111)_2$

- (f) $(0101\ 1001)_2$

- $(g) (1101\ 1101\ 0101)_2$

- $(h) (11100.101)_2$

3. Convert the following decimal numbers to equivalent binary numbers.

- $(a) (57)_{10}$

- $(b) (45)_{10}$

- $(c) (255)_{10}$

- $(d) (256)_{10}$

- $(e) (2416)_{10}$

- $(f) (4195)_{10}$

4. Make a presentation on internal working of computer. This presentation will be explained by you in the class and will be awarded on following criteria

1. Content

2. Visuals

3. Topic Coverage

4. Explanation

SUMMER VACATION WORK FOR IBDO -YEAR 1					
MATHEMATICS CORE TOPICS HL-MICHAEL HAESE					
Chapter Number	Chapter	Page number	Review Set A	Review Set B	Due Date to submit on Google Classroom
1	Straight Lines	30-32	Q1-11	Q1-11	May 31
2	Sets and Venn Diagrams	50-51	Q1-12	Q1-12	June 5
3	Surds and Exponents	69-70	Q1-13	Q1-13	June 10
4	Equations	87-88	Q1-14	Q1-14	June 15
5	Sequence and Series	126-128	Q1-26	Q1-26	June 20
6	Measurement	154-155	Q1-11	Q1-11	June 25

GDC Support for Practice available on original softcopy of Michael Haese		
Page number	Topic	
7	Graphing Calculator Instructions	
26	Graphing Linear Function	
28	Simultaneous equations	
60	Calculating Exponents	
67	Scientific Notation	
84	Polynomial equations	
91	General term of Equation	
109	Financial Model	
112	Series-Sigma Notation	
115	Evaluate Series	



MATHEMATICS (SL)

ASSIGNMENT FOR SUMMER HOLIDAYS

IBDP YEAR-1 (2021-22)

1. Do the "Mathematical Investigation" on any one of the following:-

(a) Collect the data of affected corona patients of India and other 5 countries and compare it graphically (using two different types of Graphs).

or

(b) Watching IPL is a Real Fun. Lets utilise it by collecting the data of runs / wickets of any two players / teams of your Choice and compare their performances graphically (using two different types of Graphs).

WORKSHEET

Question 1

$$-10 + -3 - -4 + 5$$

A: 2

B: - 12

C: - 4

D: 16

E: None of these

Question 2

$$-96 \div -6 \div 8 =$$

A: 2

B: 12

C: - 12

D: - 2

E: None of these

Question 3

Jo bought a used car for \$6000 and paid 15% deposit. How much did he still have to pay?

A: \$900

B: \$5000

C: \$4500

D: \$5100

E: None of these

Question 4

$$5 \times -2 - (8 - 12) + 16 \div -8 =$$

A: 6

B: - 8

C: - 16

D: - 6

E: None of these

Question 5

What is 8% of \$600?

A: \$580

B: \$480

C: \$48

D: \$58

E: None of these

Question 6

Which is the longest distance?

A: 3500cm

B: 65.5m

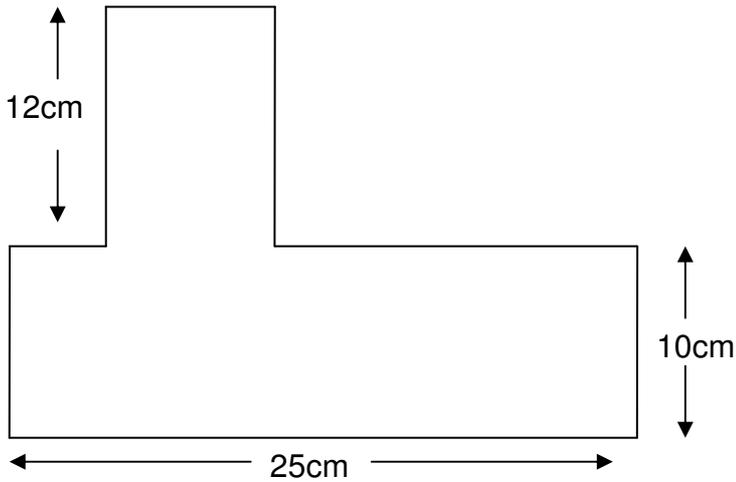
C: 75000mm

D: 15.5m

E: 0.1km

Question 7

The perimeter of the shape is



A: 47cm

B: 72cm

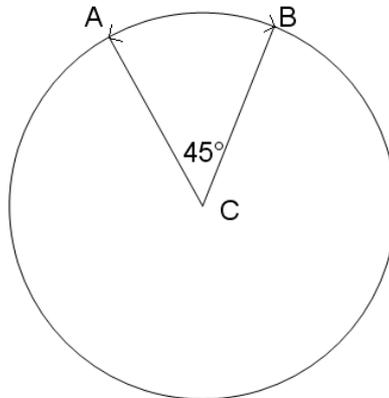
C: 69cm

D: 94cm

E: Not enough information to find perimeter

Question 8

If the length of the shorter arc \overline{AB} is 22cm and C is the centre of the circle then the circumference of the circle is:



A: 990cm

B: 67cm

C: 176cm

D: 88cm

E: None of these

Question 9

If 2 fligs make a flog and 3 flogs make a flug, how many fligs in 12 flugs?

A: 72

B: 17

C: 36

D: 34

E: None of these

Question 10

If $2\frac{1}{3} : 4\frac{1}{3}$ then $7 : \square = \square$

A: 12

B: 13

C: $8\frac{2}{3}$

D: $6\frac{1}{3}$

E: None of these

Question 11

Concrete is made by mixing screenings cement and sand in the ratio 3:1:15. How much sand would be needed to make 125 tonnes of concrete?

A: 27 tonnes

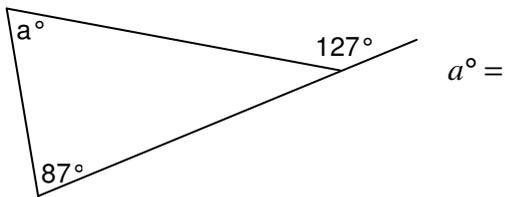
B: 33.75 tonnes

C: 45 tonnes

D: 75 tonnes

E: None of these

Question 12



A: 53

B: 40

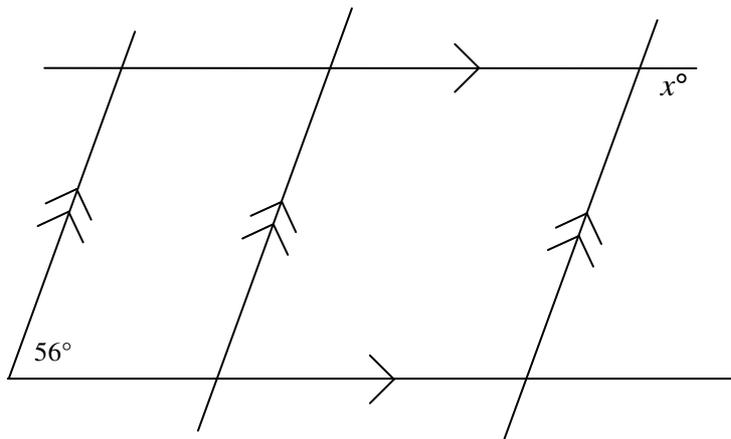
C: 93

D: 146

E: None of these

Question 13

$x^\circ =$



A: 124

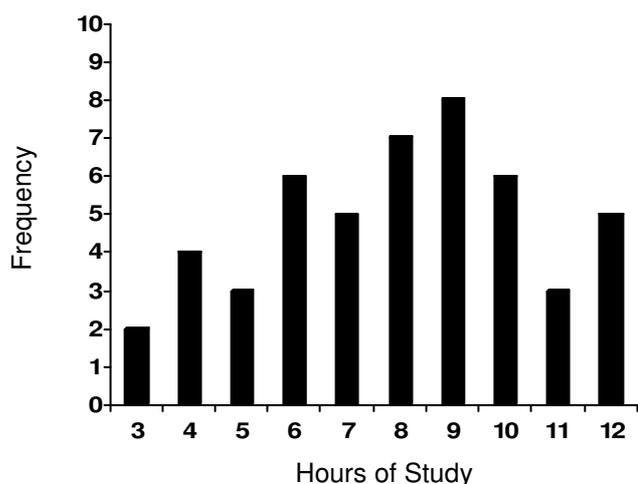
B: 304

C: 54

D: 66

E: None of these

Use the following graph to answer questions 14 and 15



The graph shows the number of hours a year 8 group spent doing homework for one week.

Question 14

How many students studied for more than 8 hours in the week?

- A:** 22 **B:** 29 **C:** 42 **D:** 50 **E:** None of these
-

Question 15

How many students studied for 6 hours or less per week?

- A:** 9 **B:** 18 **C:** 15 **D:** 12 **E:** None of these
-

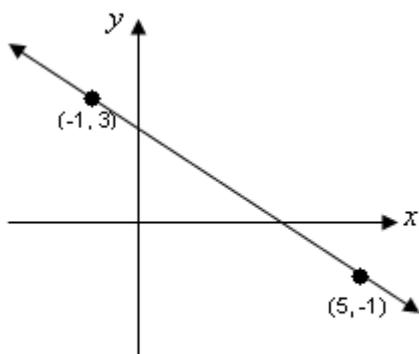
Question 16

Two six sided dice are thrown together. What is the probability that a total of 10 is thrown?

- A:** $\frac{1}{6}$ **B:** $\frac{1}{12}$ **C:** $\frac{1}{2}$ **D:** $\frac{5}{6}$ **E:** None of these

Question 17

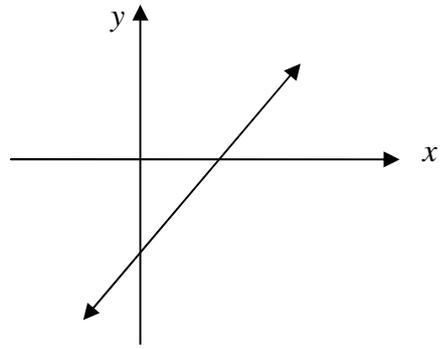
The gradient of the line is



- A:** $\frac{3}{2}$ **B:** $\frac{2}{3}$ **C:** $-\frac{2}{3}$ **D:** $-\frac{3}{2}$ **E:** None of these
-

Question 18

The y intercept of the graph could only be:



A: (4,0)

B: (0,-3)

C: (-4,0)

D: (-3,0)

E: (0,3)

Question 19

Which inequation shows the following statement?

x is 6 or less and more than - 5

A: $-5 < x \leq 6$

B: $-5 > x \leq 6$

C: $-5 \leq x \leq 6$

D: $-5 < x < 6$

E: $-5 \leq x < 6$

Question 20

Expand and simplify

$$-6(2x - 3) - 11$$

A: $-12x - 29$

B: $7 - 12x$

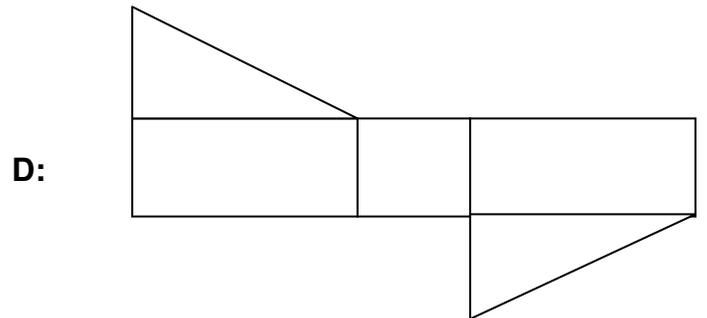
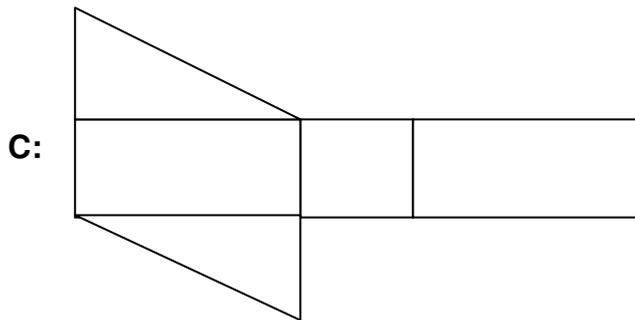
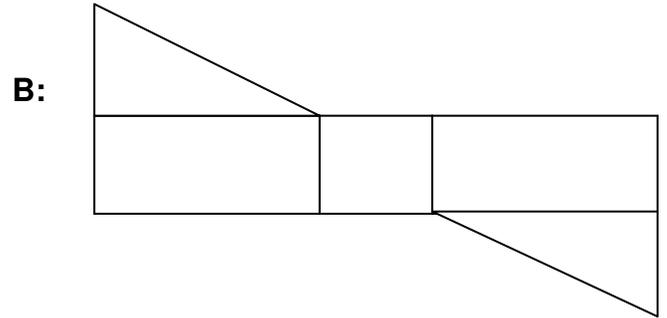
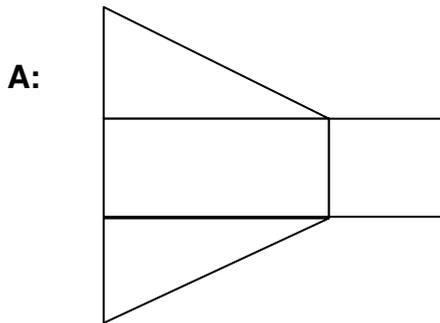
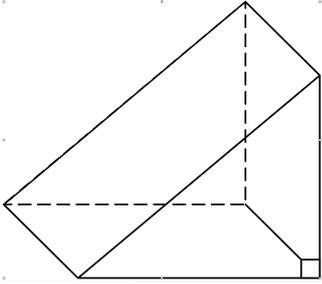
C: $12x - 7$

D: $7 + 12x$

E: None of these

Question 21

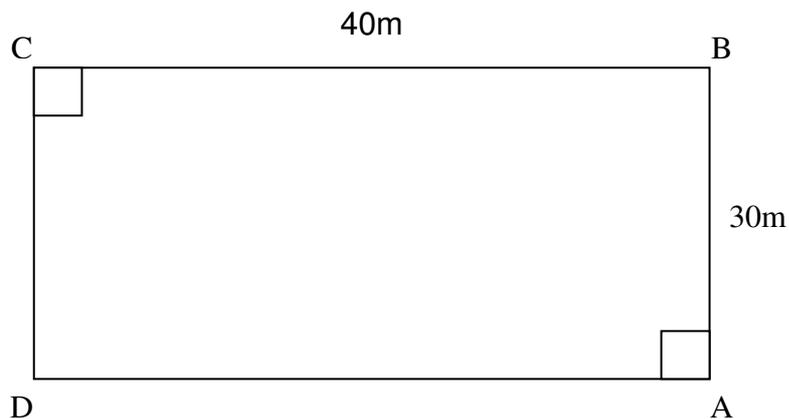
Which option would make this solid?



E: None of the nets would make the solid

Question 22

The diagram shows a small rectangular field. If Linda runs from A to B to D to C to A, how far does she run?



A: 120m

B: 160m

C: 140m

D: 150m

E: None of these

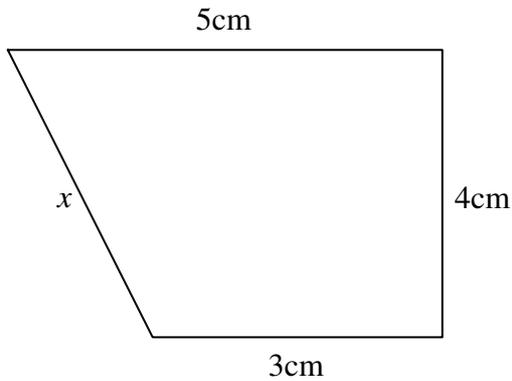
Question 23Simplify the surd $3\sqrt{56}$ completely

A: $12\sqrt{14}$

B: $5\sqrt{14}$

C: $6\sqrt{14}$

D: $6\sqrt{28}$

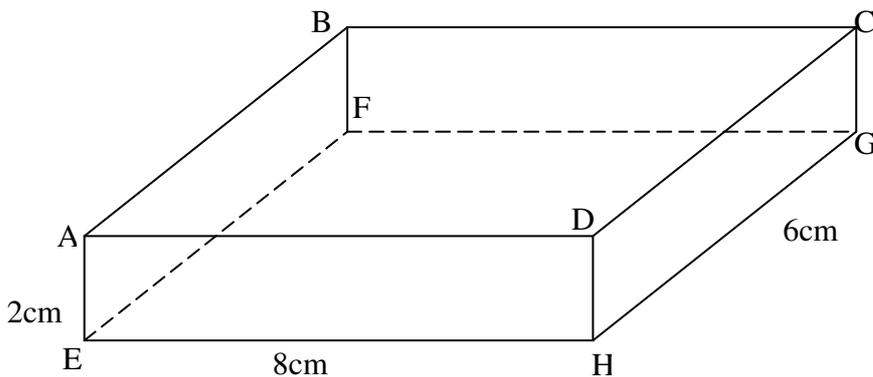
E: None of these**Question 24**The length of x equals

A: 6cm

B: $\sqrt{6}cm$

C: $5\sqrt{2}cm$

D: $2\sqrt{5}cm$

E: None of these**Question 25**The rectangle box has dimensions as shown. What is the length \overline{AG} ?

A: $2\sqrt{26}$

B: $4\sqrt{6}$

C: $2\sqrt{3}$

D: $\sqrt{16}$

E: None of these**Question 26**Sam bought a car valued at \$7700. One year later the car's value had decreased by $\frac{2}{7}$. What is the new value of the car?

A: \$2200

B: \$5500

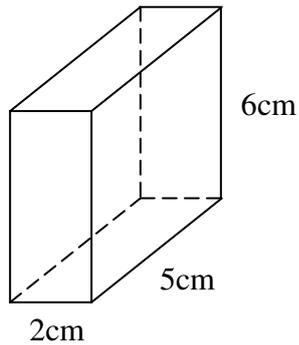
C: \$9900

D: \$4400

E: None of these

Question 27

If Density = Mass \div Volume, what is the Mass of the solid in the diagram if its Density is $1.2\text{gm} / \text{cm}^3$?



- A:** 50gm
- B:** 60gm
- C:** 72gm
- D:** 38.4gm
- E:** None of these

Question 28

What is the speed in m/s of a car that travels 30km in 20 minutes?

- A:** 1500 m/s
- B:** 150 m/s
- C:** 90 m/s
- D:** 540 m/s
- E:** None of these

Question 29

If $R = \frac{(S+T)P}{3}$ then T equals

- A:** $\frac{3R-S}{P}$
- B:** $\frac{PR}{3} - S$
- C:** $\frac{3R}{P} + S$
- D:** $\frac{3R+S}{P}$
- E:** $\frac{3R}{P} - S$

Question 30

Solve the inequation for x

$$\frac{5(9-x)}{3} + 1 < 11$$

- A:** $x < 3$
- B:** $x > 3$
- C:** $x > -3$
- D:** $x > 1\frac{4}{5}$
- E:** None of these

Question 31

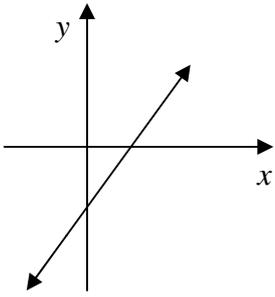
Solve for x

$$\frac{4x-3}{5} - \frac{2x-3}{2} = -2$$

- A:** $x = 1\frac{11}{18}$
- B:** $x = 5\frac{1}{2}$
- C:** $x = -5\frac{1}{2}$
- D:** $x = 14\frac{1}{2}$
- E:** $x = -14\frac{1}{2}$

Question 32

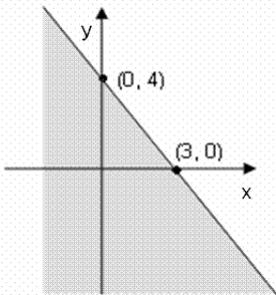
Which equation could only be the equation of the graph?



- A:** $y = 3x + 2$
- B:** $y = -3x - 2$
- C:** $y = 3x - 2$
- D:** $y = -3 + 2$
- E:** $y = -x - 2$

Question 33

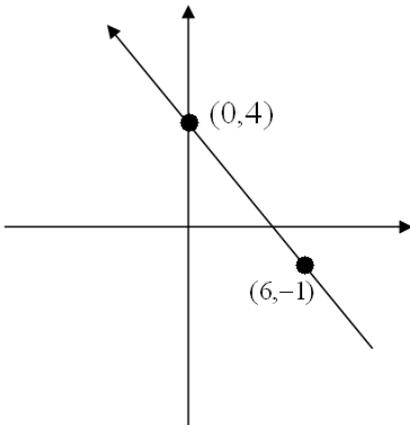
Which set of coordinates lie outside the shaded area?



- A:** (0,0)
- B:** (-1,-6)
- C:** (1,-50)
- D:** (1,1)
- E:** (4,1)

Question 34

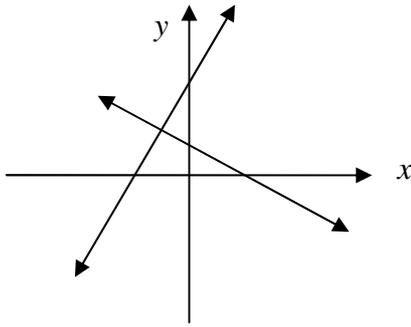
The equation of this graph is:



- A:** $y = -\frac{6x}{5} + 4$
- B:** $y = \frac{5x}{6} + 4$
- C:** $y = 5x + 4$
- D:** $y = -\frac{5x}{6} + 4$
- E:** $y = \frac{-5x}{6} - 4$

Question 35

The coordinates of the point of intersection for the two graphs could only be:



A: $(-1, 2)$

B: $(-1, -2)$

C: $(1, 2)$

D: $(1, -2)$

E: $(2, -1)$

Question 36

$$-(-3)^3 =$$

A: -9

B: 27

C: 9

D: -27

E: None of these**Question 37**

$$\frac{10x^2}{4y} \times \frac{8y^3}{5x} =$$

A: $4x^2y$

B: $\frac{2y}{x}$

C: $\frac{2xy^5}{xy}$

D: $4xy^2$

E: None of these**Question 38**

$$(3^{\circ}y)^2 \times 2(xy)^{\circ}$$

A: $18y^2$

B: $36xy^3$

C: $2y^2$

D: $6xy^2$

E: None of these**Question 39**

$$\frac{3x^{-2}y^2}{6y^{-1}x^3} =$$

A: $\frac{y^3}{2x^5}$

B: $\frac{y}{2x}$

C: $\frac{y}{3x}$

D: $\frac{3y}{x^5}$

E: $\frac{2y^3}{x}$

Question 40

Which is not the same as $32^{3/5}$?

A: $(32^{1/5})^3$

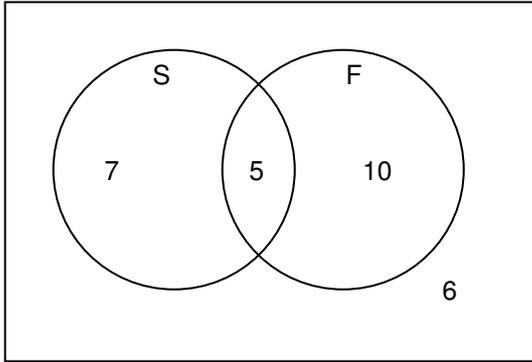
B: $(32^3)^{1/5}$

C: $(\sqrt[5]{32})^3$

D: $(32^{1/3})^5$

E: $\sqrt[5]{32^3}$

Use the Venn diagram to answer questions 41, 42 and 43



The diagram shows a class of music students and instruments they learn.

S = Saxophone
F = Flute

Question 41

What is the total number of students in the class?

- A:** 33 **B:** 22 **C:** 17 **D:** 23 **E:** 28

Question 42

How many students learnt neither saxophone nor flute?

- A:** 5 **B:** 6 **C:** 7 **D:** 10 **E:** None of these

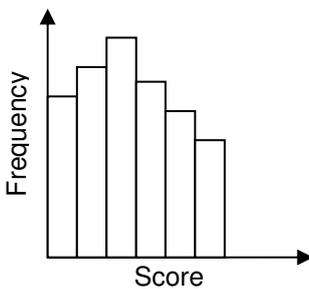
Question 43

How many students learnt just the saxophone or the flute?

- A:** 12 **B:** 22 **C:** 17 **D:** 15 **E:** None of these

Question 44

Which is the best cumulative frequency graph for the histogram?



- A:** **B:** **C:** **D:** **E:**

Question 45

Jack's Dad invested some money and for every \$12 he invested he got a total of \$15 back. If Jack's Dad invested \$300, how much in total did he get back?

- A:** \$225 **B:** \$525 **C:** \$480 **D:** \$375 **E:** None of these

Question 46

Expand the brackets and simplify

$$(2\sqrt{5} - \sqrt{2})^2$$

A: $4\sqrt{5} + 2\sqrt{2}$

B: $12 - 4\sqrt{10}$

C: $8 - 4\sqrt{10}$

D: $2\sqrt{10} - 2$

E: None of these

Question 47Rationalise and simplify $\frac{4\sqrt{5}}{\sqrt{3}}$

A: $\sqrt{2}$

B: $3\sqrt{6}$

C: $\sqrt{6}$

D: $\frac{\sqrt{6}}{3}$

E: None of these

Question 48If $x = \frac{1}{2}$, $y = \frac{2}{3}$ and $z = \frac{3}{4}$ evaluate

$x \div y + z$

A: $1\frac{1}{2}$

B: $\frac{3}{7}$

C: $1\frac{1}{12}$

D: $\frac{3}{4}$

E: None of these

Question 49

Expand and simplify

$$(3a - 5b)(3a + 5b)$$

A: $9a - 25b$

B: $9a + 25b$

C: $9a^2 + 25b^2$

D: $9a^2 - 25b^2$

E: None of these

Question 50

Factorise and simplify

$$3a^2 + 3a - 18$$

A: $(a + 3)(a - 2)$

B: $3(a - 3)(a + 2)$

C: $3(a - 3)(a - 2)$

D: $3(a + 3)(a - 2)$

E: None of these

Question 51Simplify $\frac{x^2 - 9}{4x - 12} \div \frac{x + 3}{2}$

A: $\frac{x + 3}{4}$

B: $\frac{1}{2}$

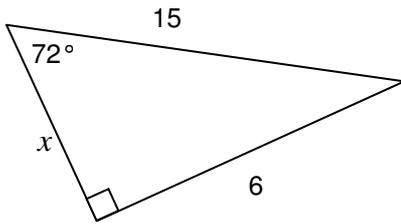
C: $\frac{x + 3}{2(x - 3)}$

D: $\frac{2}{1}$

E: None of these

Question 52

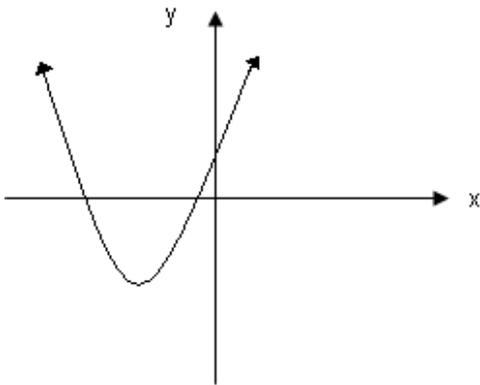
The correct ratio to find x is:



- A:** $6 \cos 72^\circ$ **B:** $6 \tan 72^\circ$ **C:** $15 \sin 18^\circ$ **D:** $15 \sin 72^\circ$ **E:** $15 \cos 18^\circ$
-

Question 53

The turning point of the graph could only be:



- A:** $(-3,3)$ **B:** $(4,-2)$ **C:** $(3,4)$ **D:** $(-2,3)$ **E:** $(-3,-2)$
-

Question 54

A number x is subtracted from two times its square and the result is 45. An equation to find the value of x would be:

- A:** $x^2 - 2x = 45$ **B:** $2x - x^2 = 45$ **C:** $2x^2 - x = 45$ **D:** $2x^2 - 2x = 45$ **E:** $x - 2x^2 = 45$
-

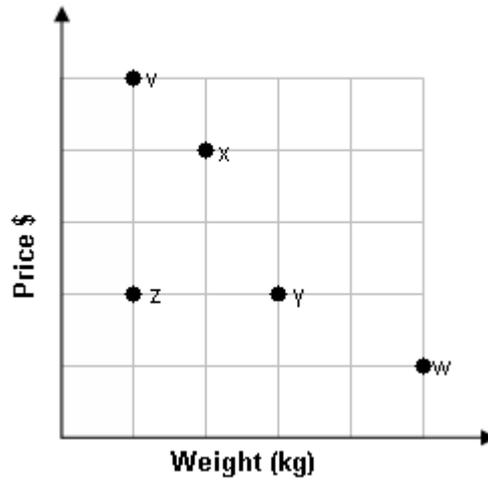
Question 55

Find the points of intersection of the graphs of $y = x^2$ and $y = 3x - 2$.

- A:** $(1,1)(1,4)$ **B:** $(2,4)(1,1)$ **C:** $(1,-1)(2,4)$ **D:** $(-2,4)(1,1)$ **E:** None of these
-

Use the graph to answer questions 56, 57 & 58

The graph shows the price paid and weight for bags of sugar bought at different shops.



Question 56

Which shop gave the worst value for money?

- A:** Shop z **B:** Shop y **C:** Shop x **D:** Shop w **E:** Shop v
-

Question 57

Which two shops charged the same price per kilogram?

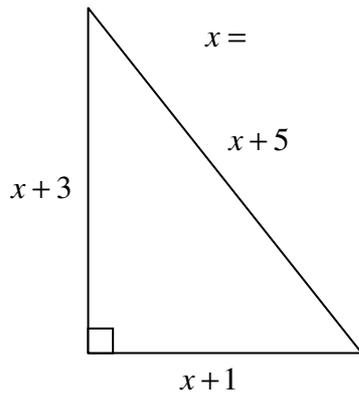
- A:** Shops z & x **B:** Shops z & v **C:** Shops y & z **D:** Shops v & w **E:** Shops x & y
-

Question 58

At which shop would you get three times the amount of sugar for the same price as shop z?

- A:** Shop v **B:** Shop x **C:** Shop w **D:** Shop y **E:** None of these
-

Question 59



A: 4

B: 5

C: 6

D: 3

E: None of these

Question 60

Factorise $ab + b^2 - ac - bc$

A: $(b-c)(a-c)$

B: $(b+a)(b+c)$

C: $(b-c)(a+b)$

D: $(b+c)(a-b)$

E: $(b-c)(a+c)$

TOK- Ethics

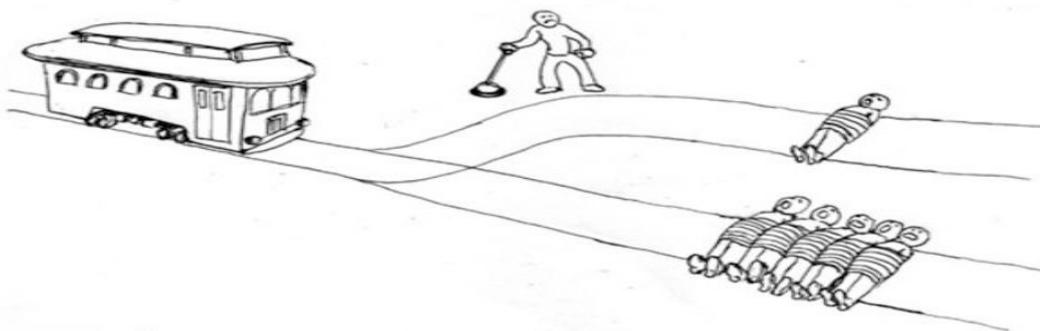
The Trolley Problem

Knowledge question: How do we know what is right and wrong?

1. Do Now: The “Trolley Problem.”

Consider the following situation. You come upon a bizarre scene. A trolley is hurtling down the track with no brakes. There are five people tied to the tracks who will die if you do nothing. You find the lever that causes the track to shift. If you pull this lever, the train will switch tracks and only kill one person. What is the right thing to do? Why? Do not try to solve this problem by freeing one of the people or fixing the brakes on the trolley. You have only two choices: Kill five people or kill one.

Follow up questions:



What if the five people on the tracks are “bad” people who are mean, return library books late without paying the fines, eat grapes in the supermarket without paying for them, and don’t call their mothers often? Does the character of those dying matter in your decision making?

Rather than pulling a lever to kill one person to save five, what if instead of standing next to a lever you were standing next to another bystander and you knew that if you push this bystander onto the tracks, the train would hit the person, killing him and the train would safely derail saving the other five? Would it be “right” to kill that one person? Is this the same as pulling the lever from the first example? What is the difference?

There was an interesting story a couple of years ago about molten aluminium:

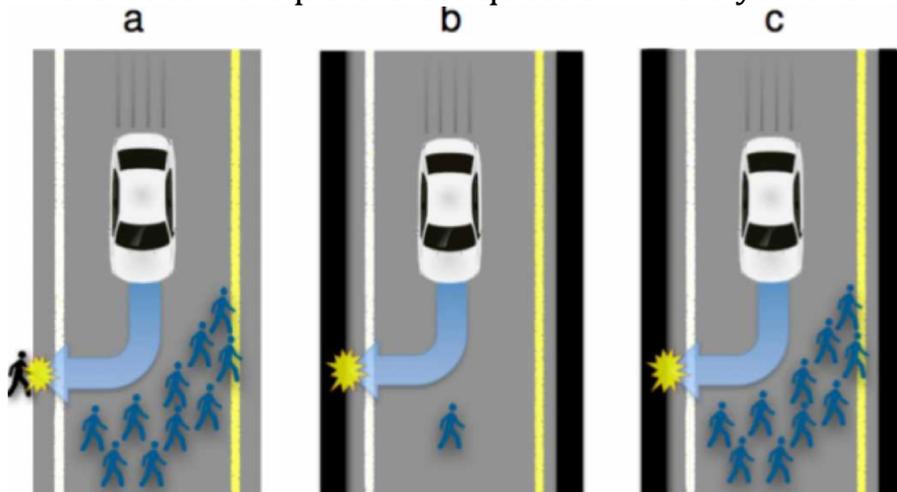
<https://youtu.be/IGJ2jMZ-gal>

There are a couple of interesting real life applications of this dilemma. This first one I came across by watching the excellent Michael Sandel lectures on youtube titled, “Justice: What’s the Right Thing To Do?” You can play this video for your students or you can watch it yourself and try to recreate the approach and energy.

<https://youtu.be/kBdfcR-8hEY>

Knowledge question: How do we know what is ethical?

1. **Do Now:** The graph below represents three situations a driverless car programmer may be presented with. If you were the programmer of the car, what would you instruct the car to do in **each** situation? This is not a multiple choices question where you answer, a, b, or c.

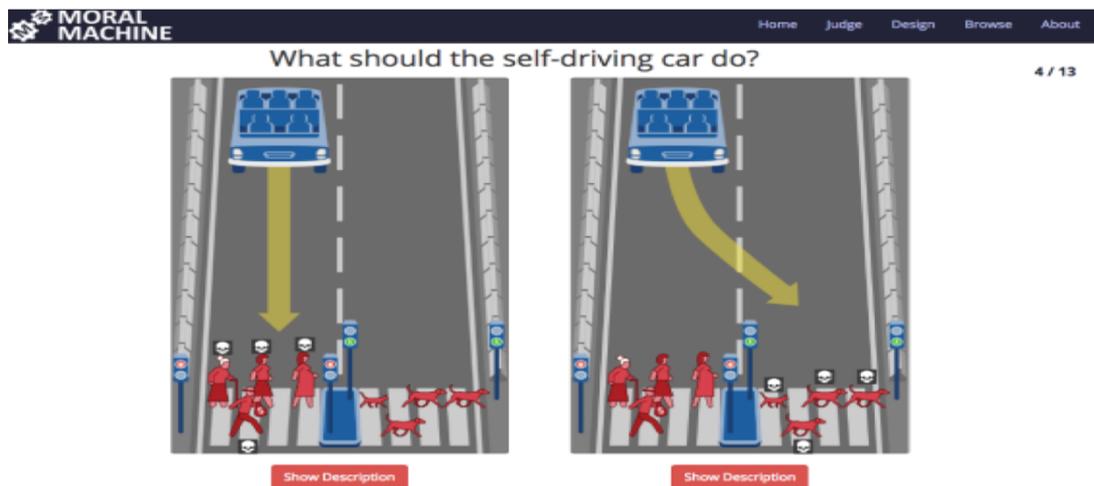


a. In situation a, should the car swerve to its right and kill one pedestrian on the sidewalk or kill a bunch of pedestrians on the road? Why?

b. In situation b, should the car swerve to its right and kill the passenger or go straight and kill one pedestrian on the road? Why?

c. In situation c, should the car swerve to its right and kill the passenger or go straight and kill a bunch of pedestrians? Why?

How about this situation?



One final ethical approach: Focus on the social context

Conformity The person acts as expected in the social context. This means that what is considered ethical varies by society and by place based on what is acceptable.

This school of thought is similar to *moral relativism* in which there is no universal sense of right and wrong but depends entirely on each place. Contrast this with the concept of *universalism* which states that there are some beliefs and actions that are right and wrong regardless of the place and time. Some things are universally true.

People who believe in this might say:

What's right for you may not be what's right for me.

What's right for my culture won't necessarily be what's right for your culture.

No moral principles are true for all people at all times and in all places.

Ex. In the United States, most people can marry whomever they want regardless of their parents' wishes. In many parts of the world, it is considered terribly immoral to disobey your parents and marry a person they disapprove of. In each case, we look at what is normal for the given society.

Examples of actions that may be considered ethical in one place but unethical in another:

What are the strengths of this approach to ethics? What are the limitations?

Bullfighting: Art or Not?

Bullfighting has its roots in rituals dating back many centuries. In its modern Spanish style, bullfighting first became a prominent cultural event in the early 18th century. Yet despite its cultural significance, bullfighting continues to face increasing scrutiny in light of animal rights issues.

Some people consider bullfighting a cruel sport in which the bull suffers a severe and tortuous death. Many animal rights activists often protest bullfighting in Spain and other countries, citing the needless endangerment of the bull and bullfighter. Some cities around the world where bullfighting was once popular, including Coslada (Spain), Mouans-Sartoux (France), and Teocelo (Mexico), have even declared themselves to be anti-bullfighting cities. Other places, including some towns in Catalonia (Spain), have ceased killing the bull in the fight, but continue bullfighting.

To other people, the spectacle of the bullfight is not mere sport. The event is not only culturally significant, but also a fine art in which the bullfighter is trained in a certain style and elicits emotion through the act of the fight. Writer Alexander Fiske-Harrison, in his research and training as a bullfighter, defends the practice and circumstances of the bull, "In terms of animal welfare, the fighting bull lives four to six years whereas the meat cow lives one to two. ...Those years are spent free roaming..." And others similarly argue that the death of the bull in the ring is more humane than the death of animals in a slaughterhouse.¹

Respond to the following questions.

1. How is the controversy over bullfighting related to the concept of relativism?

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2. How would a relativist interpret this controversy?

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3. Do you believe that bullfighting is an ethically wrong practice or a justifiable cultural event? Explain your reasoning.

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4. Do you agree that the death of the bull in the ring is more humane than the death of animals in a slaughterhouse? Why or why not? What ethical concerns are raised by both situations?

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Outrage at 'starvation' of a stray dog for art

Gerard Couzens in Madrid
[The Observer](#), Saturday 29 March 2008

Chaining up a dog and forcing it to go without food and water in the name of art is a surefire way of making yourself unpopular with animal lovers. The furor created by Damien Hirst's pickled sheep and Tracey Emin's dirty bed pales into insignificance against the international outrage Guillermo 'Habacuc' Vargas has unleashed.

The Costa Rican has been called an animal abuser, killer and worse over claims that a stray dog called Natividad died of starvation after he displayed it at an exhibition last year at the Códice Gallery in Managua, Nicaragua. Vargas tethered the animal without food and water under the words 'Eres Lo Que Lees' - 'You Are What You Read' - made out of dog biscuits while he played the Sandinista anthem backwards and set 175 pieces of crack cocaine alight in a massive incense burner. More than a million people have signed an online petition urging organisers of this year's event to stop Vargas taking part.

Vargas, 32, said he wanted to test the public's reaction, and insisted none of the exhibition visitors intervened to stop the animal's suffering. He refused to say whether the animal had survived the show, but said he had received dozens of death threats.

Juanita Bermúdez, director of the Códice Gallery, insisted Natividad escaped after just one day. She said: 'It was untied all the time except for the three hours the exhibition lasted and it was fed regularly with dog food Habacuc himself brought in.'



Questions:

1. Should this be considered artwork?

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2. Aside from what was mentioned in the article, what is the meaning of this artwork (assuming that you consider this art)?

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3. Was the artist morally wrong to create/present this work? How do you know? What is your reasoning? Explain.

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Materials, Handouts, Activities

You can use any or all of the resources linked below with attribution when appropriate

[You can download all of the resources linked below from my Ethics Dropbox folder here.](#)

Web Resources on Ethics

[Here is a collection of web resources I have collected connected to ethics as an Area of Knowledge.](#)