ICAS

SAMPLE

PAPER E

SCIENCE

DO NOT OPEN THIS BOOKLET UNTIL INSTRUCTED.

STUDENT'S NAME:

Read the instructions on the **ANSWER SHEET** and fill in your **NAME**, **SCHOOL** and **OTHER INFORMATION**.

Use a pencil. Do **NOT** use a coloured pencil or a pen.

Rub out any mistakes completely.

You **MUST** record your answers on the **ANSWER SHEET**.

Mark only **ONE** answer for each question.

Your score will be the number of correct answers.

Marks are **NOT** deducted for incorrect answers.

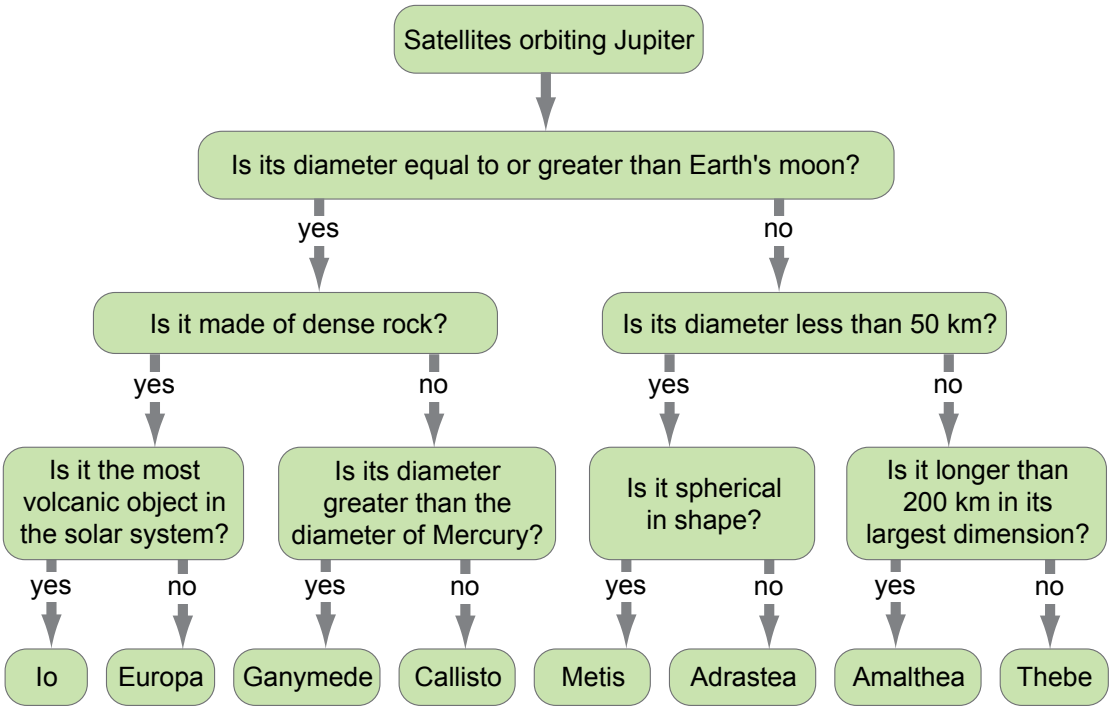
Use the information provided to choose the **BEST** answer from the four possible options.

On your **ANSWER SHEET** fill in the oval that matches your answer.

You may use a calculator and a ruler.

1. Mercury has a diameter of 4 900 km. Earth's moon has a diameter of 3 500 km.

The flow chart distinguishes between eight inner satellites of the planet Jupiter.



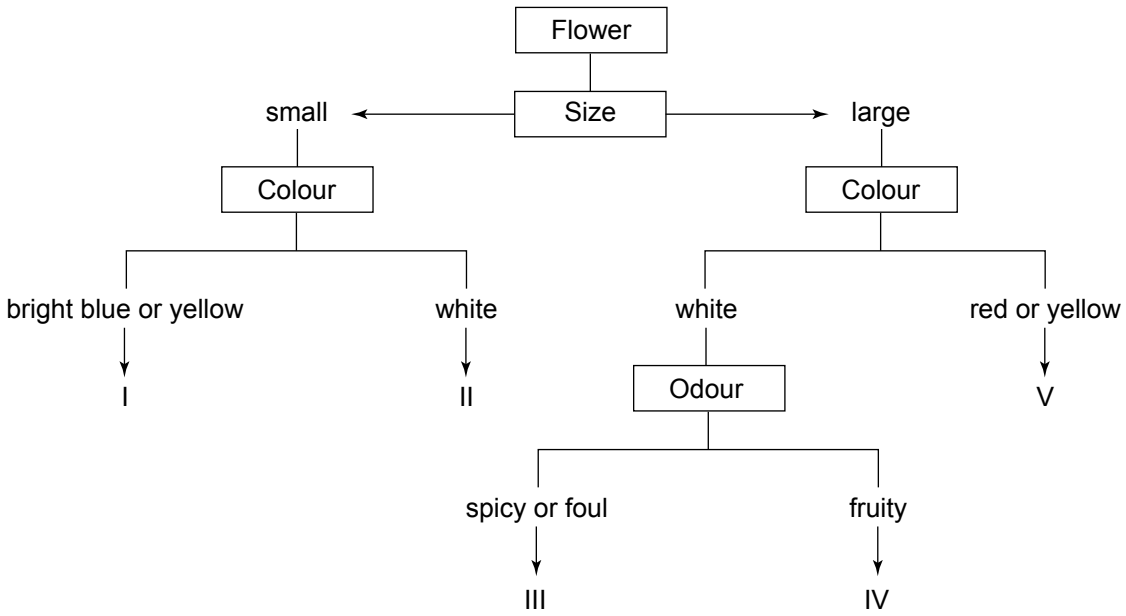
One of Jupiter's inner satellites has a diameter of 4 800 km and is not made of dense rock. Which satellite is this?

(A) Io (B) Europa (C) Ganymede (D) Callisto

2. The table shows the characteristics that some flowers have to attract animals.

Animal	The characteristics of flowers that mainly attract the animal		
	Size	**Colour**	**Smell/odour**
bee	small	bright blue or yellow	–
beetle	large	white	spicy or foul
butterfly	small	white	–
bird	large	red or yellow	–
bat	large	white	fruity

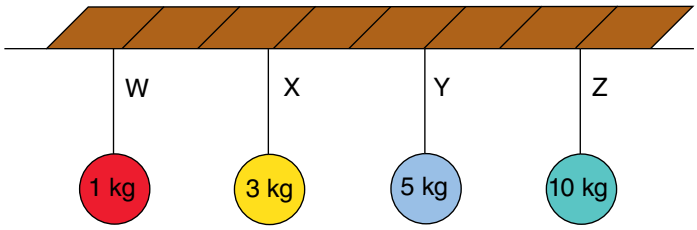
The key classifies 5 flowers: I, II, III, IV and V.



Which animal would be attracted to flower I and which would be attracted to flower IV?

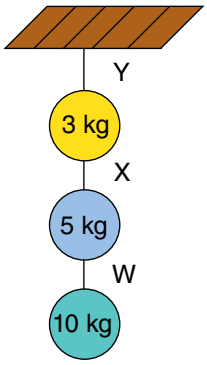
	I	**IV**
(A)	bird	beetle
(B)	bee	bird
(C)	bird	bee
(D)	bee	bat

3. Peter has four types of string that he labels W, X, Y and Z. The diagram shows the maximum weight that each can support without breaking.

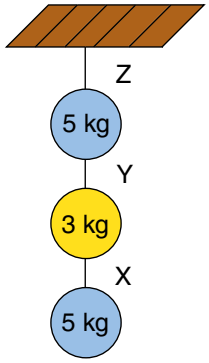


In which diagram will all the strings remain unbroken?

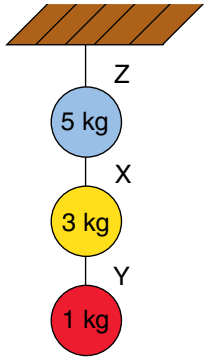
(A)



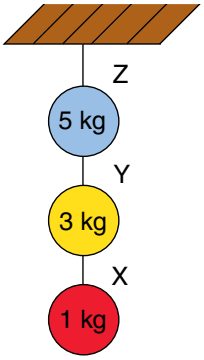
(B)



(C)

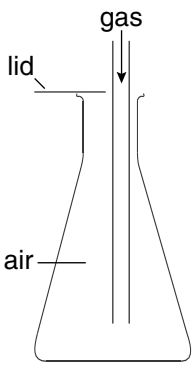


(D)

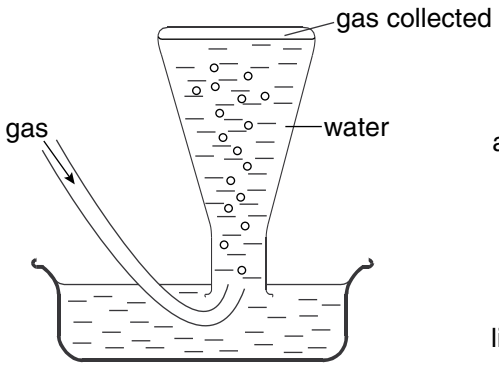


4. The diagrams show three methods that are commonly used to collect gases.

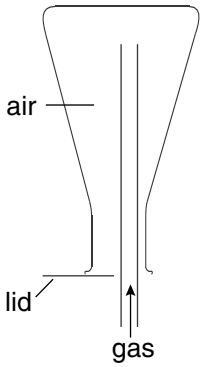
Method 1



Method 2



Method 3



Some colourless gases and their properties are shown.

Gas	Soluble in water	Mass compared to mass of equal volume of air	Smell
ammonia	yes	less	strong
oxygen	no	equal	none
hydrogen	no	less	none
methane	no	less	none
carbon dioxide	yes	more	none

A student wished to collect methane gas using method 3. What would be her biggest problem?

(A) getting the methane to stay in the flask
(B) knowing when the flask is full
(C) preventing the methane from igniting
(D) avoiding the strong smell of methane

5. Aquatic environments have a number of sources of pollutants. Pollutants from point sources come from specific places that can be easily identified and controlled. Non-point sources of pollutants are widespread, they usually cover a large area and cannot be easily measured or identified.

The following table identifies some types of pollutants and their sources.

	Point sources		**Non-point sources**	
Pollutant	Mines	Wastewater treatment plants	Stormwater	Agriculture
pathogens (bacteria and viruses)	✓	✓	✓	✓
toxicants (heavy metals and pesticides)	✓	✓	✓	✓
sediments	✓		✓	✓
nutrients (nitrates and phosphates)		✓	✓	✓
salinity				✓
heat	✓			

Which statement is correct according to the information in the table?

(A) Wastewater treatment plants are non-point sources of toxicant and nutrient pollution.
(B) All listed sources of pollutants release sediment and pathogens into aquatic environments.
(C) Mines and agriculture release the largest volume of pollutants into aquatic environments.
(D) While the table shows different pollution sources, the volume of each pollutant is not shown.

END OF PAPER

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THE FOLLOWING YEAR LEVELS SHOULD SIT THIS PAPER:

Australia	Year 7
Brunei	Form 1
Hong Kong	Form 1
Indian Subcontinent[1]	Class 7
Indonesia	Year 8
Malaysia	Form 1
Middle East[2]	Class 7
New Zealand/Pacific[3]	Year 8
Singapore	Primary 6
Southern Africa[4]	Grade 7

1 Indian Subcontinent Region: India, Sri Lanka, Nepal, Bhutan and Bangladesh.
2 Middle East Region: United Arab Emirates, Qatar, Kuwait, Saudi Arabia, Egypt, Bahrain, Oman, Turkey, Lebanon, Tunisia, Morocco, Libya, Algeria and Jordan.
3 Pacific Region: Vanuatu, Papua New Guinea and Fiji.
4 Southern Africa Region: South Africa, Botswana, Lesotho, Swaziland, Zimbabwe and Namibia.

PAPER E

UNSW Global AUSTRALIA

ICAS

PAPER E

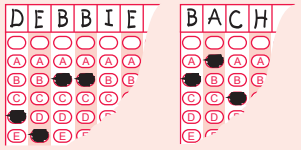
S

HOW TO FILL OUT THIS SHEET:

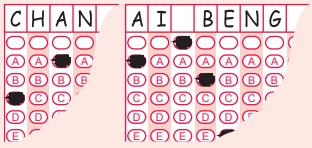
USE A PENCIL

- Print your details clearly in the boxes provided.
- Make sure you fill in only one oval in each column.
- Rub out all mistakes completely.
- Do not use a coloured pencil or pen.

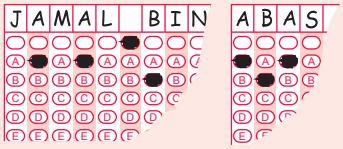
EXAMPLE 1: Debbie Bach



EXAMPLE 2: Chan Ai Beng



EXAMPLE 3: Jamal bin Abas



FIRST NAME to appear on certificate

LAST NAME to appear on certificate

Are you male or female? ○ Male ○ Female

Does anyone in your home usually speak a language other than English? ○ Yes ○ No

School name: _____

_____

Town / suburb: _____

Today's date: ____ / ____ / ____ **Postcode:** _____

DATE OF BIRTH

Day Month Year

STUDENT ID (optional)

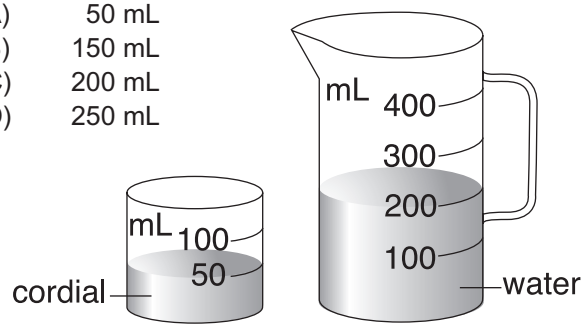
CLASS (optional)

TO ANSWER THE QUESTIONS

Example:

Ari added cordial to water to make a jug of drink. What will be the volume of the drink in the jug?

(A) 50 mL
(B) 150 mL
(C) 200 mL
(D) 250 mL



The answer is 250 mL, so you would fill in the oval (D), as shown.

(A) (B) (C) ●

USE A PENCIL
DO NOT USE A COLOURED PENCIL OR PEN

START

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

QUESTION	KEY	KEY REASONING	LEVEL OF DIFFICULTY
1	D	Start at the top of the diagram. The satellite's diameter of 4 800 km is greater than the diameter of the Earth's moon (3 500 km), but less than Mercury's diameter of 4 900 km.	Easy
2	D	The table identifies the characteristics of flowers that attract particular animals. The key classifies some flowers according to their characteristics. To arrive at the correct answer you must match the characteristics from the key to those given in the table.	Easy
3	D	For the strings to remain unbroken, the strength of each string must exceed the mass it is required to support. That is, the top string must be capable of supporting the total mass of the three weights, the middle string must be capable of supporting the mass of the two weights beneath it, and the bottom string must be capable of supporting the mass of the bottom weight. This occurs only in option (D), where string Z (capable of supporting 10 kg) is supporting three weights with a total mass of 9 kg, string Y (capable of supporting 5 kg) is supporting two weights with a total mass of 4 kg, and string X (capable of supporting 3 kg) is supporting a mass of 1 kg.	Medium/Hard
4	B	As methane has no smell, D is wrong. Because methane is less dense than air it will float upwards, so A is wrong. While methane is flammable, this will not hinder getting methane into the flask, so C is wrong.	Medium/Hard
5	D	Wastewater treatment plants are point sources of pollution, so A is wrong. According to the table, wastewater treatment plants do not release sediments, so B is wrong. The table only shows the type of pollution and its source; there is no information in the table that shows the correct volume of pollution produced, so C is wrong and D is correct.	Medium/Hard

LEGEND

Level of difficulty refers to the expected level of difficulty for the question.

Easy	more than 70% of candidates will choose the correct option.
Medium	about 50–70% of candidates will choose the correct option.
Medium/Hard	about 30–50% of candidates will choose the correct option.
Hard	less than 30% of candidates will choose the correct option.