



PAPER D

Practice
Questions



ICAS

International
Competitions
and Assessments
for Schools

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 2B or B pencil.

Do **NOT** use a pen.

Rub out any mistakes completely.

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

SCIENCE

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. The table gives information about rocks gathered on a beach.

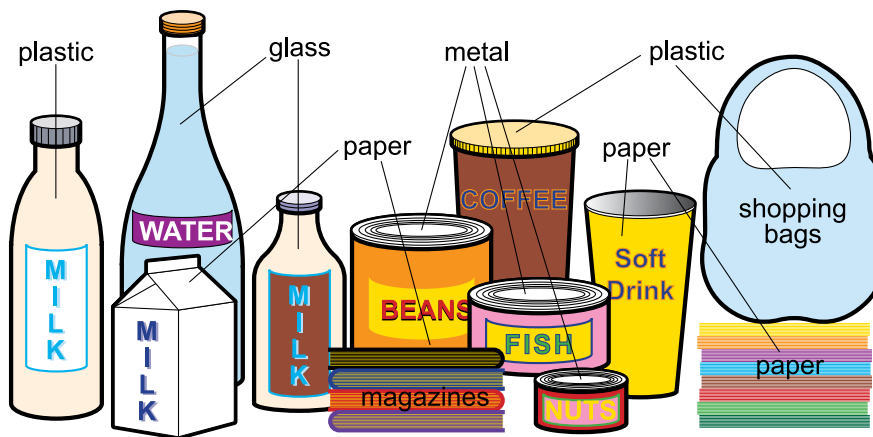
Shape	Length (cm)	Colour
flat disc-like	6½	silver grey and black patches
egg-like	5	pinkish white with black glassy spots
rounded disc-like	4	glassy white
egg-like	3	white with black spots

Which two shapes describe the four rocks?

- (A) round, spotty
- (B) white, black
- (C) disc, egg
- (D) dull, glassy

2. To recycle waste, things must be sorted into groups according to what they are made of.

Here is a drawing of some of the things found in a recycling bin.



Below are different ways of sorting these things.

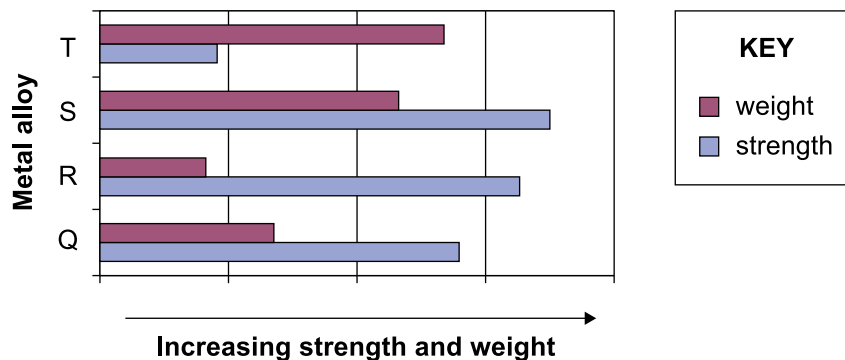
Which method of sorting would group these items for recycling?

- (A) large containers, small containers, flat containers, round containers
- (B) plastic containers, glass containers, paper bundles, metal containers
- (C) large containers, small containers, paper bundles, metal containers
- (D) plastic containers, glass containers, flat bundles, round bundles

3. Metal alloys are mixtures of two or more metals.

The strength of metal alloys is measured by the force required to push them permanently out of shape.

The graph compares the strength and weight of some metal alloys.



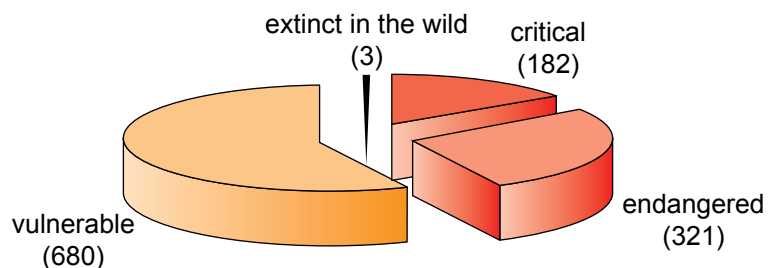
The frame of a racing bicycle needs to be both strong and lightweight.

Which metal alloy would be best suited to making frames for racing bicycles?

- (A) T (B) S (C) R (D) Q

4. Many of the world's bird species have become so few in number that they are threatened with extinction. Some have already become extinct in the wild.

The graph categorises the proportions (and gives numbers) of bird species that are threatened.

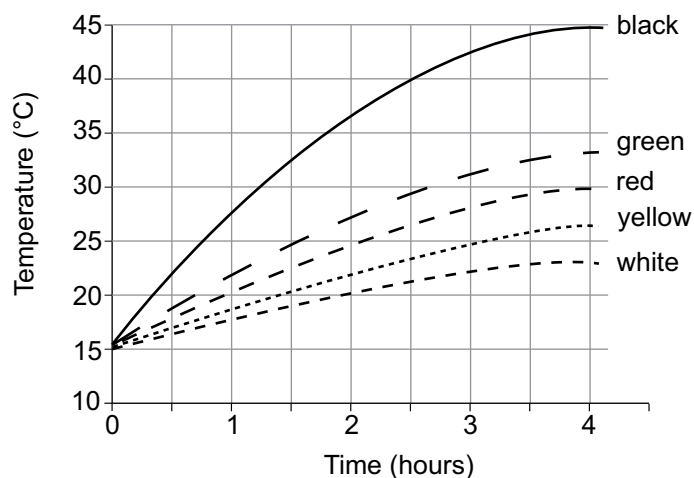
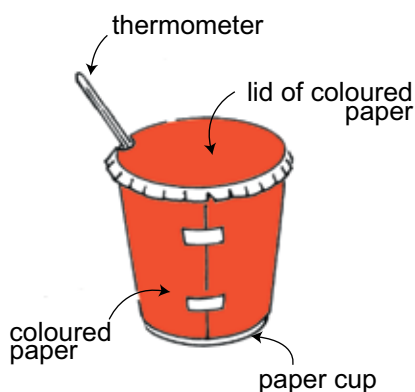


Approximately what fraction of the world's threatened bird species are categorised as critical or endangered?

- (A) 1 tenth (B) 4 tenths (C) 5 tenths (D) 6 tenths

5. Materials with a colour that absorbs the Sun's heat are best for solar heaters.
Materials with a colour that reflects the Sun's heat are best for summer clothing.

Some students set up an experiment to investigate the effect of the Sun's heat on paper of various colours. The students made five cups using paper. All the paper was of the same type but with different colours. They placed the five cups in a sunny place for a number of hours.



After 2 hours the difference in the temperatures of the black cup and the white cup was

- (A) 17 °C.
- (B) 20 °C.
- (C) 28 °C.
- (D) 37 °C.

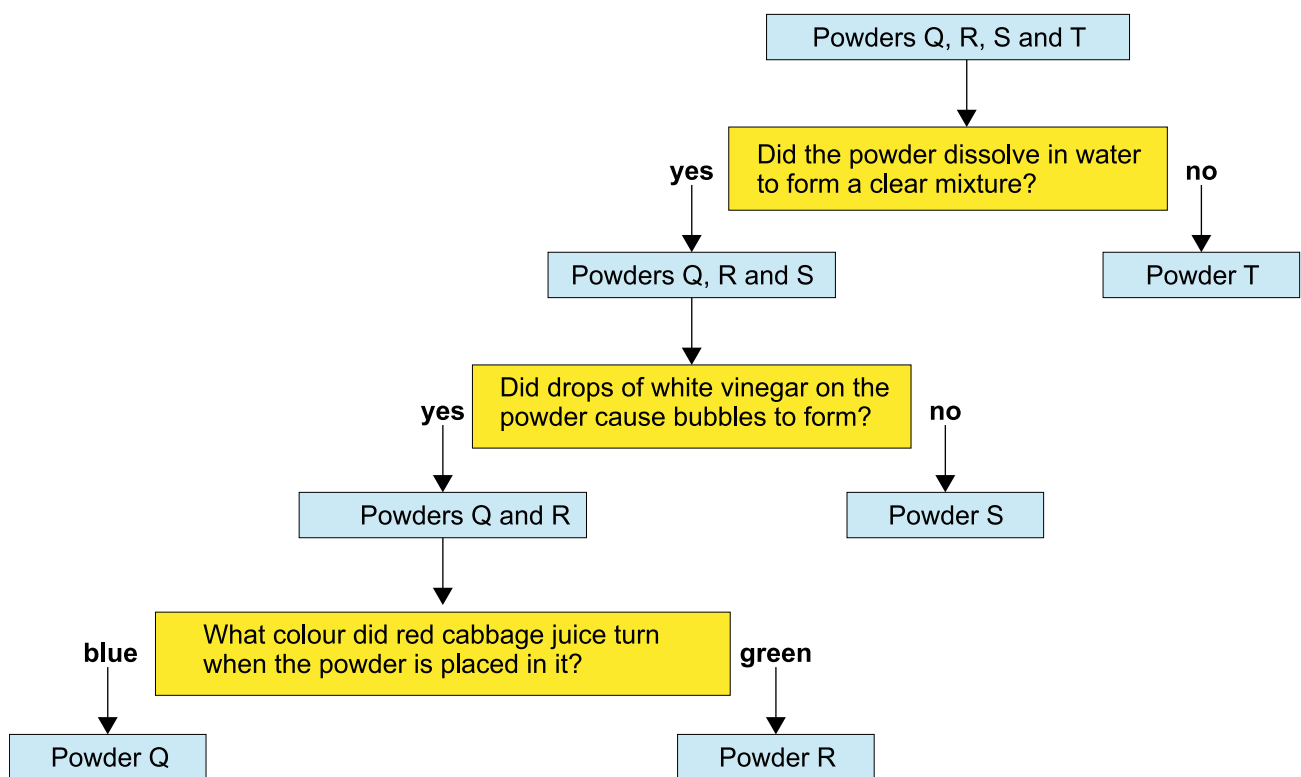
For questions 6 and 7 use the information below.

Some students tested four white powders.

The table gives their results.

Powder	Test			
	Do the powder and water form a clear mixture?	What colour does red cabbage juice turn when the powder is placed in it?	Do drops of white vinegar on the powder cause bubbles to form?	Do drops of yellow iodine turn black when placed on the powder?
cornflour	no	blue	no	yes
baking soda	yes	blue	yes	no
washing soda	yes	green	yes	no
epsom salt	yes	blue	no	no

The students constructed a flow chart to show how they distinguished between the four powders using some of the tests in the table.



6. Which substance is powder S?

- (A) cornflour
- (B) baking soda
- (C) washing soda
- (D) epsom salt

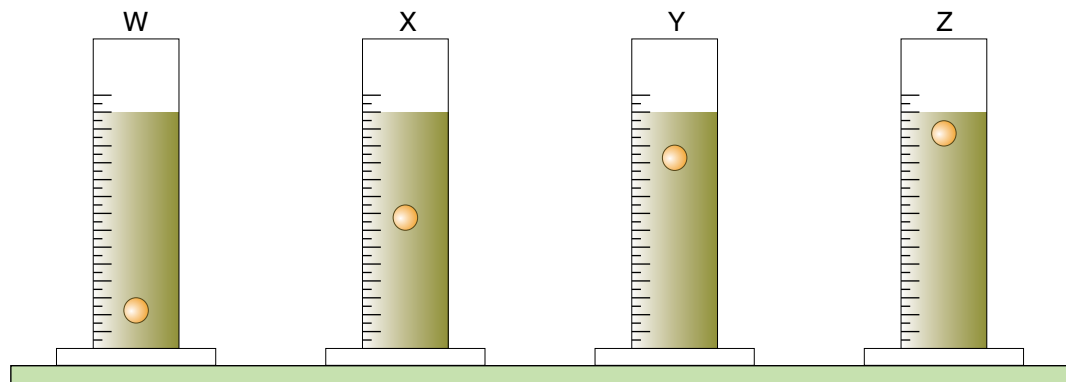
7. The students did not use the test for identifying powders containing starch to make their flow chart.

Which powder contained starch?

- (A) Q
- (B) R
- (C) S
- (D) T

8. Viscosity is a measure of a liquid's thickness and stickiness. The more viscous the liquid, the longer it takes for an object to pass through it. Generally, the viscosity of a liquid decreases as temperature increases.

The diagram shows the distances clay balls of the same size pass through four motor oils in the same time. The four oils were at the same temperature.

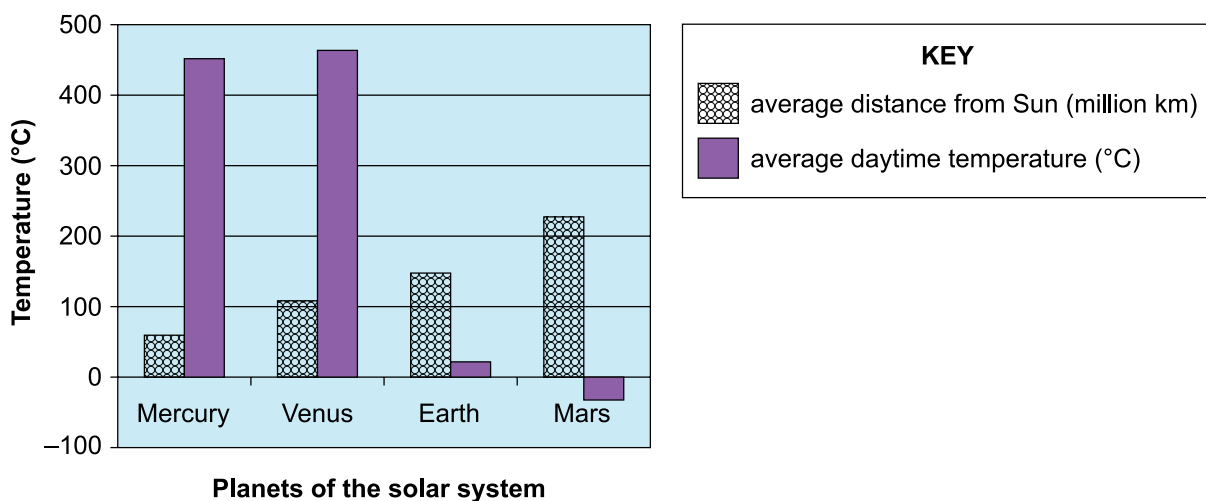


When cold, high viscosity motor oil may not get to the part of the engine it is supposed to protect. When hot, low viscosity oil may not protect engine parts because it does not stick to them.

Which motor oil would be best for protecting engine parts at high temperatures?

- (A) W (B) X (C) Y (D) Z

9. The graph shows the average distance from the Sun and the average daytime temperature for some planets in the solar system.

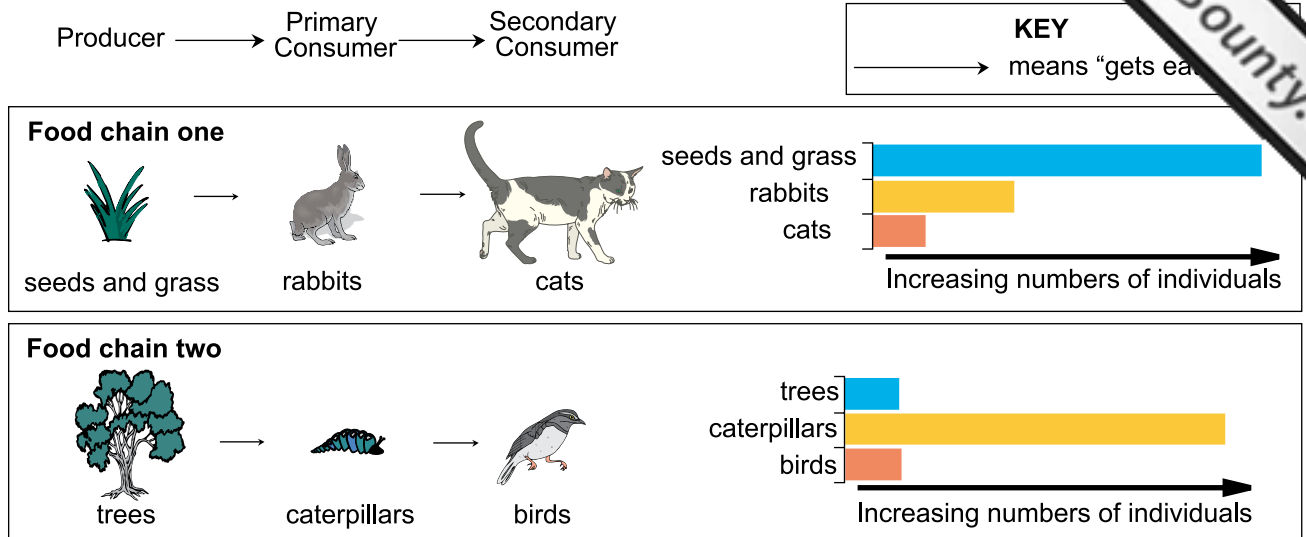


Generally, the further a planet is from the Sun, the colder will be its average daytime temperature.

According to the graph, which planet does not follow this trend?

- (A) Mercury
(B) Venus
(C) Earth
(D) Mars

10. The diagrams below show the relationship between the numbers of producers and consumers in two different food chains.



Which of the following statements is supported by the information above?

In a food chain

- (A) there are more primary consumers than there are secondary consumers.
- (B) there are more primary consumers than there are producers.
- (C) primary consumers are larger than secondary consumers.
- (D) primary consumers are usually insects that eat plants.

Acknowledgment

Copyright in this booklet is owned by Educational Assessment Australia, UNSW Global Pty Limited, unless otherwise indicated. Every effort has been made to trace and acknowledge copyright. Educational Assessment Australia apologises for any accidental infringement and welcomes information to redress the situation.

The following year levels should sit THIS Paper:

Australia	Year 6
Brunei	Primary 6
Hong Kong	Primary 6
Indonesia	Year 7
Malaysia	Standard 6
New Zealand	Year 7
Pacific	Year 6
Singapore	Primary 5
South Africa	Grade 6



UNSW Global
THE UNIVERSITY OF NEW SOUTH WALES
SYDNEY • AUSTRALIA

Educational Assessment Australia
eaa.unsw.edu.au

© 2010 Educational Assessment Australia. EAA is an education group of UNSW Global Pty Limited, a not-for-profit provider of education, training and consulting services and a wholly owned enterprise of the University of New South Wales. ABN 62 086 418 582



- Rub out all mistakes completely.
- Print your details clearly in the boxes provided.
- Make sure you fill in only one oval in each column.

FIRST NAME

D	E	B	B	I	E
○	○	○	○	○	○
(A)	(A)	(A)	(A)	(A)	(A)
(B)	(B)	●	●	(B)	(F)
(C)	(C)	(C)	(C)	(C)	(C)
(D)	(D)	(D)	(D)	(D)	(D)

LAST NAME

B	A	C	H
○	○	○	○
(A)	●	(A)	(A)
●	(B)	(B)	(F)
(C)	(C)	●	(C)
(D)	(D)	(D)	(D)

FIRST NAME	LAST NAME
C H A N	A I B E N G
☐ ☐ ☐ ☐	☐ ☐ ☐ ☐
☐ A ☐ ☐ A	☐ ☐ A ☐ A ☐ A ☐ A
☐ B ☐ B ☐ B	☐ B ☐ B ☐ B ☐ B ☐ B
☐ ☐ C ☐ C	☐ C ☐ C ☐ C ☐ C
☐ D ☐ D	☐ D ☐ D ☐ D

FIRST NAME										LAST NAME			
J	A	M	A	L			B	I	N	A	B	A	S
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☒ A	☒ B	☒ A	☒ B	☐ A	☐ A	☐ A	☐ A	☐ A	☐ A	☒ B	☒ A	☒ B	☐ A
☐ B	☐ B	☐ B	☐ B	☐ B	☐ B	☒ A	☐ B	☐ B	☐ B	☐ B	☒ A	☐ B	☐ B
☐ C	☐ C	☐ C	☐ C	☐ C	☐ C	☐ C	☐ C	☐ C	☐ C	☐ C	☐ C	☐ C	☐ C
☐ D	☐ D	☐ D	☐ D	☐ D	☐ D	☐ D	☐ D	☐ D	☐ D	☐ D	☐ D	☐ D	☐ D

[illegible][illegible]

☐ Male ☐ Female



☐ Yes ☐ No

School name: _____

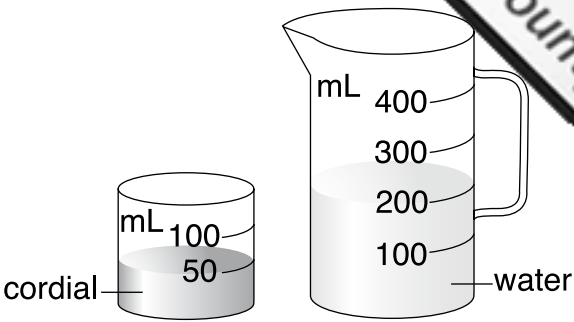
Day		Month		Year	
0	0	0	0	0	0
1	1	1	1	1	1
2	2		2	2	2
3	3		3	3	3
	4		4	4	4
	5		5	5	5
	6		6	6	6

(A)	(K)
(B)	(L)
(C)	(M)
(D)	(N)
(E)	(O)
(F)	(P)
(G)	(Q)

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) ☒



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)
- 6

(A) (B) (C) (D)
- 7

(A) (B) (C) (D)
- 8

(A) (B) (C) (D)
- 9

(A) (B) (C) (D)
- 10

(A) (B) (C) (D)

QUESTION	KEY	KEY REASONING	LEVEL OF DIFFICULTY
1	C	Some rocks are flat while others are rounded, but all are either disc-like or egg-like.	
2	B	According to the introduction, "to recycle waste, things must be sorted into groups according to what they are made of". Labels on the diagram show what the things are made of. Although the items shown could be sorted into different groups according to their characteristics, to get the correct answer, the option sorting them into what they are made of must be chosen: plastic containers, glass containers, paper bundles and metal containers.	Easy
3	C	The racing bike needs to be light, so A and B are wrong. The racing bike also needs to be strong, so A and D are wrong.	Easy
4	B	From the graph, the fraction categorised as critical or endangered is smaller than 5 tenths (half) but larger than 1 tenth. Numerically, $\frac{182 + 321}{182 + 321 + 680 + 3} \times \frac{100}{1} = 42\%$, about 4 tenths (although students in Year 6 would not be expected to answer this way).	Medium
5	A	To find the difference in temperatures of the black cup and the white cup after two hours, you must interpret the graph and calculate the difference. The graph curves represent the changing temperatures of the cups over time. The temperature of the cups at 2 hours is found by locating the intersection of the vertical line from (time) 2 hours on the x-axis and the curve representing each of the temperatures of the black and white cups. The temperatures are found by reading the y-axis values for these intersections. The black cup temperature is 37 °C. The temperature of the white cup is 20 °C. The difference in temperature between the cups is $37 - 20 = 17$ °C.	Medium
6	D	Start at the top of the flow chart and use information from the table. Of the four powders only T (cornflour) does not form a clear mixture with water. Of the remaining three powders, only S (Epsom salts) does not bubble when white vinegar is added.	Medium
7	D	There are four tests; (1) mix with water, (2) mix with red cabbage juice, (3) mix with white vinegar and (4) mix with yellow iodine solution. Starting at the top of the chart, test 1 is performed, and then test 3 and finally test 2. This means that test 4 is the test that was not performed and so it must be the test that indicates the presence for starch. From the table, this last test indicated that cornflour is the only substance that contains starch. The next step is to identify which substance (Q, R, S or T) is cornflour. From the table, cornflour is the only substance that does not form a clear mixture with water. Start at the top of the flow chart. Of the four powders only T does not form a clear mixture with water. Hence, powder T is cornflour and contains starch.	Medium/Hard
8	D	The question only refers to high temperatures. The oil with the greatest viscosity is needed as this type of oil will best stick to the engine parts at high temperatures. The oil with the greatest viscosity is the one in which the ball travels the smallest distance in the same time i.e. the ball drops through it the slowest.	Medium/Hard
9	B	To answer the question, we have to ask the following: as the spotted graph goes up (increasing distance away from the Sun), does the purple graph (average daytime temperature) always go down? The average daytime temperature of Venus is higher (not lower) than Mercury's average daytime temperature even though it is further from the Sun. It should be noted that the daytime temperature of Mars is below Earth's daytime temperature.	Medium/Hard
10	A	In a food chain the producers are always plants. The graphs representing the two food chains show the number of individuals that are producers, primary consumers and secondary consumers. In food chain one, there are more producers than consumers. In food chain two the size of the individuals matters more than the numbers of individuals. Because the trees are large and the caterpillars are small, few trees feed many caterpillars. However in both food	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.