



This publication assists applicants for Year 7 entry to selective high schools to become more familiar with the Selective High Schools Test.

Some of the items have not been included for copyright reasons. Items that assess reading will be available at a later date.

In the actual Selective High Schools Test there are 45 questions in reading, 40 in mathematics and 60 in general ability.

The Selective High Schools Test measures ability and is set to discriminate at a very high level. Students who are accustomed to answering most questions in tests correctly should not be discouraged if they get a number of questions wrong. It is very rare for even the highest scoring candidates to score full marks on all components of the Selective High Schools Test.

Selective high school entry does not depend entirely on a student's performance in the Selective High Schools Test as school assessment scores in English and mathematics are provided by the primary schools. It is important to note that selection committees and appeals panels will not accept students' performance in this past paper as evidence of academic merit for the purposes of entry into a selective high school in any future year.

NSW DEPARTMENT OF EDUCATION AND TRAINING



SELECTIVE HIGH SCHOOLS TEST

2002

TEST 2

MATHEMATICS

INSTRUCTIONS

- 1 You have 40 minutes to complete the test. It contains 40 questions.
- 2 With each question there are four possible answers **A, B, C** or **D**. For each question you are to choose the **ONE** answer you think is best. To show your answer, fill the oval for one letter (**A, B, C** or **D**) on the separate answer sheet in the section headed Mathematics.
- 3 If you decide to change an answer, rub it out completely and mark your new answer clearly.
- 4 If you want to work anything out you may write on the question booklet.
- 5 If you need the help of the supervisor during the test, raise your hand.

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD

In three different places in the Mathematics test you will see a message like this.
When you see it follow the steps.

ANSWER CHECK (Example)

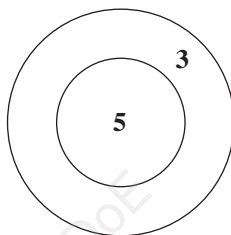
Look on your Answer Sheet — the last question you answered should have been Question 11 —

If it was, keep going.

If it wasn't, put your hand up for help.

Questions 1–2 refer to the following information:

This dart board has only two possible scoring areas.



- 1 Which one of the following scores could **not** be obtained by throwing one or more darts?

A 6
B 7
C 9
D 10

- 2 What is the smallest number of darts needed to score exactly 21?

A fewer than 5
B 5
C 6
D 7

-
- 3 Mark went to the zoo. He stayed there for $7\frac{1}{2}$ hours, and left at 4:20 pm.

What time did he arrive at the zoo?

A 8:50 am
B 9:10 am
C 11:50 am
D 3:10 pm

- 4 $\Delta \div 6 = 48 \div 12$

$\Delta =$

A 4
B 8
C 24
D 96

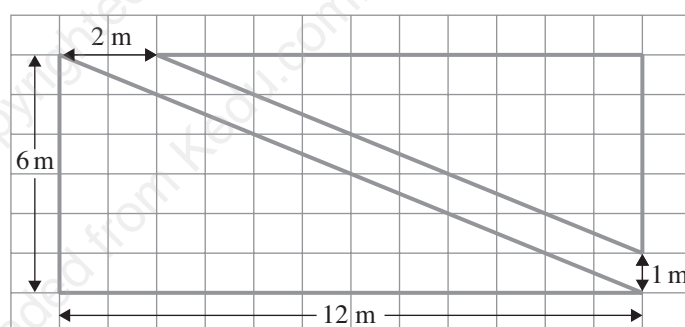
- 5 A jug weighs 550 g. When the jug is one quarter full of milk, the jug and the milk together weigh 750 g.

If the jug is half full of milk, the jug and milk together weigh

- A 900 g.
- B 950 g.
- C 1000 g.
- D 1050 g.

Questions 6–7 refer to the following information:

Jim is designing a garden. He wants to put a diagonal path across the rectangular garden as shown. This divides the garden into two triangular garden beds.



- 6 What is the area of the smaller triangular bed?

- A 25 square metres
- B 36 square metres
- C 50 square metres
- D 72 square metres

- 7 What is the area of the path?

- A 5 square metres
- B 6 square metres
- C 9 square metres
- D 11 square metres

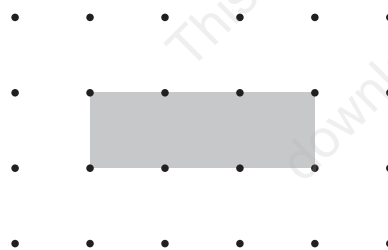
-
- 8 Which one of the numbers in the list

1, 3, 5, 7, 9, 11, 13

should be removed so that the average of the remaining numbers is 8?

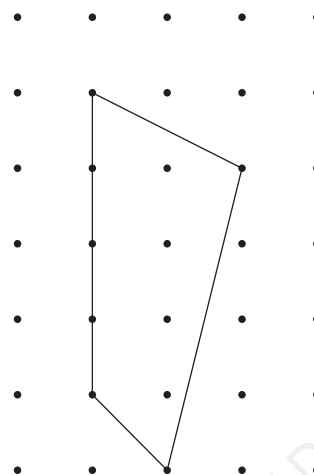
- A 5
- B 3
- C 1
- D none of 5, 3 or 1

- 9 The area of the shaded rectangle is 3 square units.



The area enclosed in this shape is

- A $6\frac{1}{2}$ square units
 B 7 square units
 C $7\frac{1}{2}$ square units
 D 8 square units



- 10 Hok sets out the even whole numbers in the following pattern of rows and columns. The pattern continues down the page.

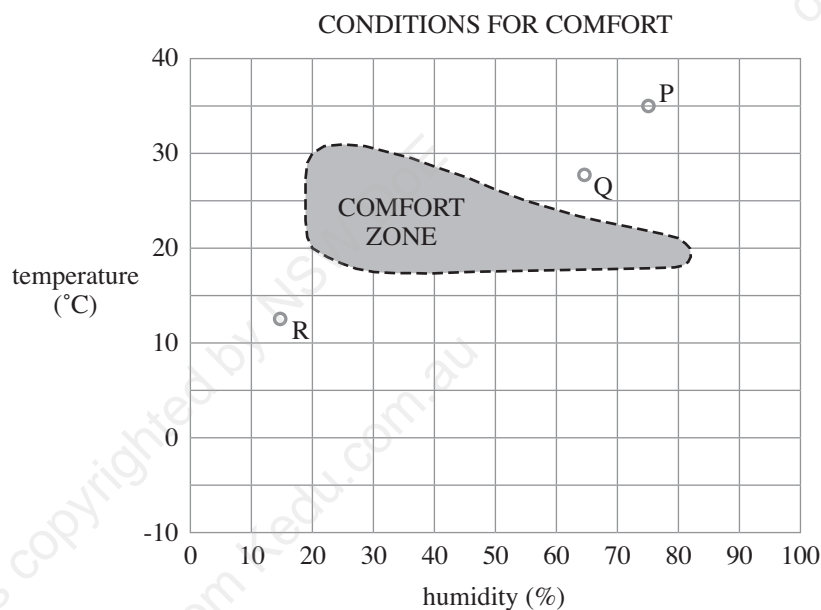
		column				
		i	ii	iii	iv	v
row	I	2	4	6	8	10
	II	12	14	16	18	20
	III	22
	IV

The number 54 is in

- A Row V, column ii
 B Row VI, column ii
 C Row V, column iii
 D none of the above

Questions 11–13 refer to the following information:

The graph below shows temperature and humidity. The conditions in which people feel comfortable are inside the area labelled *comfort zone*.



- 11** We would feel comfortable at a humidity of 60% when the temperature is between
- A 14°C and 24°C.
 - B 14°C and 28°C.
 - C 18°C and 24°C.
 - D 18°C and 28°C.
- 12** Suppose conditions are like point P on the graph. We would feel comfortable if
- A the temperature fell by 5°C.
 - B the temperature fell by 15°C.
 - C the humidity fell by 5%.
 - D the humidity fell by 15%.
- 13** Consider conditions at point Q and at point R on the graph. At which of these points could we feel comfortable by changing either the temperature or the humidity, but not both?
- A at Q only
 - B at R only
 - C at both Q and R
 - D at neither Q nor R

ANSWER CHECK (Mathematics No. 1)
Look on your Answer Sheet – the last question you answered should have been Question 13.

If it was, keep going.

If it wasn't, put your hand up for help.

Questions 14–15 refer to the following information:

Tarek's bike has a front wheel bigger than its back wheel. The circumference of the front wheel is 240 cm, and the circumference of the back wheel is 120 cm.



14 How many times will the back wheel turn when the front wheel turns 40 times?

- A** 40
- B** 80
- C** 160
- D** 320

15 If the front wheel turns 100 times, how far does the bicycle travel?

- A** 24 metres
- B** 120 metres
- C** 240 metres
- D** 480 metres

Questions 16–17 refer to the following information:

Here are the first four steps in a number pattern:

Step 1: $3 + 2 = 5$
Step 2: $6 + 4 = 10$
Step 3: $9 + 6 = 15$
Step 4: $12 + 8 = 20$

16 What is Step 20 in this pattern?

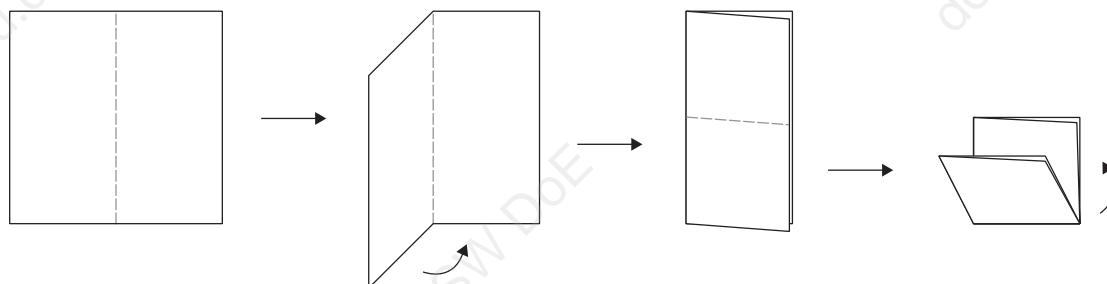
- A** $30 + 20 = 50$
- B** $60 + 40 = 100$
- C** $30 + 40 = 70$
- D** $120 + 80 = 200$

17 Which one of these is from the same pattern?

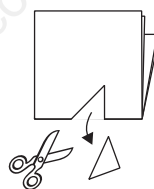
- A** $56 + 28 = 84$
- B** $75 + 50 = 125$
- C** $120 + 60 = 180$
- D** $100 + 50 = 150$

Questions 18–19 refer to the following information:

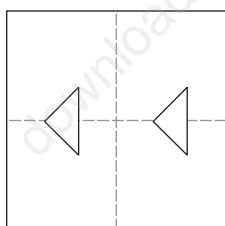
A square page is folded and folded again, as shown.



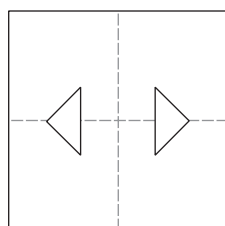
- 18 A triangular piece is cut out of the folded page. The page is then unfolded, and placed in the same way as shown originally.



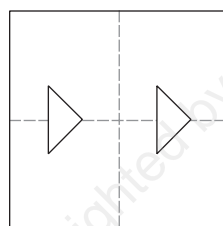
Which picture shows the cut page opened out?



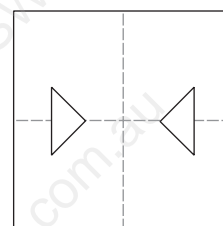
A



B

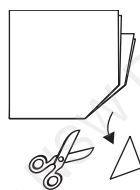
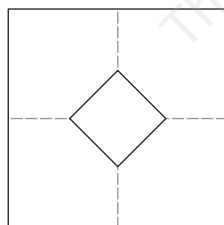


C

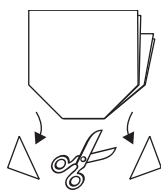


D

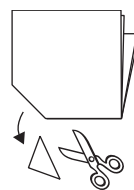
- 19 What cut(s) of the folded page would have produced the shape shown here when unfolded?



A



B



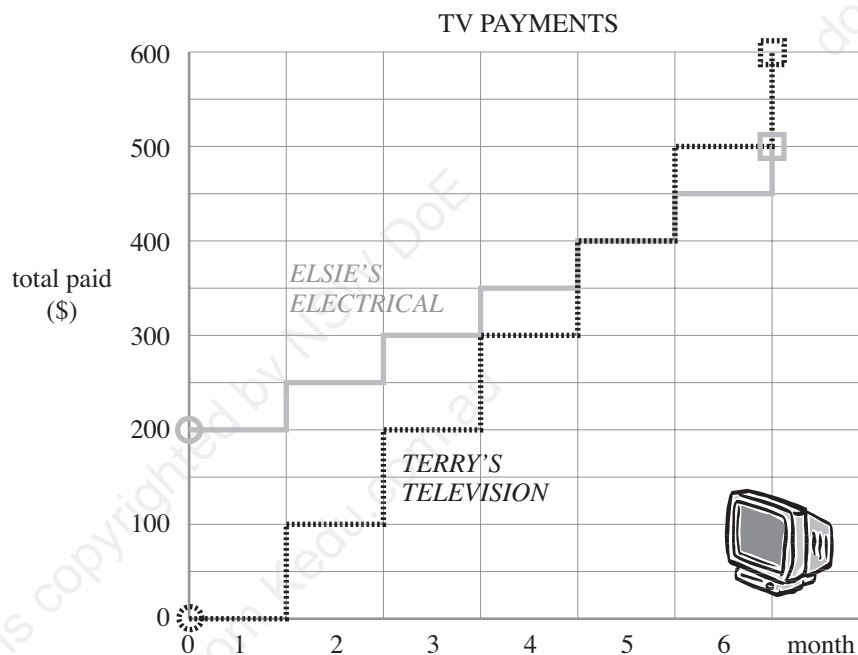
C



D

Questions 20–22 refer to the following information:

Carla has found a TV set she wants to buy. She decides to pay it off on a monthly basis.



The graph shows how much it costs to buy the TV set from two different shops, Terry's Television and Elsie's Electrical. From either shop, the TV is paid for at the end of six months.

20 How much would Carla pay each month at Elsie's Electrical?

- A** \$500
- B** \$200
- C** \$100
- D** \$50

21 Half way through the third month, what is the difference between the total paid at Elsie's and the total paid at Terry's?

- A** \$0
- B** \$50
- C** \$100
- D** \$200

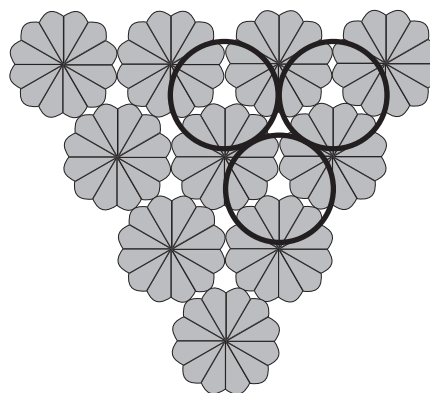
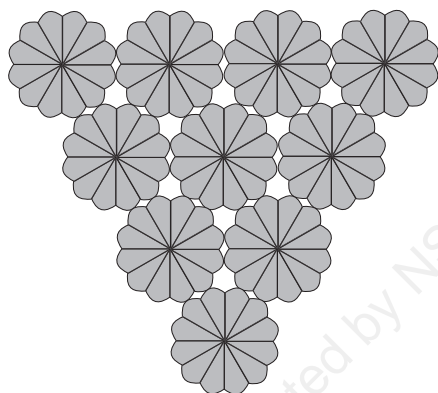
22 Terry says "Buy from me. It will cost you less to begin with."
Elsie says "Buy from me. It will cost you less in the end."

According to the information in the graph, which of these statements is true?

- A** Terry's only.
- B** Elsie's only.
- C** Neither Terry's nor Elsie's.
- D** Both Terry's and Elsie's.

Questions 23–25 refer to the following information:

Henry is helping his father on the farm. They have picked pumpkins and are stacking them. The first ten are placed in a triangle as shown. Then a second layer is started as shown by the circles. The completed stack will have four layers.



- 23 When the stack is finished the second layer will contain
- A 4 pumpkins.
 - B 5 pumpkins.
 - C 6 pumpkins.
 - D more than 6 pumpkins.
- 24 When the stack is finished the third layer will contain
- A fewer than 3 pumpkins.
 - B 3 pumpkins.
 - C 4 pumpkins.
 - D more than 4 pumpkins.
- 25 Henry's father made a bigger stack using the same pattern but with five layers of pumpkins. There were ten pumpkins in the *second* layer.

How many pumpkins did the first layer contain?

- A 15
- B 20
- C 21
- D more than 21

ANSWER CHECK (Mathematics No. 2)
Look on your Answer Sheet – the last question you answered should have been Question 25.
If it was, keep going.
If it wasn't, put your hand up for help.

- 26 Patel, Quoc and Ron live near each other along the same straight road. Patel lives 0.6 km from Quoc. Ron lives 0.4 km from Patel.

How far apart do Quoc and Ron live?

- A They must live 0.2 km apart.
- B They must live 1.0 km apart.
- C They could live 0.2 km or 1.0 km apart.
- D They could live 0.8 km or 1.2 km apart.

- 27 Jill buys fruit costing a total of \$3.50. She gives the greengrocer a \$5 note. The greengrocer has only \$1.00, 50 cent and 20 cent coins in his till.

In how many different ways can the greengrocer combine his coins to give Jill the change?

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

- 28 It is 12.00 noon. On this clock, the hour hand and the minute hand are overlapping (both pointing exactly the same way).

During which of the following time intervals do the two hands **not** overlap?

- A from 11:01 to 12:01
- B from 12:01 to 1:01
- C from 1:31 to 2:31
- D the hands overlap during all these time intervals



- 29 Con opened his book and laid it down. He noticed that when the two page numbers showing in his book were multiplied together the answer was 1190. The right hand pages had odd numbers.

The left hand page number was

- A 30.
- B 34.
- C 36.
- D 40.

Questions 30–32 refer to the following information:

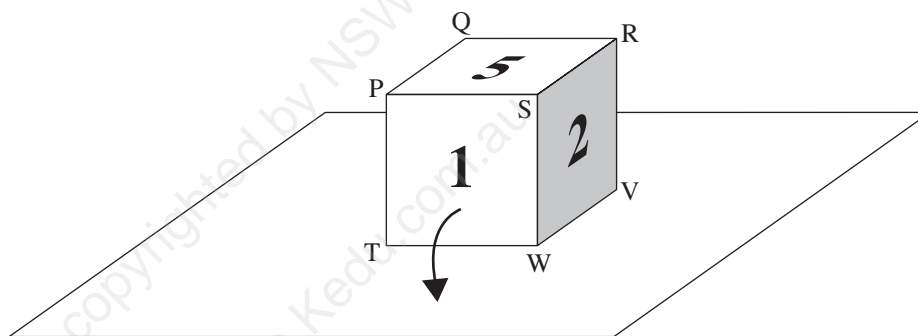
A cube has faces numbered 1 to 6. It sits on a table as shown. The hidden corner is U.

Face 3 is opposite face 1, and face 4 is opposite face 2.

The cube can be rolled over an edge. If, for example it is rolled over edge TW, as shown by the arrow, then face 1 would be at the bottom.

After rolling, the corners keep their labels in their new positions.

The viewer's position stays unchanged.



CUBE AT STARTING POSITION

- 30** From its starting position the cube was rolled over edge WV and then rolled over edge SW.

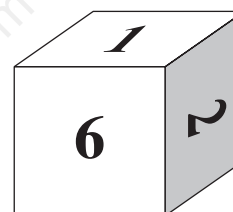
Which face was then on the top?

- A** 3
- B** 4
- C** 5
- D** 6

- 31** From its starting position, the cube was rolled once and then looked like this.

What edge had the cube rolled over?

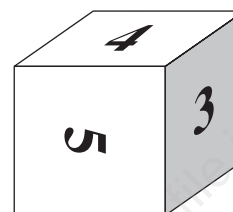
- A** VS
- B** ST
- C** TU
- D** UV



- 32** From its starting position, the cube was rolled twice, and then looked like this.

What edges had the cube rolled over, and in what order?

- A** TW then WS
- B** VW then WS
- C** either TW then WS, or VW then WS
- D** none of the above



Questions 33–34 refer to the following information:

In this addition square some of the numbers are missing.

33 The number at **Q** will be

- A 16.1
- B 17.7
- C 19.3
- D none of the above

34 The number at **R** will be

- A 6.1
- B 7.7
- C 9.3
- D none of the above

		Row totals	
	R	13.8	
0.9	1.6		
Column totals	7.0	Q	Overall total

Questions 35–36 refer to the following information:

In this addition square some of the numbers are missing.

35 The number at **S** will be

- A 7
- B 9
- C 11
- D none of the above

36 The number at **T** will be

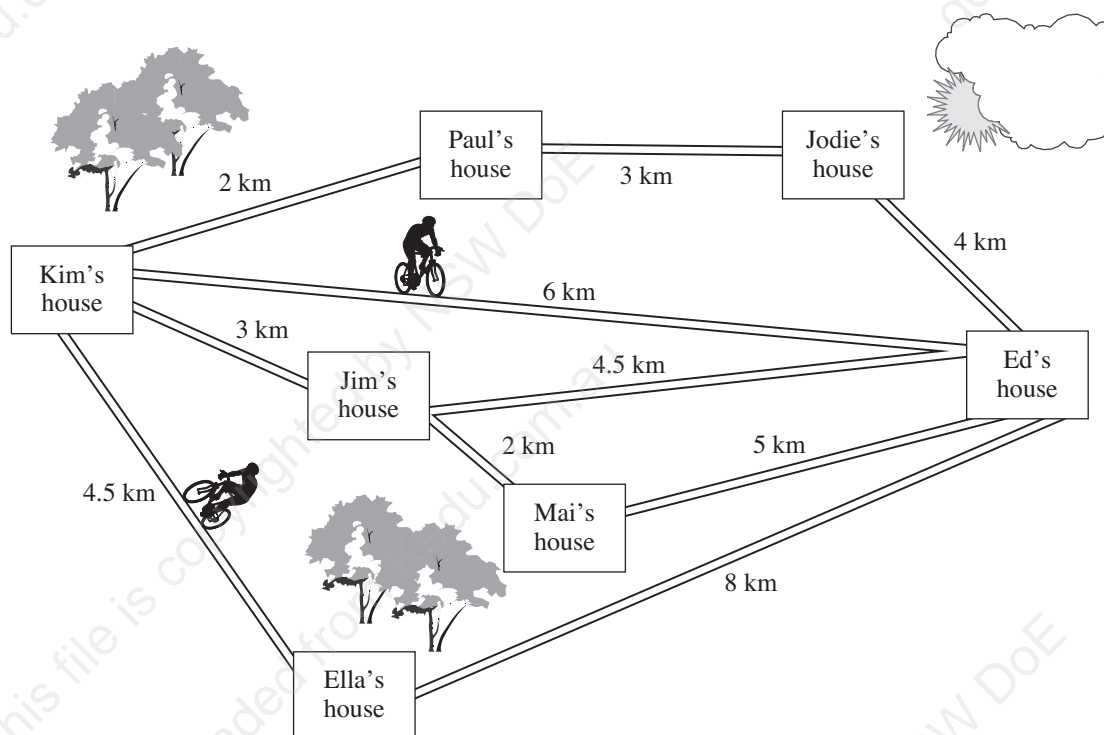
- A 41
- B 42
- C 43
- D 44

	9	4	Row totals	
13			22	
	4	1	8	
Column totals	17	S	12	Overall total
			T	

Questions 37–38 refer to the following information:

Kim often rides her bike to visit Ed. She can go various ways.

For example, if she rides via Paul and Jodie's houses, the total distance is 9 km.



- 37 Ed wants to ride to Kim's house visiting Jim's house on the way.

Using the shortest distances in each case, how much further would Ed need to ride if he also visited Mai's house?

- A 2.5 km
- B 3 km
- C 3.5 km
- D more than 3.5 km

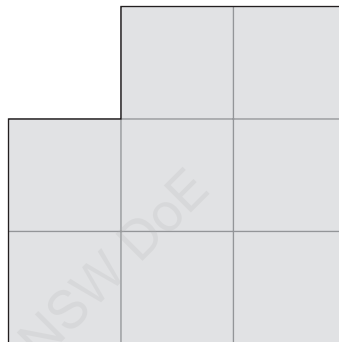
- 38 Ella, Jodie, Kim and Paul all leave at the same time to ride the shortest way to Jim's house. They all ride at the same speed.

Who will arrive there **last**?

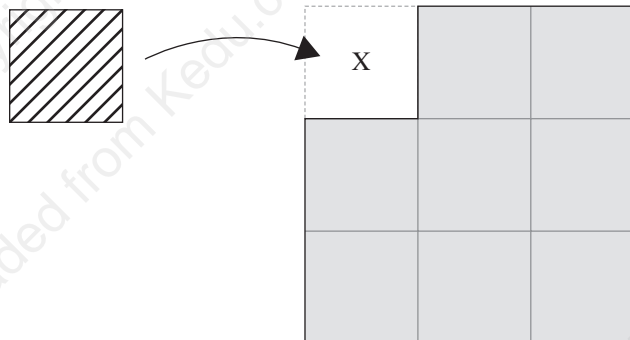
- A Kim
- B Jodie
- C Ella
- D Paul

Questions 39–40 refer to the following information:

The perimeter of the grey shape is 12 units, and its area is 8 square units.



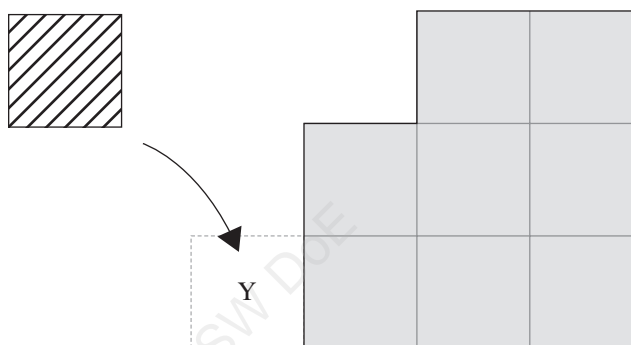
- 39 The striped square is moved into position X, making a new shape.



Compared to the original grey shape, the perimeter will

- A not change.
- B increase by 1 unit.
- C increase by 2 units.
- D increase by 4 units.

- 40 The striped square is moved instead to position Y, making another new shape.



By what fraction will the perimeter and area of this new shape increase compared to the original grey shape?

	perimeter increased by	area increased by
A	$\frac{2}{12}$	$\frac{1}{9}$
B	$\frac{3}{12}$	$\frac{1}{9}$
C	$\frac{2}{12}$	$\frac{1}{8}$
D	$\frac{3}{12}$	$\frac{1}{8}$

ANSWER CHECK (Mathematics No. 3)
Look on your Answer Sheet – the last question you answered should have been Question 40.
If it wasn't, put your hand up for help.

END OF TEST

**LOOK BACK OVER YOUR WORK
 IF YOU HAVE TIME.**

MATHS 02	
No.	KEY
1	B
2	B
3	A
4	C
5	B
6	A
7	D
8	C
9	A
10	B
11	C
12	B
13	A
14	B
15	C
16	B
17	B
18	D
19	C
20	D
21	C
22	D
23	C
24	B
25	A
26	C
27	C
28	B
29	B
30	A
31	D
32	A
33	D
34	B
35	D
36	D
37	A
38	B
39	A
40	C