Student application number	C	2	1	0				

First name(s) _____

Family name _____

5186261836

Opportunity Class Placement Test

Mathematical Reasoning Question Paper

21 July 2021 **40 minutes**

INSTRUCTIONS FOR CANDIDATES

Please read this page carefully.

DO NOT OPEN THIS QUESTION PAPER UNTIL YOU ARE TOLD TO DO SO.

A separate answer sheet is provided for this test. Please fill in the following information on your answer sheet and on this question paper:

- Student application number
- First name(s)
- Family name

There are **35** questions in this paper. For each question there are five possible answers, **A**, **B**, **C**, **D** and **E**. Choose the **one** correct answer and record your choice on the separate answer sheet. If you make a mistake, erase thoroughly and try again.

You will **not** lose marks for incorrect answers, so you should attempt **all 35** questions.

You **must** complete the answer sheet within the time limit. There will **not** be any extra time at the end of the exam to record your answers on the answer sheet.

You can use the question paper for working out, but no extra paper is allowed.

Calculators and dictionaries are **NOT** allowed.

Cambridge Assessment Admissions Testing

PV2

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1 There were 72 people on a bus.

At a bus stop, some people got off and 15 people got on.

Then there were 68 people on the bus.

How many people got off at the bus stop?

A 1

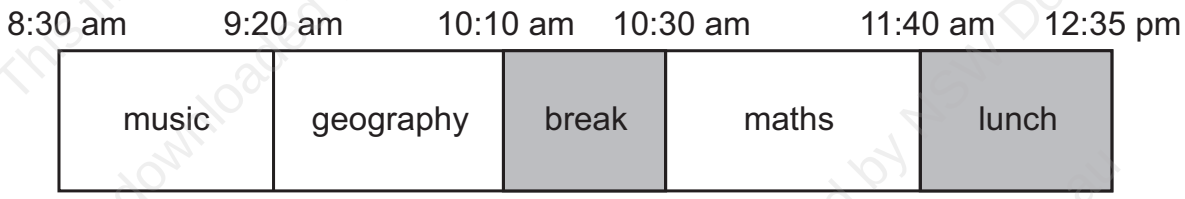
B 4

C 11

D 19

E 29

2 Here is part of Year 4's timetable for Friday:



How many minutes are spent altogether on break and lunch?

A 55 minutes

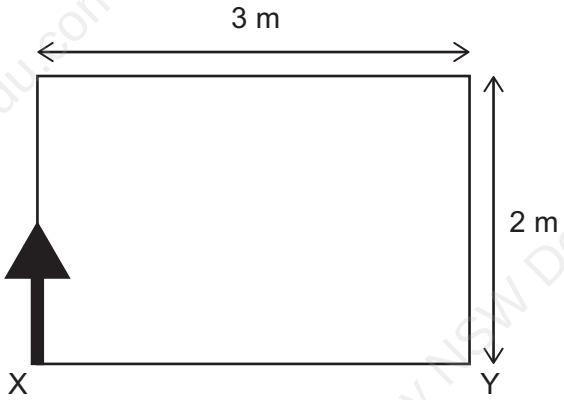
B 75 minutes

C 85 minutes

D 95 minutes

E 115 minutes

3 Antony walks around the rectangle in the direction shown, starting at X.



[diagram not to scale]

He walks around the rectangle 4 times completely, then walks along 3 more sides, always travelling in the same direction around the rectangle. He finishes at Y.

How far does Antony walk in total?

A 24 m

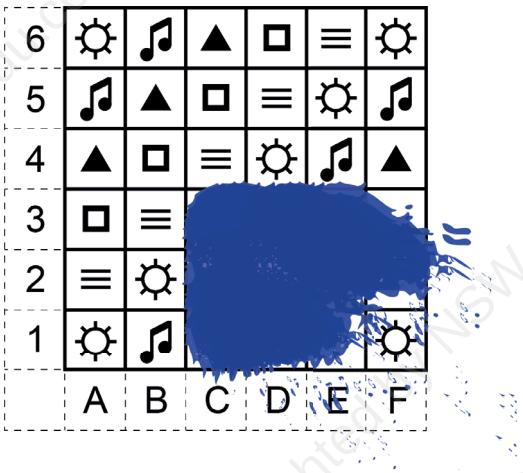
B 31 m

C 36 m

D 40 m

E 47 m

4 There is a repeating pattern shown in the grid below. Part of the pattern is hidden by some spilled paint.



Which image is in position D2?

A ☼

B ♫

C ▲

D □

E ≡

5 Here are the first five numbers in a sequence:

5 11 17 23 29

What is the 10th number of the sequence?

A 35

B 59

C 60

D 61

E 89

6 Melissa cuts her birthday cake into 10 equal pieces.

She gives 2 pieces to John, then gives Sue half of what is left.

Melissa then eats one piece.

What fraction of the cake does Melissa have left?

A $\frac{2}{10}$

B $\frac{1}{4}$

C $\frac{3}{10}$

D $\frac{2}{3}$

E $\frac{3}{4}$

7 Raj bought 8 soft drinks, each at the same price.

He paid using a $20 note.

He received $8 change.

How much did each soft drink cost?

A $0.75

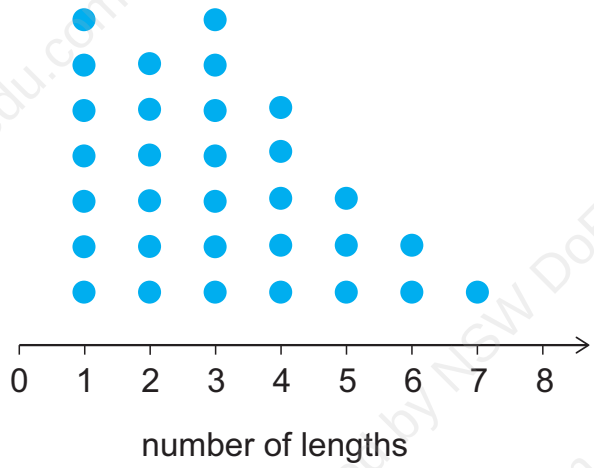
B $0.96

C $1.00

D $1.20

E $1.50

8 The diagram shows the number of lengths of a swimming pool swum by 31 people.



Kalou counts the number of people who swam three or more lengths.

Jade counts the number of people who swam fewer than three lengths.

What is the difference between the numbers Kalou and Jade calculate?

A 2

B 5

C 7

D 9

E 12

9 When the digit 8 is replaced by the digit 9 in each of the numbers below, which number increases the most?

A 24 680

B 48 001

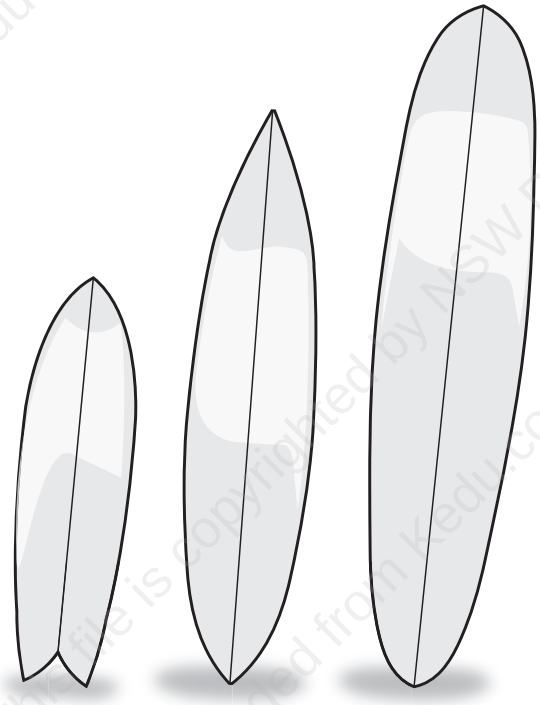
C 63 918

D 81 234

E 99 899

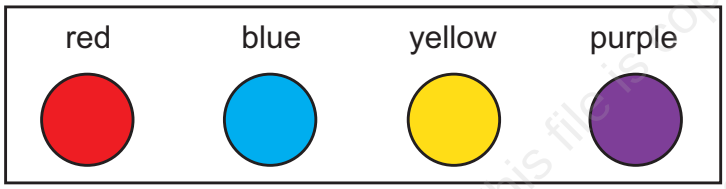
10 Cooper wants to buy a new surfboard.

He must choose both the shape and the colour. There are three shapes to choose from:



fish gun longboard

Each shape is available in any one of these four colours:



How many different types of surfboard can Cooper choose from?

A 6

B 7

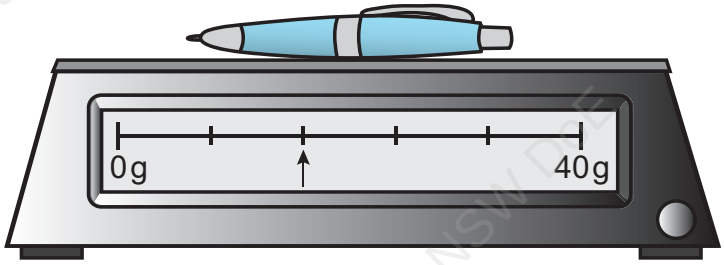
C 8

D 12

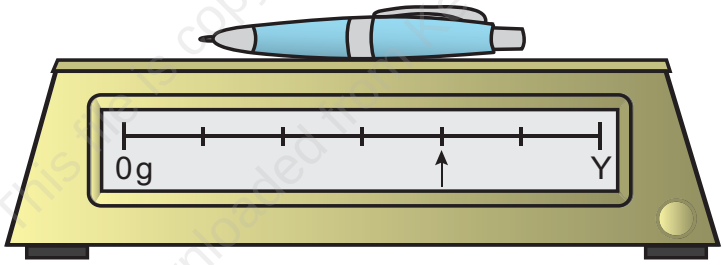
E 16

11 Amina and Morten both weigh the same pen.

When Amina places the pen on her scales, the arrow correctly shows its mass in grams.



When Morten places the pen on his **different** scales, the arrow correctly shows the pen's mass in grams, but the arrow is in a different position.



What does Y represent on Morten's scales?

A 15 g

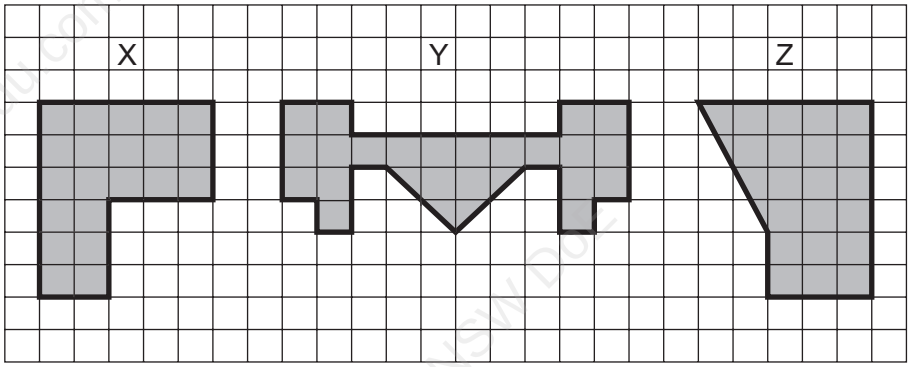
B 24 g

C 48 g

D 60 g

E 96 g

12 Here are three shapes: X, Y and Z.



What is the order of the shapes, from smallest area to largest area?

A X, Y, Z

B X, Z, Y

C Y, X, Z

D Y, Z, X

E Z, Y, X

13 A packet of nuts weighs 25 grams.

How many packets of nuts weigh half a kilogram?

A 2

B 10

C 20

D 40

E 200

14 Shamira has these notes in her purse:

- four $5 notes
- two $10 notes
- two $20 notes

She takes a note from her purse without looking.

Which of these statements is/are correct?

1 She is more likely to take a $5 note than a $20 note.

2 She is equally likely to take a $5 note or not to take a $5 note.

3 It is certain that she takes a note worth more than $5.

A statement 1 only

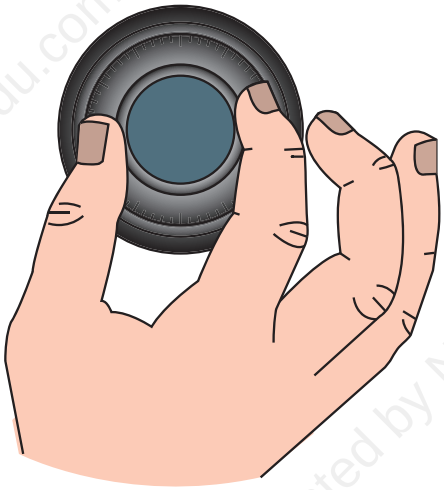
B statement 2 only

C statements 1 and 2 only

D statements 2 and 3 only

E statements 1, 2 and 3

15 Maxine turns a dial on a machine.



She follows this instruction repeatedly:

- Turn the dial clockwise through an acute angle.

After a while, she has turned the dial by at least one complete revolution.

What is the smallest number of times she could have followed the instruction?

A 2

B 3

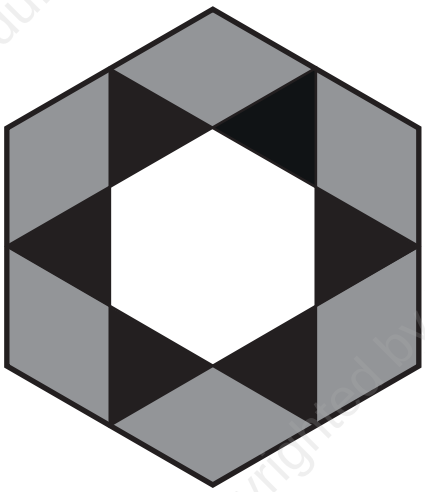
C 4

D 5

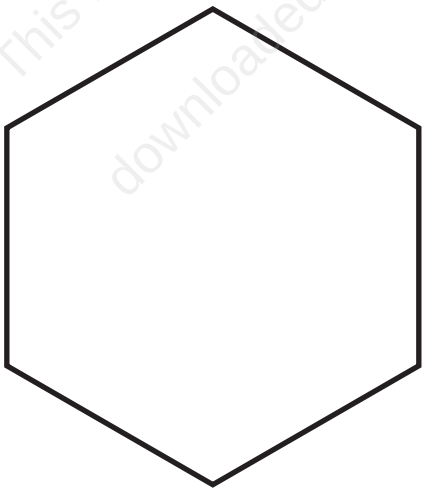
E 6

16 Grey rhombuses are placed inside a regular hexagon, touching the corners.

Black equilateral triangles are placed between the rhombuses.



Here is the original hexagon:



How many black triangles would be needed to completely fill the original hexagon?

A 18

B 21

C 24

D 30

E 36

17 A rectangle and a rhombus have the same perimeter.

Joel measures one edge of the rhombus and finds that it is 9 centimetres long.

Jenna measures the length of the rectangle and finds that it is 14 centimetres long.

What is the width of the rectangle?

A 4 cm

B 5 cm

C 8 cm

D 22 cm

E 36 cm

18 $12 \times 35 = 4 \times \blacktriangle \times 7$

What is the missing number ▲?

A 3

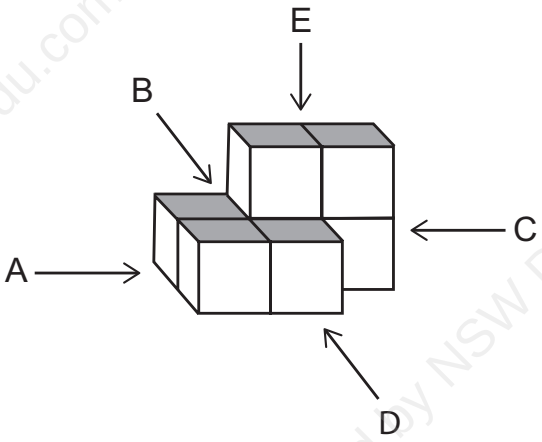
B 4

C 5

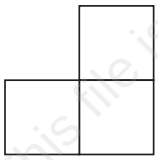
D 8

E 15

19 Erin is looking at the following block of cubes:



From her point of view, she sees:



Which arrow shows the way Erin must be looking?

A A

B B

C C

D D

E E

20 A clock shows 5:55 am.

What time will it show 555 minutes later?

A 11:10 am

B 11:50 am

C 12:05 pm

D 3:10 pm

E 3:50 pm

21 Panu, Quinn and Rita each think of a number.

Panu is thinking of the number of halves needed to make $2\frac{1}{2}$

Quinn is thinking of the number of thirds needed to make $2\frac{1}{3}$

Rita is thinking of the number of quarters needed to make $1\frac{1}{2}$

What is the order of their numbers from smallest to largest?

A Panu's, Rita's, Quinn's

B Quinn's, Panu's, Rita's

C Quinn's, Rita's, Panu's

D Rita's, Panu's, Quinn's

E Rita's, Quinn's, Panu's

22 Which of these are possible ways to make 100 by adding three whole numbers?

1 Add three even numbers.

2 Add two even numbers and one odd number.

3 Add two odd numbers and one even number.

4 Add three odd numbers.

A 1 only

B 1 and 2 only

C 1 and 3 only

D 1, 2 and 3 only

E 2, 3 and 4 only

23 A box contains 25 marbles:

3 blue, 4 red, 8 yellow and 10 green.

Lemar takes one marble out of the box without looking.

Which of these events is the least likely?

A The marble is either blue or red.

B The marble is yellow.

C The marble is not green.

D The marble is not blue.

E The marble is neither red nor green.

24 Alesha is doing this puzzle:

Write the **same** whole number into each box to make the sentences true.

☐ + 4 is bigger than 8.

☐ + ☐ is less than 14.

Alesha realises that there is more than one correct answer to the puzzle.

How many different correct answers are there?

A 2

B 3

C 4

D 5

E 6

25 Ophelia has 12 lumps of clay with the following masses:

100 g, 100 g
50 g
5 g, 5 g, 5 g
2 g, 2 g, 2 g
1 g, 1 g, 1 g

She joins them all to make one big lump.

She splits the big lump into two equal pieces.

What is the mass of each piece?

A 87 g

B 137 g

C 174 g

D 237 g

E 274 g

26 Charles counts from 4 to 7 in jumps of $\frac{1}{3}$

Julie counts from 6 to 8 in jumps of $\frac{1}{4}$

Which statement is correct?

A Julie makes 2 more jumps than Charles.

B Julie makes 1 more jump than Charles.

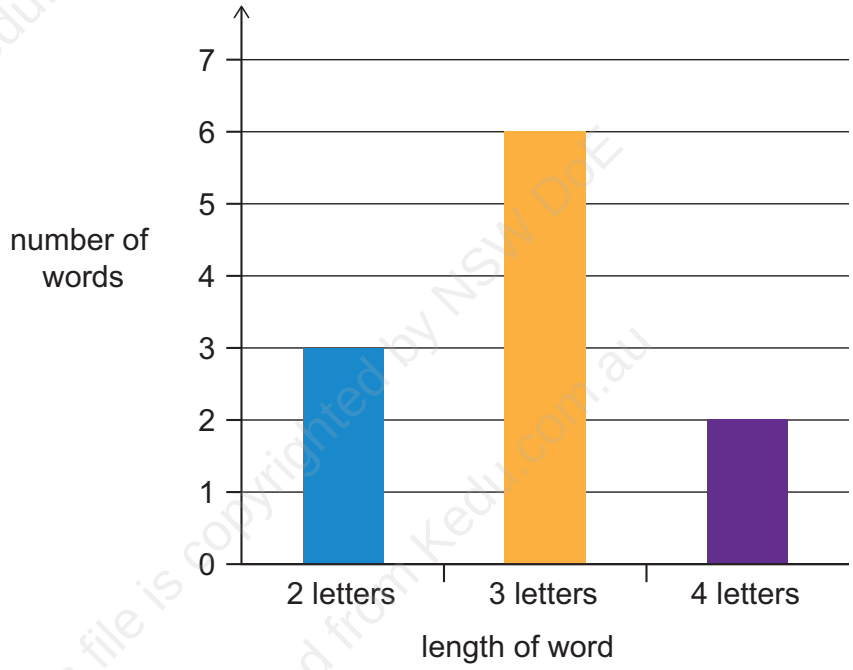
C They make the same number of jumps.

D Charles makes 1 more jump than Julie.

E Charles makes 2 more jumps than Julie.

27 Isabella recorded the number of letters in each word of a sentence.

The column graph shows her results.



What was the total number of letters in the sentence?

A 9

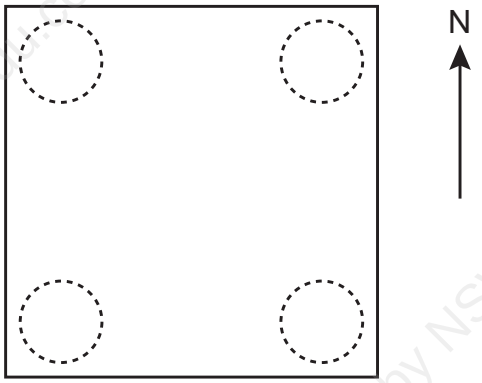
B 11

C 20

D 28

E 32

28 This square is drawn on a playground. It has a circle at each corner. The arrow shows the direction of north.



Alan, Bea, Carla and Denzil are each standing in different circles.

Alan is facing south-east and is looking at Carla.
Carla is facing west and is looking at Denzil.
Denzil is looking at Bea.

Which direction is Denzil facing?

A north-east

B north

C north-west

D west

E south-west

29 Sajid's birthday is on Tuesday 7th January.

Ruby's birthday is 20 days before Sajid's birthday.

January						
Mo	Tu	We	Th	Fr	Sa	Su
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2

On what day and date is Ruby's birthday?

A Tuesday 17th December

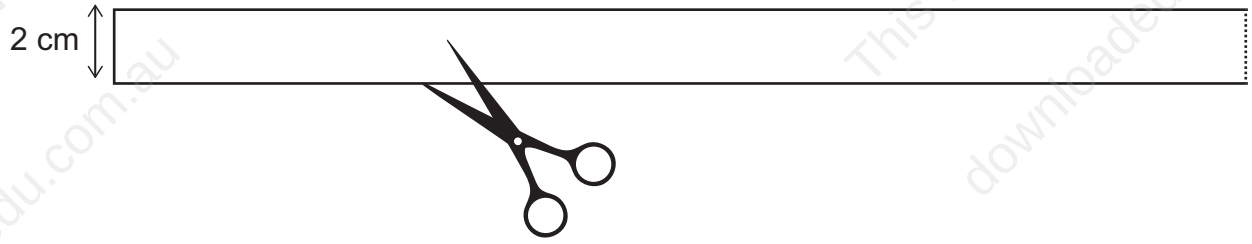
B Wednesday 17th December

C Tuesday 18th December

D Wednesday 18th December

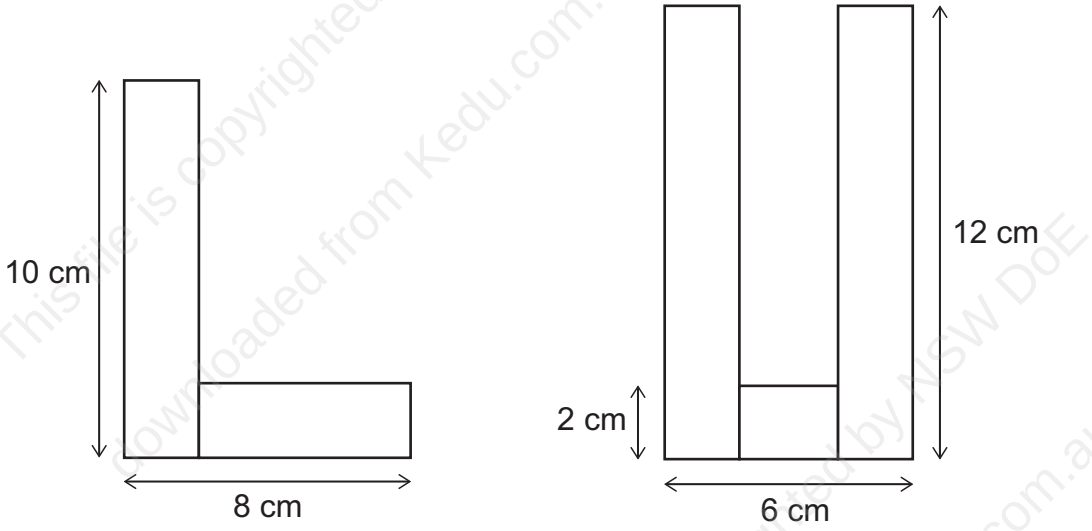
E Tuesday 19th December

30



Lachlan cuts this strip of paper 2 cm wide into five shorter rectangular strips that are still 2 cm wide.

He uses **all** of the five shorter strips to make two letters, L and U, without overlapping or folding any of these strips:



[diagrams not to scale]

What was the length of the strip of paper Lachlan started with?

A 40 cm

B 42 cm

C 44 cm

D 46 cm

E 48 cm

31 Sean writes down the smallest 3-digit number that has three different digits.

Tammy writes down the largest 3-digit number that has three different digits.

What is the sum of their two numbers?

A 1089

B 1098

C 1099

D 1107

E 1110

32 Here is a picture graph showing the numbers of butterflies counted in a garden on three different days. The key is missing.

Monday	
Tuesday	
Wednesday	

 represents half as many as 

Which of these sets of numbers could this graph represent?

X

Monday	12
Tuesday	20
Wednesday	16

Y

Monday	20
Tuesday	28
Wednesday	24

Z

Monday	30
Tuesday	50
Wednesday	20

A X only

B Z only

C X and Y only

D Y and Z only

E X, Y and Z

33 Dave is 7 years younger than Sam.

Sam is 5 years older than Lisa.

Fred is 13 years older than Dave.

Fred is older than Lisa.

How many years older is Fred than Lisa?

A 6

B 8

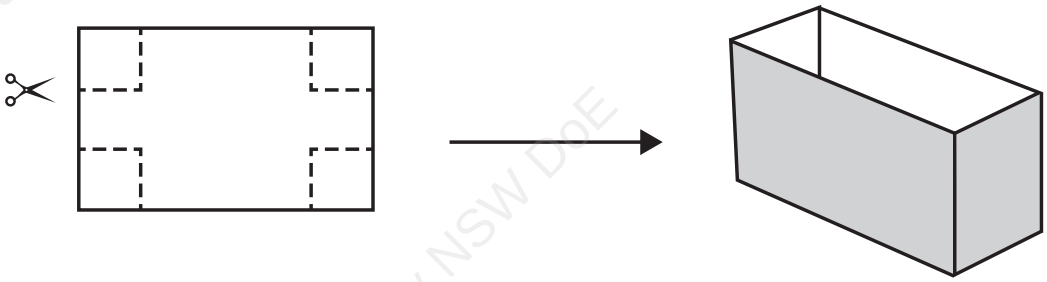
C 10

D 11

E 15

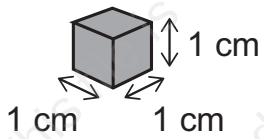
34 Mei has a piece of card that measures 12 cm by 8 cm. She cuts a 3 cm by 3 cm square from each corner.

She then folds up the edges to make an open box.



[diagram not to scale]

Here is a centimetre cube:



Mei puts centimetre cubes into the box.

How many cubes does she need to completely fill the box?

A 36

B 60

C 72

D 135

E 288

35 In a code, each letter is represented by a **different** whole number **greater than 1**.

Words are replaced by the product of their letters.

For example:

If $M = 5$ and $E = 10$ then $ME = 5 \times 10 = 50$

If $NAN = 36$ and $NUN = 18$, what is the value of UNA?

A 12

B 24

C 30

D 36

E 72

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