



Student application
number

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Given name(s)

Family name

Selective High School Placement Test

Mathematical Reasoning Question Paper

Sample Test

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:

- Student application number
- Given 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

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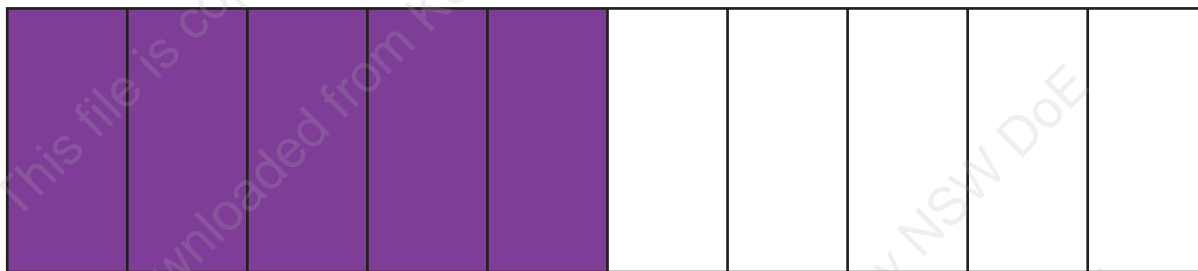
- 1 Sandy's watch reads 1850.

What is the time one quarter of an hour later, in 12-hour format?

- A 6:35 am
- B 7:05 am
- C 6:35 pm
- D 6:45 pm
- E 7:05 pm

- 2 Jack divides a white wall into equal sections.

He paints some sections purple, as shown.



Jack then paints $\frac{2}{5}$ of the whole wall yellow.

Finally, he paints the rest of the wall green.

How many sections does he paint green?

- A 1
- B 2
- C 3
- D 4
- E 5

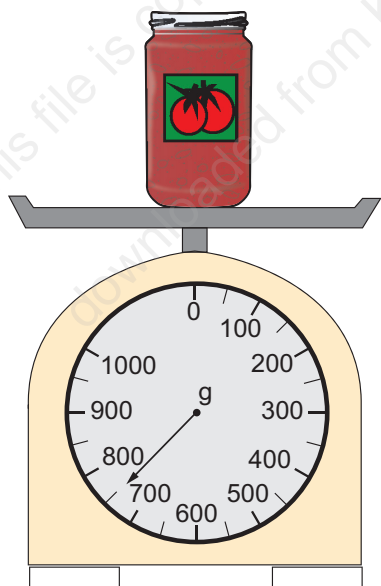
- 3 Nicola multiplies the smallest four-digit whole number by the largest two-digit whole number.

What is the answer?

- A 99 000
- B 99 990
- C 990 000
- D 999 900
- E 999 999

- 4 Rana needs 650 grams of cooking sauce.

She places a glass jar of cooking sauce on a scale.



The glass jar weighs 330 g when empty.

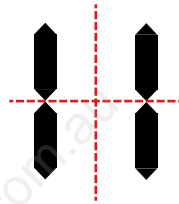
How much more cooking sauce does Rana need?

- A 100 g
- B 130 g
- C 200 g
- D 230 g
- E 430 g

- 5 'Calculator numbers' are written in the style of digits on a calculator, as shown.



The calculator number eleven is the **smallest** two-digit number with **two** lines of symmetry.



Which of the numbers below is the largest two-digit calculator number that has just one line of symmetry?

- A 52
- B 83
- C 88
- D 96
- E 99

- 6 Kim and Jamie each think of a different whole number that is greater than zero and less than 50.

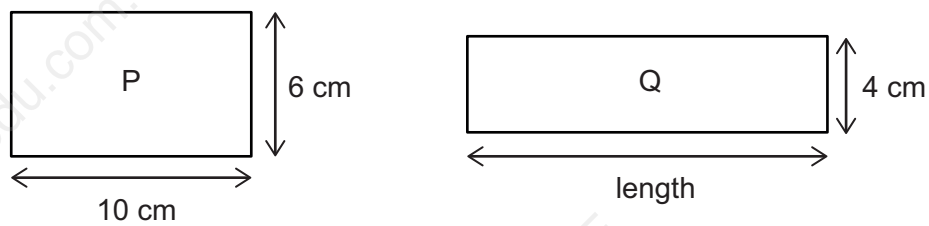
Kim's number is a multiple of 5.

Jamie's number is an even number which is a multiple of 7.

What is the difference between the **largest** possible value of Kim's number and the **smallest** possible value of Jamie's number?

- A 31
- B 36
- C 38
- D 39
- E 43

- 7 Rectangles P and Q both have the same area.

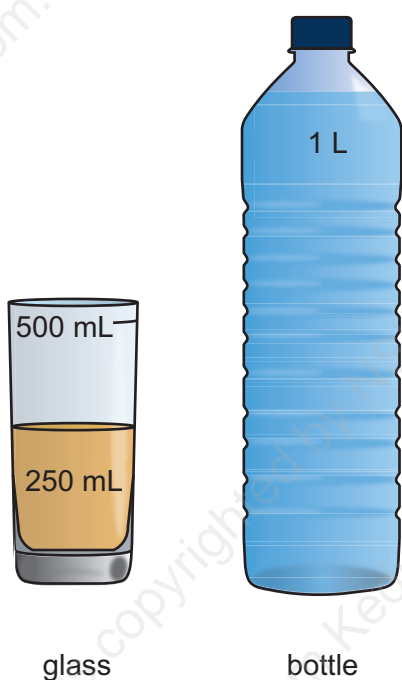


[diagram not to scale]

What is the length of rectangle Q?

- A 8 cm
- B 12 cm
- C 15 cm
- D 32 cm
- E 60 cm

- 8 Sooyoung has a glass containing 250 millilitres of cordial, and a bottle containing 1 litre of water.



Sooyoung drinks 10 mL of the cordial.

She finds the drink too strong, so she pours water from the bottle into the glass until the water reaches the 500 mL mark.

How much water is left in the bottle?

- A 240 mL
- B 260 mL
- C 740 mL
- D 760 mL
- E 990 mL

9 \square always represents the same number.

\triangle represents a different number.

If

$$9 \times \square = 108$$

and

$$\triangle + \square = 36$$

what is \triangle ?

A 3

B 12

C 24

D 28

E 48

10



Tahnee is making a pattern out of white and black tiles.

She hasn't finished yet. She wants the finished pattern to have one vertical line of symmetry.

What is the smallest number of tiles she needs to add onto the right of the pattern?

A 2

B 3

C 6

D 8

E 9

11 Jessica has blue, green, red and yellow buttons in a bag.

There are twice as many red buttons as blue buttons.

If she takes one button out of the bag without looking:

- the probability that it is blue is 0.2
- the probability that it is green is 0.3

What is the probability that Jessica takes out a yellow button?

A 0.1

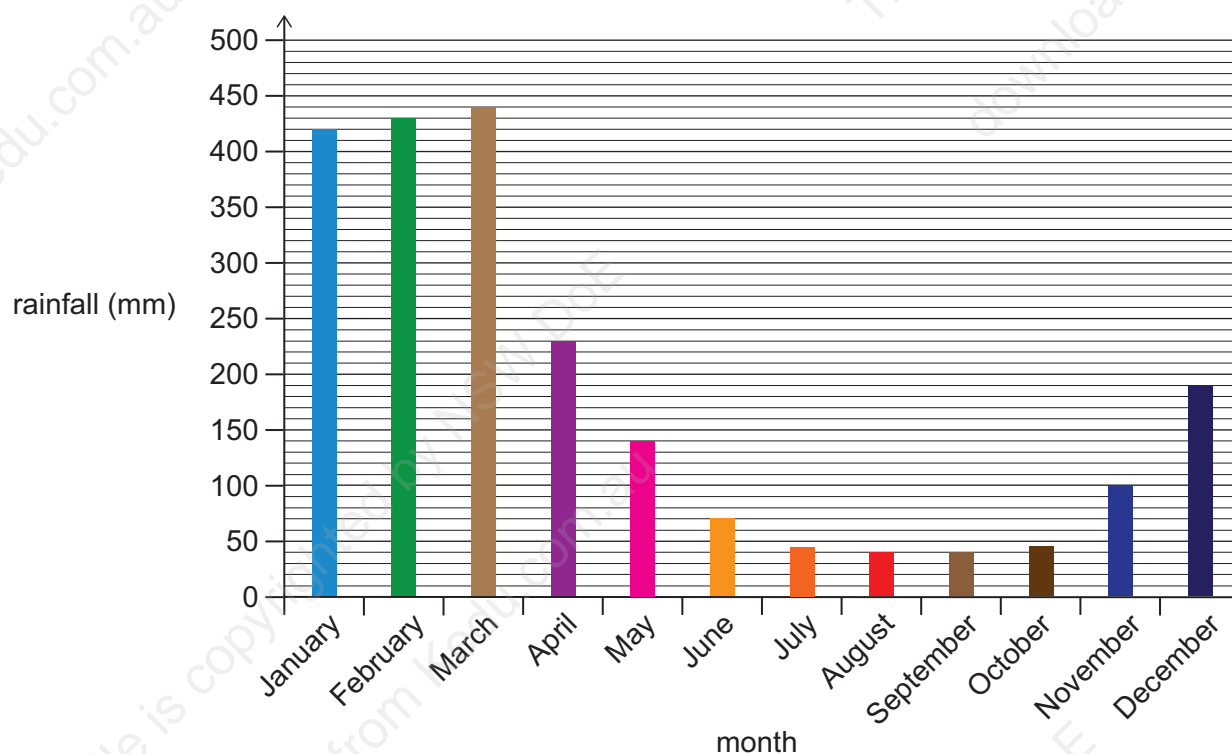
B 0.3

C 0.5

D 0.7

E 0.9

- 12 The graph shows the average monthly rainfall in Cairns for one year.



Here are three statements about the graph.

- 1 June had more than twice as much rainfall as August.
- 2 December had 9 cm more rainfall than November.
- 3 The rainfall in February, March and April combined was more than 1 metre.

Which of these statements are correct?

- 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

13 Alan had \$10. He gave some of this money to Kiana.

Alan then gave half of what he had left to Jason.

Jason gave half of what he was given to Lenny.

Lenny received \$1.60.

How much did Alan give to Kiana?

A \$3.20

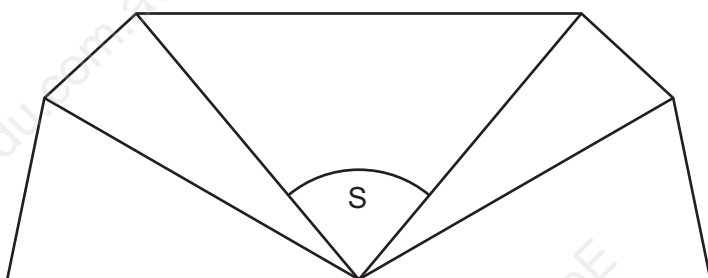
B \$3.60

C \$4.80

D \$6.40

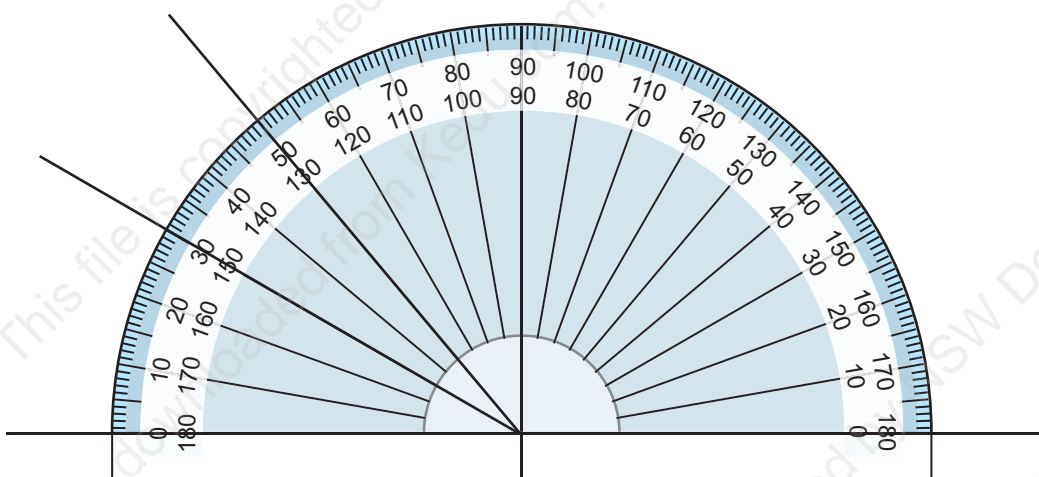
E \$6.80

- 14 Noah is drawing an accurate copy of this shape:



The shape has one line of symmetry.

He starts drawing the shape as follows:



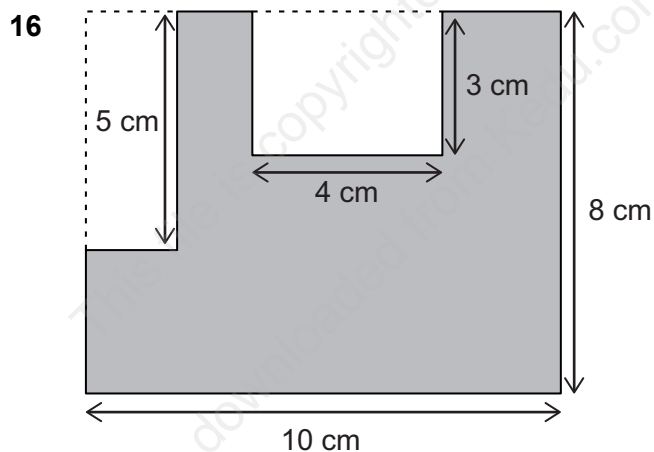
What is the size of angle S?

- A 50°
- B 80°
- C 90°
- D 100°
- E 130°

- 15** When 117 chocolates are shared between 14 people, each person gets 8 chocolates and there are 5 chocolates left over.

Which number sentence shows this information?

- A** $14 + 8 \times 5 = 117$
- B** $14 \times 5 - 8 = 117$
- C** $14 \times 5 + 8 = 117$
- D** $14 \times 8 - 5 = 117$
- E** $14 \times 8 + 5 = 117$



[diagram not to scale]

A large rectangle has sides 8 cm and 10 cm.

Two small rectangles are removed from this large rectangle.

This leaves the shaded shape.

What is the perimeter of the shaded shape?

- A** 30 cm
- B** 36 cm
- C** 39 cm
- D** 40 cm
- E** 42 cm

17



Andy, Bella and Carlo shared a chocolate bar.

Andy ate $\frac{1}{5}$ of the bar, Bella ate $\frac{2}{5}$ of the bar and Carlo ate the rest.

Which of the following statements are correct?

- 1 Carlo ate less than half of the chocolate bar.
 - 2 Andy ate more than one quarter of the chocolate bar.
 - 3 Andy and Bella ate less than three quarters of the chocolate bar altogether.
- A** statement 1 only
- B** statement 2 only
- C** statement 3 only
- D** statements 1 and 2 only
- E** statements 1 and 3 only

18 In a 'magic square', each row, each column and each diagonal add up to the same total.

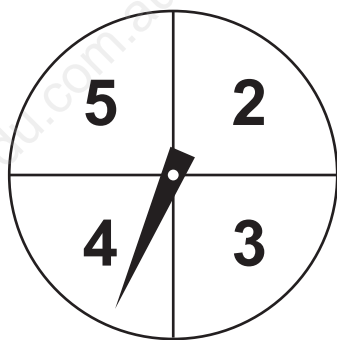
In the magic square below, some of the numbers are missing.

20	15	16
18		◆

What is the missing number at ◆?

- A** 4
- B** 14
- C** 17
- D** 18
- E** 21

- 19 Chen has a spinner that is split into four equal sections.

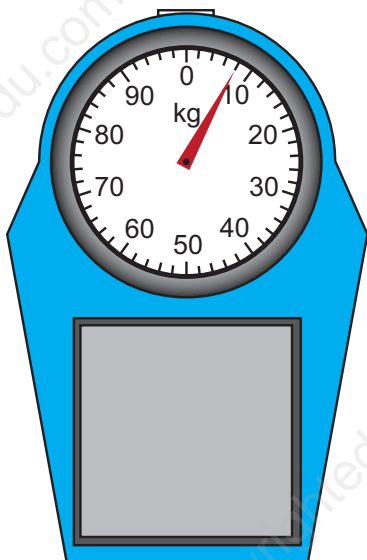


He spins the spinner and it lands on 4.

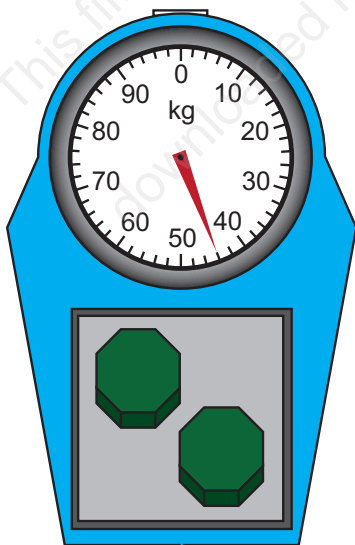
Now Emily is going to spin the spinner once. Which of these statements are correct?

- X** The probability of Emily getting a 4 is $\frac{1}{4}$
- Y** The probability that Emily's number is less than Chen's is $\frac{1}{2}$
- Z** The probability that Emily and Chen's scores add up to make more than 5 is $\frac{3}{4}$
- A** none of them
- B** statements X and Y only
- C** statements X and Z only
- D** statements Y and Z only
- E** statements X, Y and Z

- 20** There is something wrong with these scales. As shown, the pointer does not start at 0 kilograms when there is nothing on the scales:



Apart from this, the scales work normally: the pointer goes up by 1 kg for every kilogram added to the scales.



Two identical blocks are placed on the scales. The pointer makes less than a full turn.

What is the mass, in kg, of one of the blocks?

- A** 13 kg
- B** 14 kg
- C** 18 kg
- D** 19 kg
- E** 22 kg

21 Alinta and Tau both round the number 4 850 000.

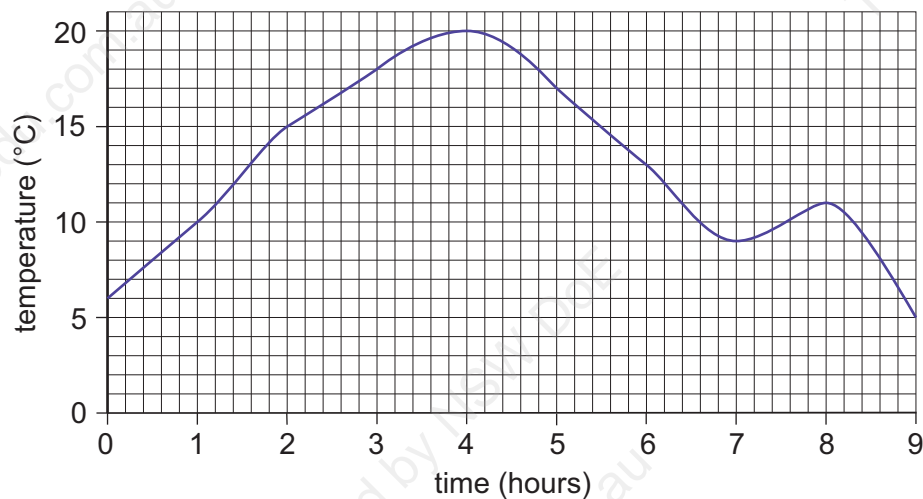
Alinta rounds the number to the nearest million.

Tau rounds the number to the nearest hundred thousand.

What is the difference between their answers?

- A** 0
- B** 50 000
- C** 100 000
- D** 150 000
- E** 200 000

22 Here is a graph showing the outdoor temperature during a period of 9 hours.



Which of these statements are true?

- 1** The temperature was 10°C at four different times.
 - 2** The temperature change between 1 hour and 3 hours was greater than the temperature change between 4 hours and 6 hours.
 - 3** The lowest temperature was 5°C.
- A** none of the statements
- B** statements 1 and 2 only
- C** statements 1 and 3 only
- D** statements 2 and 3 only
- E** statements 1, 2 and 3

23 Quoc bought 4 pizzas to share with Amina, Fred and Sally.

Amina ate $\frac{4}{5}$ of a pizza.

Fred ate $1\frac{1}{5}$ pizzas.

Sally ate $\frac{3}{5}$ of a pizza.

Quoc ate **all** of the pizza that was left.

How much **more** pizza did Quoc eat than Amina?

A $\frac{2}{5}$

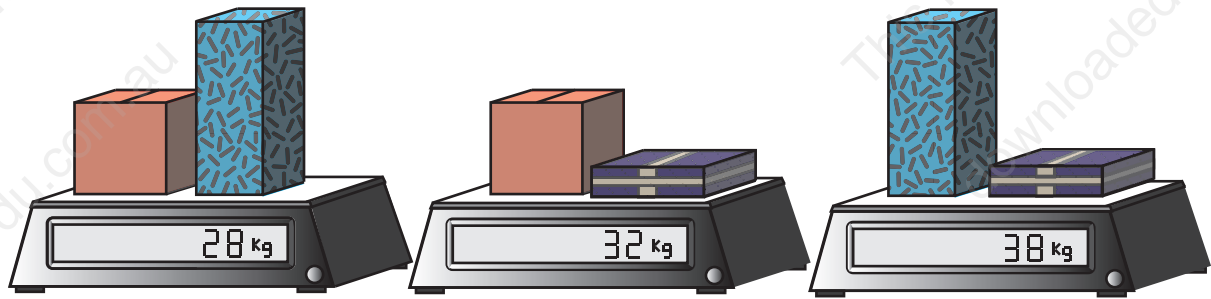
B $\frac{3}{5}$

C $\frac{4}{5}$

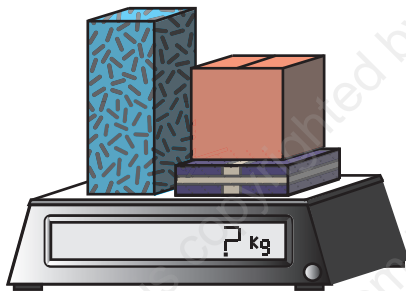
D $1\frac{4}{5}$

E $2\frac{1}{5}$

24



Three different boxes are weighed in pairs. Different pairs of boxes have combined weights of 28 kg, 32 kg and 38 kg as shown.



When the three boxes are weighed together, what is their combined weight?

- A 49 kg
- B 60 kg
- C 66 kg
- D 70 kg
- E 98 kg

25 What is the sum of the number of faces, the number of edges and the number of vertices of a pyramid with a hexagonal base?

- A 18
- B 20
- C 24
- D 26
- E 38

- 26** In our number system, the value represented by a digit depends on its position. For example, in the number 273, the digit 7 represents 70.

In the number 30 060, how many times larger is the value represented by the digit 3 than the value represented by the digit 6?

- A** 50 times
- B** 100 times
- C** 500 times
- D** 1000 times
- E** 2000 times

- 27** Kylie lives in Las Vegas and she visits her cousin Mike, who lives in Sydney.

Kylie leaves Las Vegas on Friday at 1300 local time on a 6-hour flight to New York.

She spends 24 hours in New York.

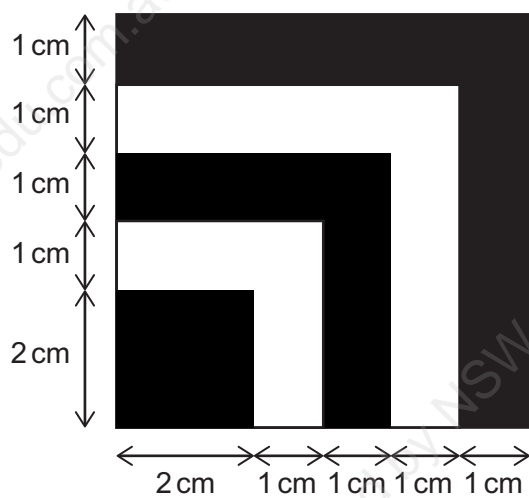
She then catches a 20-hour flight to Sydney.

The time in Las Vegas is 17 hours behind the time in Sydney.

What time is it in Sydney when Kylie arrives?

- A** Monday at 0800
- B** Wednesday at 1100
- C** Saturday at 2200
- D** Sunday at 1500
- E** Sunday at 2300

28 Here is a shape made of black and white parts:



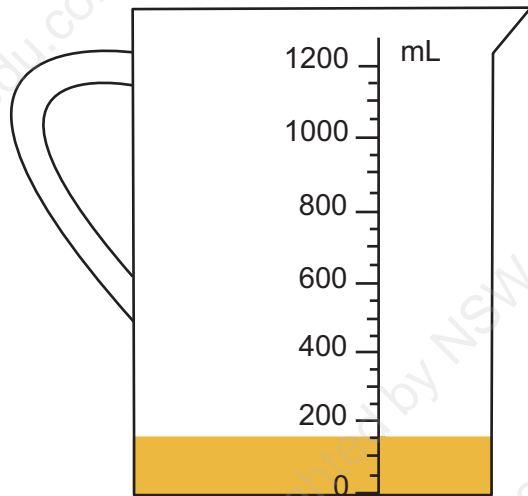
[diagram not to scale]

What is the total area that is black?

- A** 14 cm²
- B** 15 cm²
- C** 20 cm²
- D** 22 cm²
- E** 24 cm²

29 Jan is making a mixed fruit drink for a party.

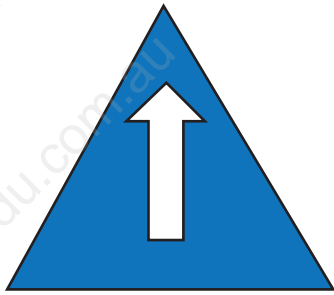
She puts some orange juice into the jug, as shown.



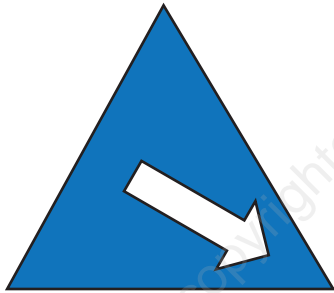
She then adds 6 times as much apple juice.

How many millilitres of fruit drink does Jan make?

- A** 400 mL
- B** 525 mL
- C** 900 mL
- D** 1050 mL
- E** 1500 mL



The equilateral triangle above is rotated anti-clockwise into the position shown below.



Through what angle is it rotated anti-clockwise?

- A** 60°
- B** 120°
- C** 180°
- D** 240°
- E** 300°

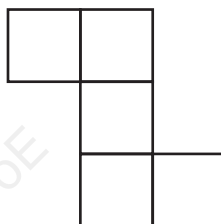
- 31 Vinayak's little brother tried to draw three different nets of a cube, but he got it wrong. He only drew five squares for each net, but a complete cube net has six squares.

Here are his three drawings:

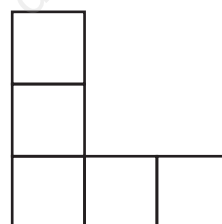
1



2



3

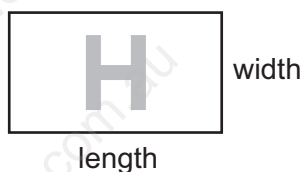


Vinayak wants to help, by adding **one more square** to each net to make a correct cube net. However, he is not sure if this is possible for all of the drawings.

Which of the three drawings can be made into complete cube nets by adding one square?

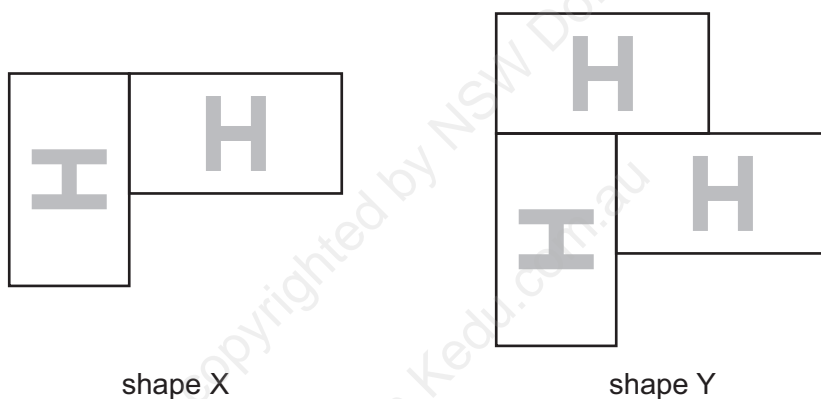
- A drawing 1 only
- B drawing 2 only
- C drawing 3 only
- D drawings 1 and 3 only
- E drawings 1, 2 and 3

32



Harry is making shapes out of identical rectangular cards with the letter H on.

He makes shape X, then adds another card to make shape Y, as shown.



[diagrams not to scale]

The perimeter of shape X is 64 cm and the perimeter of shape Y is 82 cm.

What is the **width** of each of Harry's rectangles?

- A 3 cm
- B 4 cm
- C 5 cm
- D 8 cm
- E 9 cm

33 Claudia makes a number pattern using these rules:

- Choose the first three numbers.
- After this, each number is the sum of the three numbers before it.

Here is Claudia's pattern with three missing numbers labelled X, Y and Z.

2, X, 0, Y, 6, Z

All the numbers are whole numbers.

What number does Z represent?

- A** 8
- B** 9
- C** 10
- D** 11
- E** 12

- 34** In a game, I collect stars and hearts.

I get points when I collect a star. The number of points for a star is always the same.

I get a different number of points when I collect a heart. The number of points for a heart is always the same.

If I collect 3 stars and 5 hearts, I get 27 points.



If I collect 5 stars and 7 hearts, I get 41 points.



How many points do I get if I collect 1 star and 1 heart?



- A** 7
- B** 12
- C** 14
- D** 24
- E** 50
- 35** How many whole numbers between 1 and 100 are multiples of 3, but are not multiples of 8?

You should include 3 itself.

- A** 21
- B** 25
- C** 27
- D** 29
- E** 33

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