THE NORTH LONDON INDEPENDENT GIRLS' SCHOOLS' CONSORTIUM

Group 1

YEAR 7
ENTRANCE EXAMINATION

MATHEMATICS

Friday 13 January 2017

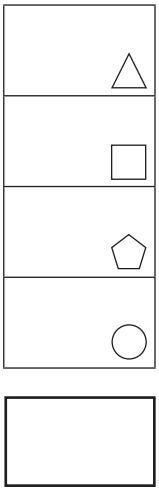
Time allowed: 1 hour 15 minutes

First Name: .....

Surname: .....

Instructions:

- Please write in pencil.
- Please try **all** the questions.
  If you cannot answer a question, go on to the next one.
- Do your rough working in the space near each question.
  Do not rub out your working as you may get marks for it.
- Calculators and rulers are NOT allowed.



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1. Work out $2017 + 1984$

Answer: .....

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2. Work out $7890 - 6996$

Answer: .....

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3. Work out 4653×7

Answer: .....

---

4. Work out $5256 \div 6$

Answer: .....

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5. Work out $\frac{4}{7}$ of 91

Answer: .....



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6. Which of these numbers is **not** equal in value to any of the others?

$\frac{4}{5}$ 0.8 80% $\frac{12}{15}$ 0.8%

Answer: .....

---

7. Given that $460 \times 130 = 59\,800$, write down the answers to the following:

(a) $46 \times 13 =$

Answer: .....

(b) $5.98 \div 0.46 =$

Answer: .....

---

8. Yesterday the temperature was $-4\,°C$ and today it is 7 degrees colder.

What is the temperature today?

Answer: .....°C

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9. Write the next number in the series:

88, 105, 122, 139, ...

Answer: .....

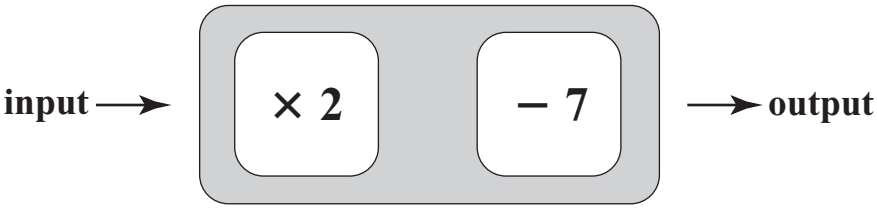
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10. Write down the number that is 100 less than 3048

Answer: .....

---

11. Lisa's function machine multiplies the input by 2 and then subtracts 7



If Lisa puts in 3, what is the output?

Answer: .....

---

12. Write down the number that is exactly half way between 37 and 63

Answer: .....

---

13. Write the mixed number $4\frac{1}{5}$ as a decimal.

Answer: .....

---

14. Sarah wrote down two 4-digit numbers.

2386 **3017**

Which number is closer to 2500?

Answer: .....

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15.

FRESH FRUIT

ORANGES – 45p each
LEMONS – 50p each

(a) Clement buys 9 lemons.

How much does he pay?

Answer: £ .....

(b) Clement spends £4.95 on buying oranges.

How many oranges does he buy?

Answer: .....

(c) After buying the oranges and lemons, how much change does he get from £10?

Answer: £ .....

---

16. Here is a sequence of numbers:

$$3, \quad 4\frac{2}{3}, \quad 6\frac{1}{3}, \quad 8, \quad 9\frac{2}{3} \quad .....$$

(a) How much is added on each time to get the next number?

Answer: .....

(b) What are the next two numbers to follow $9\frac{2}{3}$?

Answer: ..... and .....

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17. Karena and Rohan each think of a number between 1 and 10

(a) Karena multiplies her number by 5, subtracts 3 and gets an answer of 42

What is Karena's number?

Answer: .....

(b) Rohan squares his number and then divides it by 9
He gets a result of 4

What is Rohan's number?

Answer: .....

---

18. Zenab does three separate calculations, but leaves out the brackets in two of them.

$2 + 0 + 1 \times 7 = 21$ ☐

$2 + 0 + 1 + 7 = 10$ ☐

$2 + 0 \times 1 \times 7 = 14$ ☐

(a) Tick the box beside the calculation that does **not** need brackets.

(b) Put **one** set of brackets in each of the other two calculations so they are correct.

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19. In Year Six, 9 of the 20 girls play the piano.
12 children altogether in Year Six play the piano.

(a) How many boys in Year Six play the piano?

Answer: .....

5 boys in Year Six do not play the piano.

(b) How many children in Year 6 do not play the piano?

Answer: .....

(c) How many children are there in Year 6?

Answer: .....

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20. Three shops sell stickers.

BUY OUR STICKERS!	
shop A	36p per sheet
shop B	40p per sheet – 20% off total if you buy more than 4 sheets
shop C	45p per sheet – $\frac{1}{3}$ off total if you buy more than 4 sheets

(a) How much do I pay if I buy 4 sheets of stickers from Shop A?

Answer: £ .....

(b) I buy 10 sheets of stickers.

(i) At which shop will the stickers have the lowest cost?

Answer: shop .....

(ii) How much do I pay at this shop?

Answer: £ .....

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21. Three friends follow a recipe for making fruit smoothie.

fruit smoothie



Use three times as many raspberries as blackberries.

Add **two** strawberries.

(a) Ria makes a smoothie using 9 blackberries.

How many raspberries does she use?

Answer: .....

(b) Ami makes a larger smoothie.
She uses 50 pieces of fruit altogether.

How many blackberries does she use?

Answer: .....

Each raspberry weighs 4 g and each blackberry weighs 6 g.
Strawberries weigh less than 10 g.

(c) Evi makes a smoothie weighing 180 g.

How much does each strawberry weigh?

Answer: ..... g

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22. Damien has a packet of frozen peas weighing 200 g.
There are 750 peas in the packet.
He wants to know the mean (average) mass of one pea.

(a) Circle the calculation he must perform to find this out:

200 g + 750 750 − 200 g 200 g × 750

200 g ÷ 750 750 ÷ 200 g

(b) Estimate, to the nearest 10 g, the mass of 1000 peas.

Answer: ..... g

---

23. Janet lists the multiples of 6:

6 12 18 24 etc.

John lists the multiples of 7:

7 14 21 28 etc.

(a) What is the first number that is a multiple of both 6 and 7?

Answer: .....

(b) What is the smallest 3 digit number that is a multiple of 6?

Answer: .....

(c) What is the largest 3 digit number that is a multiple of 7?

Answer: .....

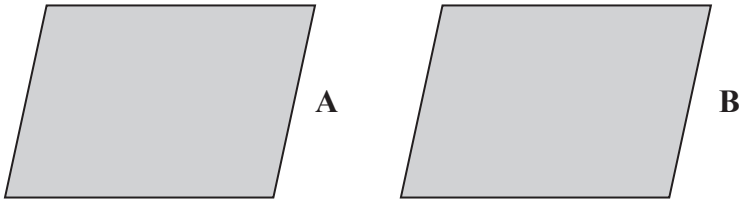
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24. Write 1.05 m in millimetres.

Answer: ..... mm

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25. Circle the transformation that could **not** map shape **A** onto shape **B**.



reflection translation rotation

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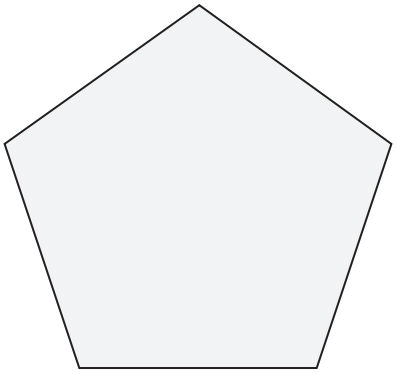
26. Joanne starts her homework at 16:55 and finishes 55 minutes later.

At what time does she finish?

Answer: .....

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27. Draw all the lines of symmetry on this regular shape.



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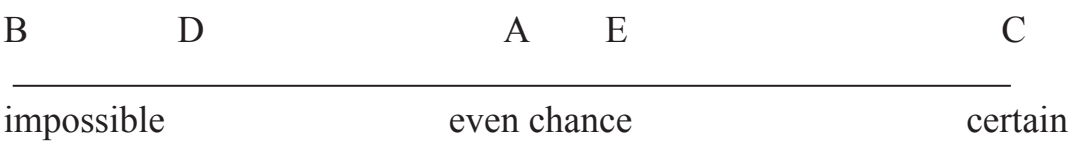
28. A rectangle has width 7 cm and length 14 cm.

Calculate the area of the rectangle.

Answer: ..... cm^2

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29. Five events are marked with letters on the likelihood scale below.



(a) Which letter corresponds to each of the following statements?

(i) You will fly to the Moon today. letter .....

(ii) Christmas Day will be on the 25th December next year. letter .....

(b) Which letter corresponds to each of the following statements?

(i) You toss a fair coin and get a head. letter .....

(ii) You will score a six when you roll a die. letter .....

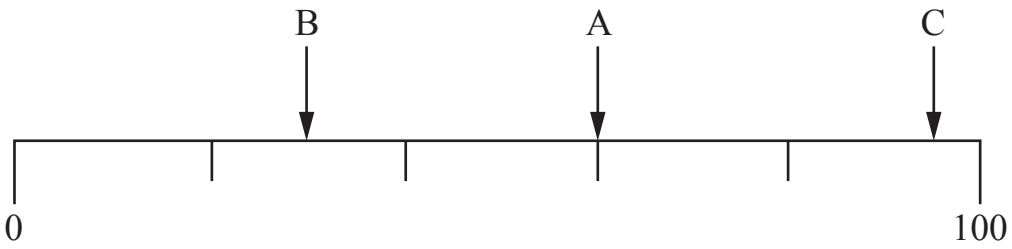
(c) Which letter corresponds to this statement?

You will get a total of more than 6 when you roll two dice and add the scores.

letter .....

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30. Write down each number indicated on the scale below.



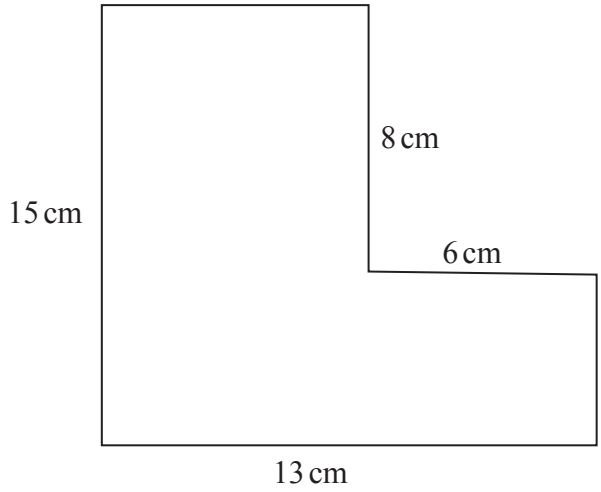
Answer: A .....

Answer: B .....

Answer: C .....

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31. Find the perimeter of the following shape.



Answer: ..... cm

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32. A jug contains 3 litres of orange squash.
A glass contains 125 ml.

How many glasses could be filled completely from one jug?

Answer: ..... glasses

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33. Gita got the following marks in her ten weekly mental maths tests.

7 8 10 9 8 8 10 7 8 9

What is her mean (average) score?

Answer: .....

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34. Jane and Lucy hold a piece of ribbon measuring 2.64 m long.

(a) How long is the ribbon to the nearest tenth of a metre?

Answer: ..... m

Jane and Lucy then cut the ribbon into six equal pieces.

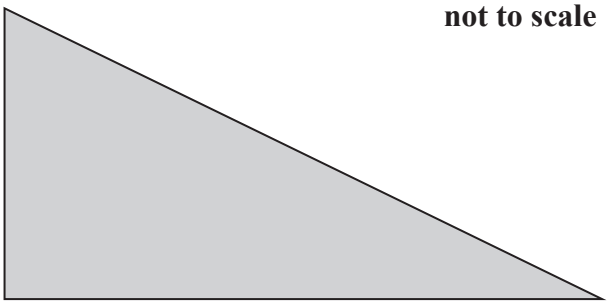
(b) How long is each piece?

Answer: ..... m

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35. The area of a triangle is 120 cm^2.

not to scale



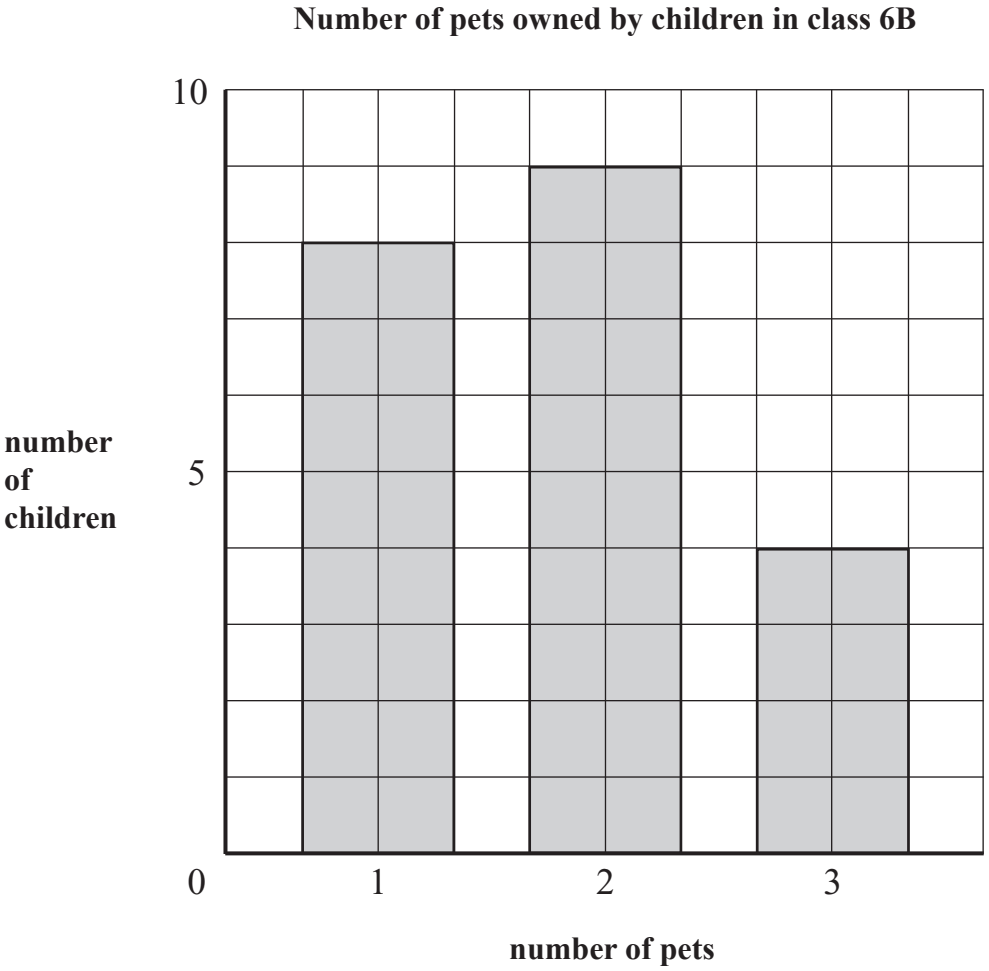
The height of the triangle is 12 cm.

What is the length of the base?

Answer: ..... cm

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36. The bar chart below shows the numbers of pets owned by children in class 6B.



(a) How many children are in class 6B?

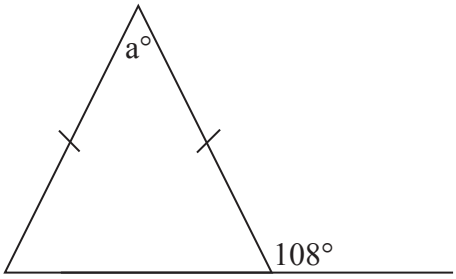
Answer: .....

(b) What is the modal number of pets?

Answer: .....

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37. Find the value in degrees of the angle marked a° at the top of the isosceles triangle drawn below.



Answer: ..... °

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38. The 57 pupils in Years 5 and 6 were asked about their favourite crisps.
The table below shows the results.

	salt and vinegar	cheese and onion	Total
Year 5		12	25
Year 6	14		
Total			57

Some of the numbers are missing.

(a) Fill in the missing numbers.

(b) What percentage of the pupils in Year 5 like cheese and onion?

Answer: ..... %

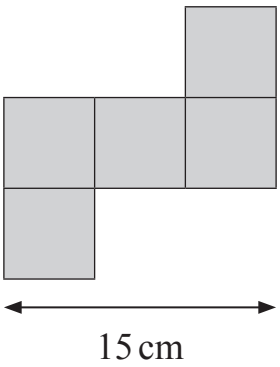
(c) What fraction of all the pupils like salt and vinegar?

Write your answer in its lowest terms (simplest form).

Answer: .....

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39. A pentomino is made up of 5 equal-sized squares.



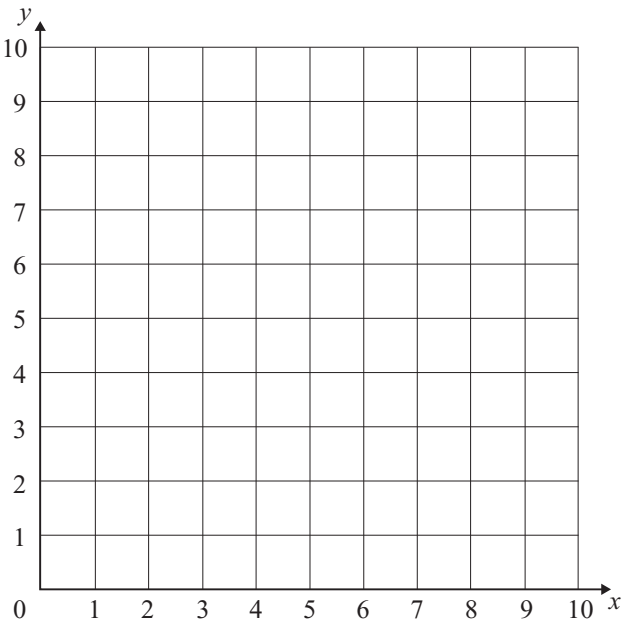
What is the area of the pentomino?

Answer: ..... cm^2

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40. *ABCD* is a square with vertices (corners) at the points with co-ordinates *A* (0, 5), *B* (3, 1), *C* (?, ?) and *D* (4, 8)

Write down the co-ordinates of vertex (corner) *C*.

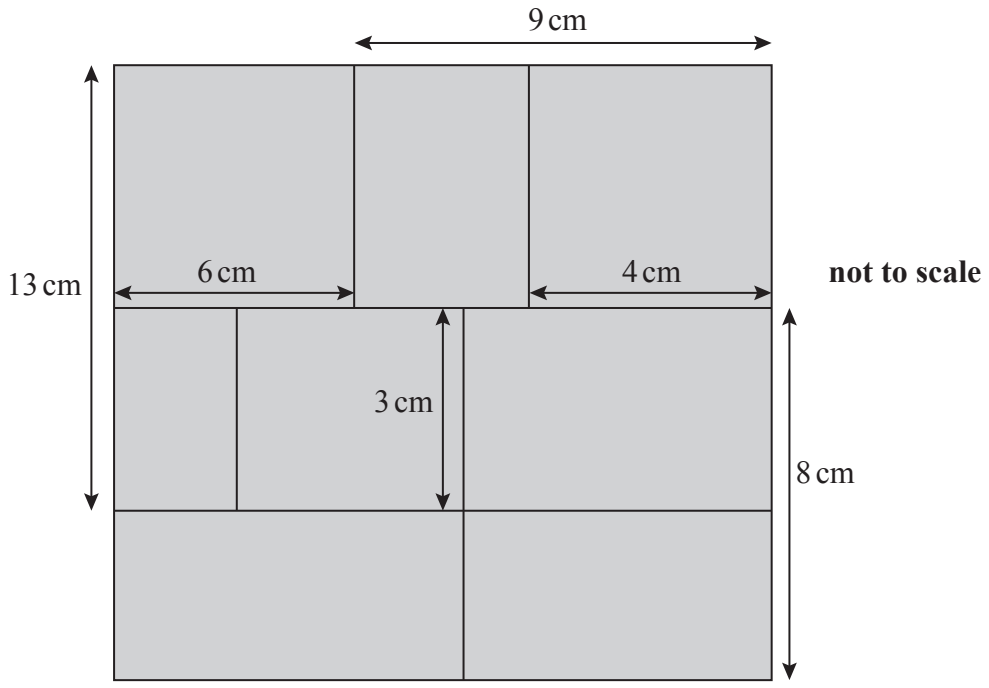


Answer: *C* (..... , ...)

You may use this grid to help you.

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41. Eight rectangles fit exactly onto a piece of card, as shown below.



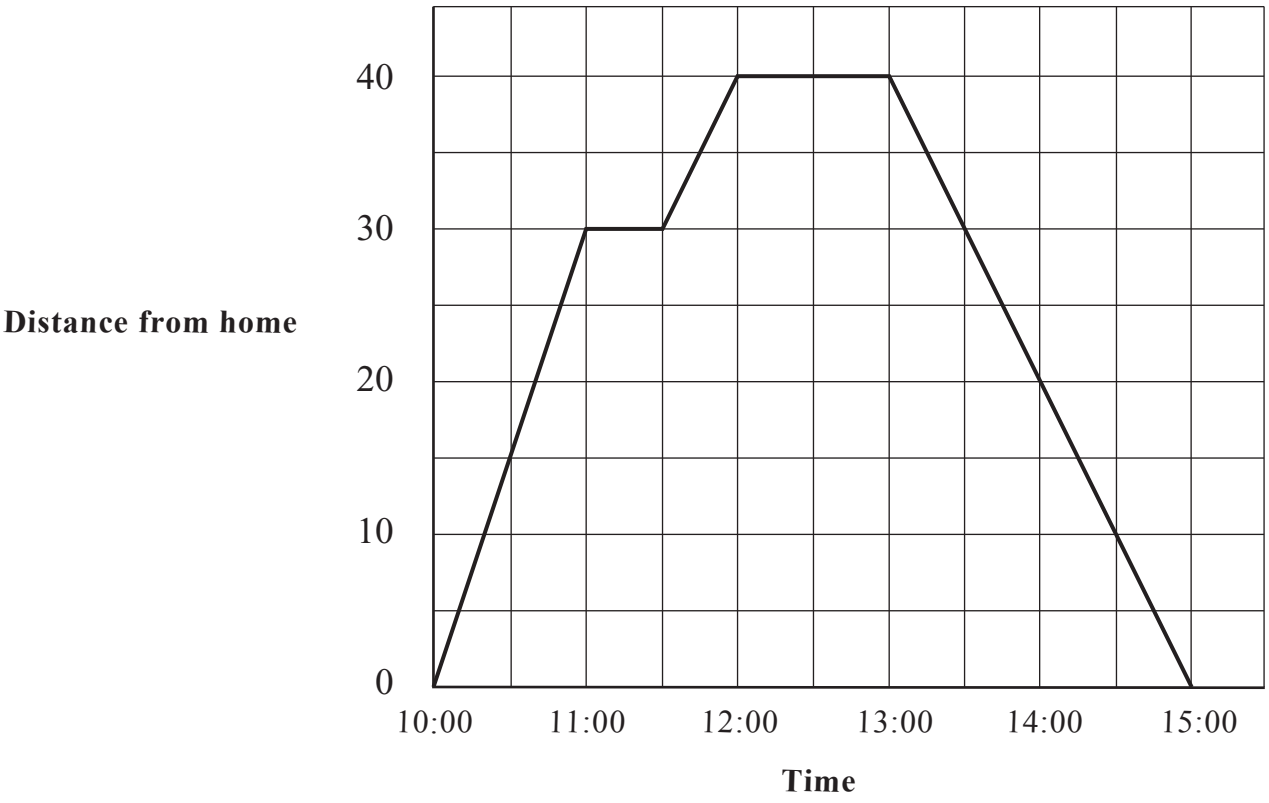
What are the dimensions (length and width) of the piece of card?

Answer: ..... cm by ..... cm

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42. Max cycled to his Grandmother's house for lunch and then returned home.

The travel graph below shows his journey.



On the way there, he stopped to buy sandwiches for the lunch.

(a) At what time did he stop to buy sandwiches?

Answer: .....

(b) How many minutes did Max stay at his Grandmother's house?

Answer: ..... minutes

On the way back home, he cycled without stopping.

(c) How long did Max spend cycling that day?

Answer: ..... hours

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43. *Pizza Palace* prices are shown in the table below.

base	price (£)	topping	price (£)
small thin	1.00	mushroom	0.45
small thick	1.20	onion	0.20
medium thin	1.50	pepperoni	0.40
medium thick	1.70	ham	0.50
large thin	2.00	tomato	0.30
large thick	2.20	peppers	0.25

Myra orders a pizza.

She asks for a medium thin pizza with 4 toppings: mushroom, ham, tomato and peppers.

(a) What is the cost of Myra's pizza?

Answer: £ .....

Claudia orders a pizza with a large, thick base and three different toppings.

The cost of Claudia's pizza is £3.45

(b) What did Claudia order?

Answer:

base large thick

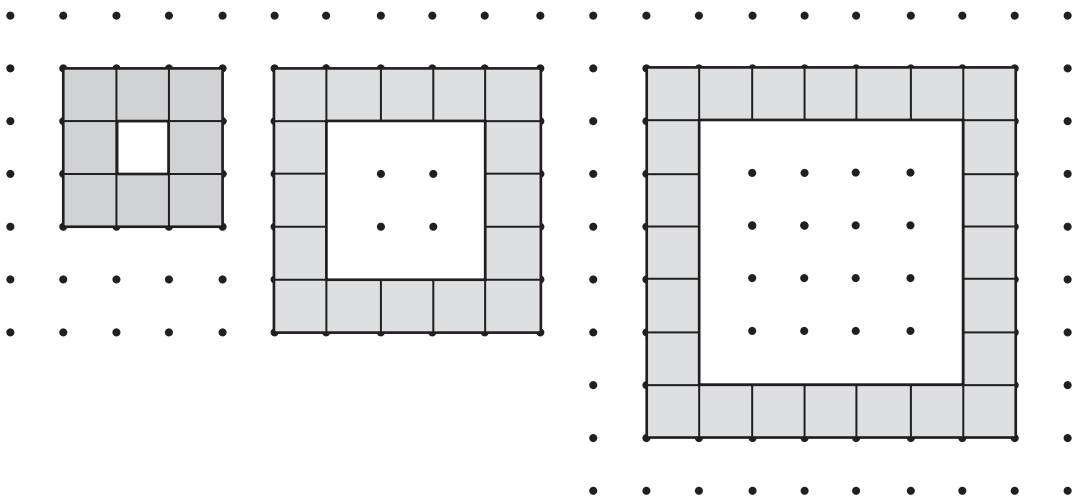
topping 1 .....

topping 2 .....

topping 3 .....

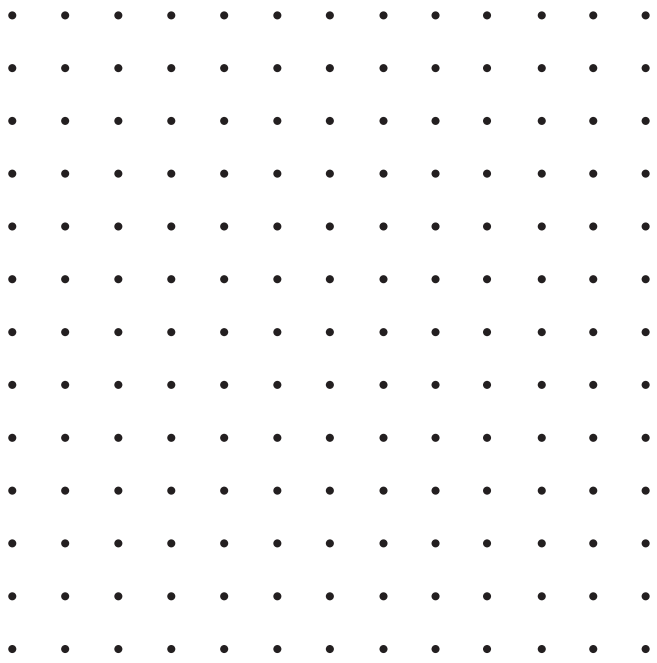
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44. The diagram below shows patterns drawn on a square dotted grid.



pattern 1 **2** **3**

(a) On the grid below, draw **pattern 4**



pattern 4

(b) Complete the table below.

pattern number	**1**	**2**	**3**	**4**	**5**
number of small squares	8	16			
perimeter (units)	16				

(c) What is the number of small squares in pattern 20?

Answer: .....

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45. When Melissa was 8 years old, her mother was 32

Now, Melissa's mother is three times as old as Melissa.

How old is Melissa now?

Answer: .....

---

46. Morgan and Gina are making up puzzles for each other.

Morgan has written down a number pattern.

1 8 16 23 46 53 .....

(a) What number should come next?

Answer: .....

Gina is thinking of a decimal number between 1 and 2

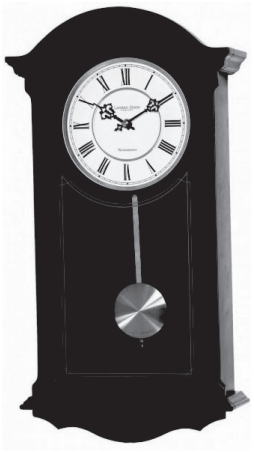
When she multiplies her number by 3, she gets the same result as when she adds it to 3

(b) What number is Gina thinking of?

Answer: .....

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47. A 12-hour clock chimes every hour on the hour.



It chimes once at 1 o'clock, twice at 2 o'clock, 3 times at 3 o'clock and so on, up to 12 chimes at 12 o'clock.

(a) How many chimes will the clock make in a 24-hour day?

Answer: .....

Anne starts listening at 3.45 p.m. and counts the chimes.

After a while, she has counted 30 chimes altogether.

(b) What time could it be?

Circle the correct time.

7.50 p.m. 8.20 p.m. 9.00 p.m.

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48. Starting with a 2-digit number, Wendy applies the rule

double the tens digit and add the units digit

repeatedly until her result is a single-digit number.

examples:

45 $\xrightarrow{(4 \times 2) + 5}$ 13 $\xrightarrow{(1 \times 2) + 3}$ 5 (2 steps)

17 $\longrightarrow$ 9 (1 step)

99 $\longrightarrow$ 27 $\longrightarrow$ 11 $\longrightarrow$ 3 (3 steps)

(a) Apply the rule to the following starting numbers:

(i) 20

Answer: 20 → .....

(ii) 21

Answer: 21 → .....

(iii) 22

Answer: 22 → .....

(iv) 28

Answer: 28 → .....

(b) List the starting numbers between 30 and 50 (inclusive) which give the single digit result 4

Answer: .....

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The single digit result zero is not possible.

(c) Which other single digit result is not possible?

Answer: .....

(d) What is the next number after 73 to give the single digit result 9?

Answer: .....

---

49. There are 4 prime numbers between 10 and 20

(a) Write these prime numbers down.

Answer: .....

(b) Janice adds together two of these prime numbers to get a square number.

What square number does she get?

Answer: .....

(c) Angela subtracts one of these prime numbers from another to get a cube number.

What cube number does she get?

Answer: .....

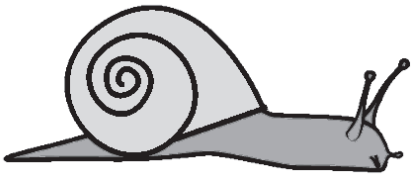
(d) Cecilia multiplies two of these prime numbers together to make 323

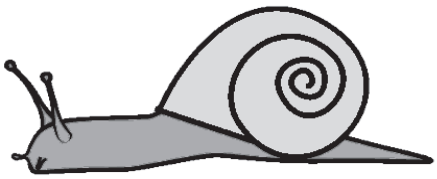
Which two numbers does she multiply together?

Answer: ..... and .....

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50. Two snails, Alfie and Brian, are 1 metre apart and start sliding towards each other at the same time.





Alfie slides 8 mm every minute.

Brian slides 12 mm every minute.

(a) After how many minutes will the snails meet?

Answer: ..... minutes

(b) How much further than Alfie will Brian have moved?

Answer: ..... cm

(Total: 100 marks)

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