HIGH 5
The Junior Mathematicians Challenge
PHASE 1 – QUALIFYING TEST

question no.	1	2	3	4	5	6	7	8	9	10
marks										

question no.	11	12	13	14	15	16	17	18	19	20
marks										

question no.	21	22	23
marks			

SCORE OBTAINED	

Read the instructions carefully before the tests starts.

- This test is **1 hour** long.

- The use of calculator and protractor is not permitted during this test.

- Read each question carefully and attempt all questions.

- You do not need to answer the questions in order. Start from whichever question you want. If you cannot do one of the questions, go on to the next one.

- After attempting all the questions, go back and check your work.

- Any students caught cheating or copying will be disqualified.
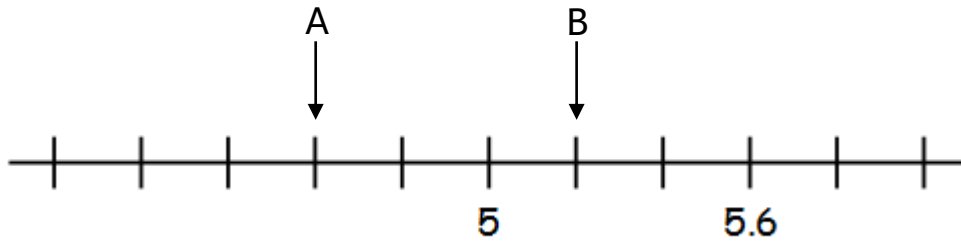
Do your best!

Tick (✓) the correct answer in each question.

Each question carries **2 points**.

1. Look carefully at the number line below.
    Work out the **difference** between **A** and **B**.

a. 0·3 ☐

b. 0·6 ☐

c. 3 ☐

d. 6 ☐

2. **Both 30** and **45** are **exactly divisible** by:

a. 6 ☐

b. 9 ☐

c. 15 ☐

d. 30 ☐

3. In the grid below the three numbers in each horizontal row and vertical column **add up to 15**.

Work out the value of the ▲.

▲+▲	1	8
7	5	▲
2	▲ + ▲ + ▲	4

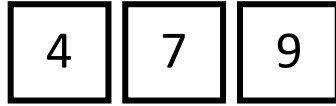a. 2 ☐

b. 3 ☐

c. 6 ☐

d. 9 ☐

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4. **One taxi** can take **no more than 4 passengers** at a time.
What is **the least number of taxis** needed to carry a group of **23 passengers**?

a. 4 ☐

b. 5 ☐

c. 6 ☐

d. 7 ☐

5. How many different 3-digit numbers can you make using these 3 number cards?

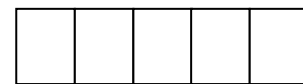Each number card can be used once in every number you make.

| 4 | 7 | 9 |

a. 3 ☐

b. 4 ☐

c. 6 ☐

d. 9 ☐

6. Mark has a chocolate bar. He gives $\frac{1}{5}$ of it to his sister Maria.

Then he gives $\frac{1}{2}$ of the remaining part to his friend Max and he eats the rest.

What fraction of the chocolate bar does he eat?

a. $\frac{1}{2}$ ☐

b. $\frac{1}{4}$ ☐

c. $\frac{2}{4}$ ☐

d. $\frac{2}{5}$ ☐

the chocolate bar

7. 13 multiplied by itself is equal to:

a. 26 ☐

b. 39 ☐

c. 166 ☐

d. 169 ☐

8. **6 adults take 2 days** to paint the school hall.
    How many adults are needed to paint the same school hall in
    1 day, if they all paint at the same speed?

    a. 2 ☐

    b. 3 ☐

    c. 8 ☐

    d. 12 ☐

9. The doctor tells mum to give her son **15 m𝓵** of medicine **three times**
    a day for **7 days**.
    How much medicine will he take in all?

    a. 45 m𝓵 ☐

    b. 105 m𝓵 ☐
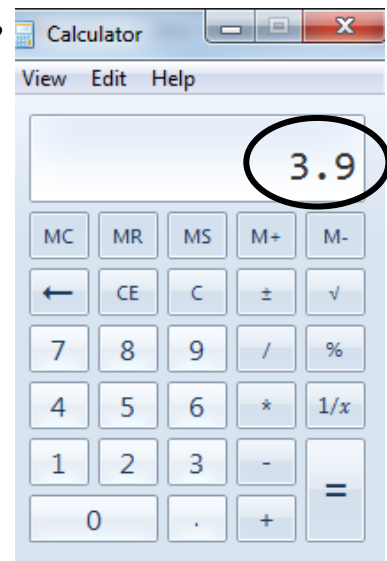
    c. 315 m𝓵 ☐

    d. 450 m𝓵 ☐

10. On Saturday Martina fell asleep at **10:30 pm**.
    The next day she woke up at **8:20 am**.
    Her older sister Tania slept **1 hour and 15 minutes** less than
    Martina.
    How long did Tania sleep?

    a.   2 hours 10 minutes ☐

    b.   8 hours 35 minutes ☐

    c.   55 minutes ☐
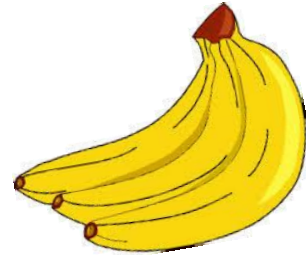
    d.   13 hours 50 minutes ☐

11. What could the 3.9 on this calculator mean?

    a.   3 kg 9 g ☐

    b.   39 mm ☐

    c.   €3·90 ☐

    d.   3 ℓ 90 mℓ ☐

12. Bananas are sold at **€1·50 cent** per **1 kg**.
    What is the cost of **2·7 kg** of bananas?

    a.   €3·70   ☐

    b.   €4·05   ☐

    c.   €4·50   ☐

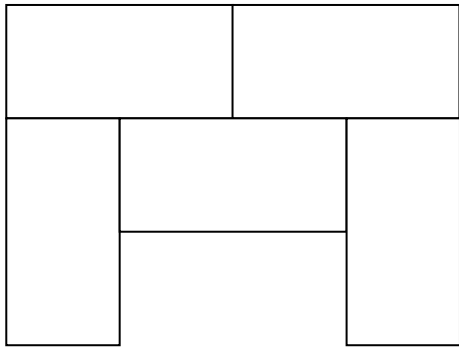   d.   €7·29   ☐

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13. **Three identical squares** are put side-by-side to form a **rectangle**.
    The **perimeter** of this rectangle is **48 cm**.
    What is the **perimeter** of the **each square**?

    a.   12 cm   ☐

    b.   16 cm   ☐

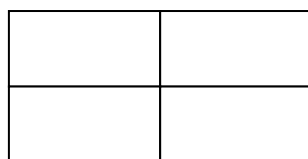   c.   24 cm   ☐

    d.   36 cm   ☐

14. The figure below is made up of **5 identical rectangles**.
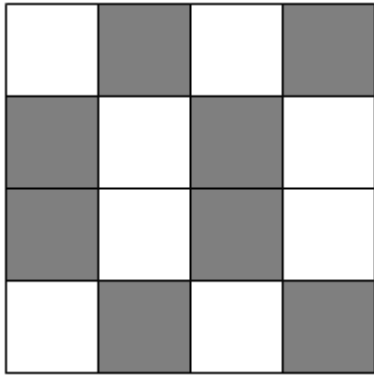   What is the **least number of such rectangle(s)** that must be **added** to the figure **to make a square**?

a. 1 ☐

b. 3 ☐

c. 4 ☐

d. 7 ☐

15. How many **rectangles** can you see in the figure below?

a. 9 ☐

b. 7 ☐

c. 6 ☐

d. 4 ☐

16. How many **lines of symmetry** does the picture below have?
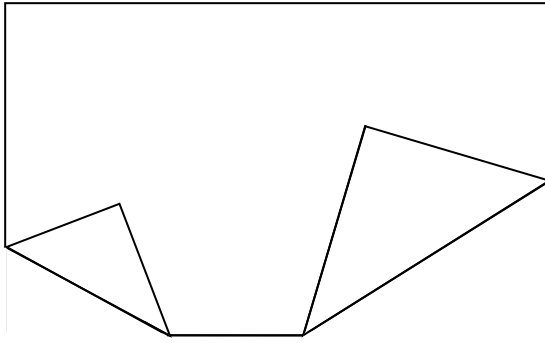
a. 0

b. 1

c. 2

d. 3

17. Jacob is facing **South East**.
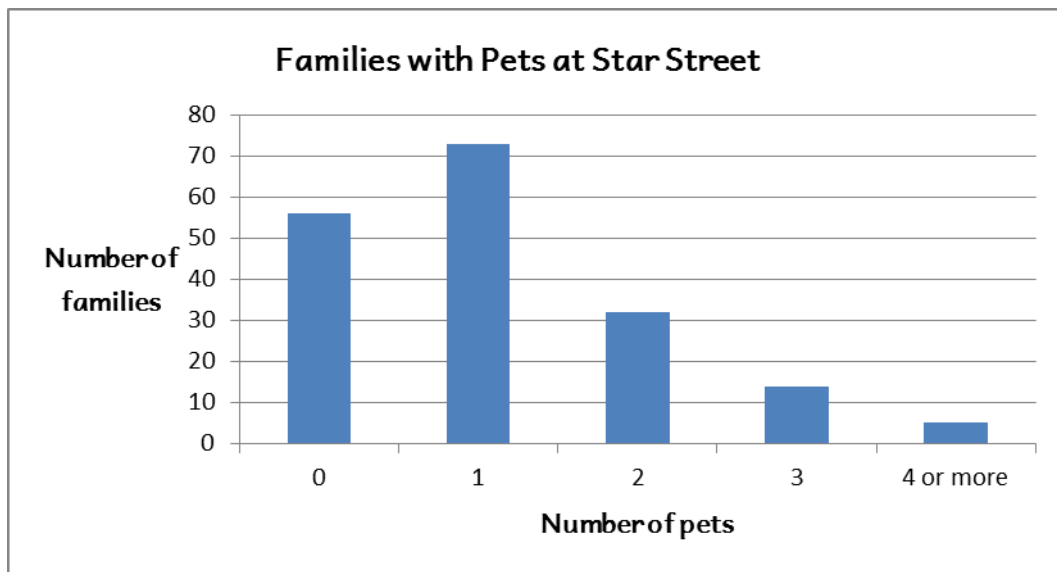If he turns **315° clockwise**, what direction will he face?

N

a. E

b. SE

c. W

d. NW

18. The figure below shows a rectangular piece of paper.
This paper is folded at two of the corners.
How many right angles are there on the figure below?

a. 2   ☐

b. 4   ☐

c. 6   ☐

d. 8   ☐

19. There are **180 families** in Star Street.

The bar chart below shows the number of pets in every house.

Families with Pets at Star Street

How many families in Star Street have **less than 3 pets** in their family?

a.   3

b.   14

c.   161

d.   175

Section B
Show your working.
Each question carries **3 points**.

20. The table below shows the points won by **5 different teams**.
Every team has played **once against each other**.
There was a winner in every game.

Teams get **3 points for a win**.

Teams	A	B	C	D	E
Points	9	0	9	6	6

Did any of the teams **win all the games**?
Tick (✓) the correct answer.

Yes ☐   No ☐
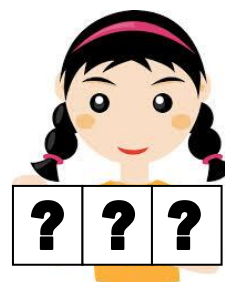
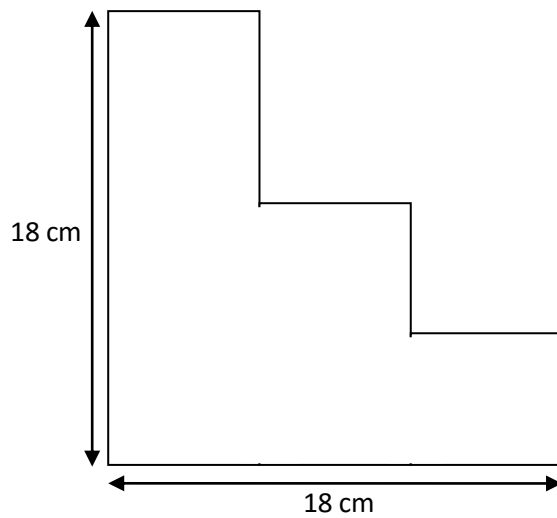Give a reason for your answer.

_____

_____

_____

21. My number is a **three-digit number**.
All the digits are odd and **add up to 13**.
My number is **divisible by 5**.

What could my number be?

22. What is the **perimeter** of this shape?

18 cm

18 cm

cm

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23. The Head of School of SciMath school buys **some tablets** and **some printers** for the school.

She spent a **total** of **€2046**.

A printer costs two times as much as a tablet.

How much money does she spend on the printers?

€

End of test