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HIGH 5
The Junior Mathematicians Challenge
Final Test
5th April 2017



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	
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WORKING TIME	
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to be filled in by invigilator



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!

Section A

Tick (✓) the correct answer in each question.

Each question carries 2 points.

1. Which fraction is **equivalent** to $\frac{8}{6}$?

a. $\frac{2}{6}$

b. $\frac{10}{8}$

c. $\frac{12}{9}$

d. $\frac{19}{12}$

2. How many whole numbers **between 3 and 101** are **even, but not divisible by 10**?

a. 39

b. 40

c. 44

d. 49

3. $50 \cdot 8 - 4 \cdot 27$ is equal to:

a. $45 \cdot 63$

b. $46 \cdot 67$

c. $46 \cdot 53$

d. $55 \cdot 07$

4. Work out the sum of 22 ones, 20 tens, 20 hundreds and 2 thousands?

a. 64

b. 2242

c. 2422

d. 4222

5. 625 is a square number.

One of the numbers below is also a square number.

Tick (✓) the square number.

a. 650

b. 676

c. 678

d. 700

6. Tick (✓) all the calculations below that give 3 as an answer.

a. $\frac{1}{2}$ of 6

b. $\frac{1}{3}$ of 3

c. $6 \div 2$

d. $1 \div 3$

7. Think about the **smallest 4-digit number** you can make using **four different digits**.

What **digit** is in the **tens place**?

- a. 0
- b. 2
- c. 3
- d. 4
-

8. Yesterday Klara slept at **23:50**.

Today she woke up at **07:20**.

How long did Klara sleep?

- a. 16 hours 30 minutes
- b. $8 \frac{1}{2}$ hours
- c. 8•3 hours
- d. 7 hours 30 minutes
-

9. When a jar of tomato sauce is two **thirds full**, its mass (weight) is **770 g**.

When it is only **one third full**, its mass is **535 g**.

What is the **mass of this jar** of tomato sauce when **full**?

- a. 1•005 kg
- b. 1•155 kg
- c. 1•305 kg
- d. 1•605 kg
-

10. What is the **largest number of days** possible in **three consecutive months**? (e.g. March, April and May are consecutive months)


- a. 90 days
 - b. 91 days
 - c. 92 days
 - d. 93 days
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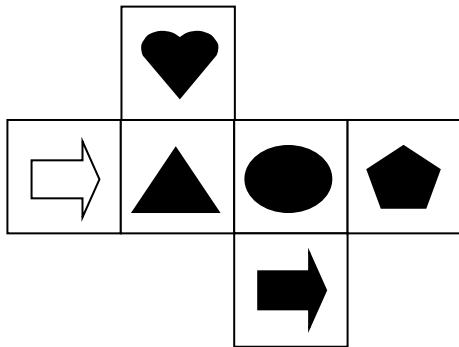
11. The **sum of ages** of **four children** Mia, Zack, Ben and Sofia is **32 years**.
Sofia is five years older than Zack.
Ben is three years younger than Sofia.
Mia is the youngest and she is 4 years old.
How old is **Zack**?





- a. 8 years
 - b. 7 years
 - c. 6 years
 - d. 5 years
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12. Which of the following is the same as **4 litres 5 millilitres**?

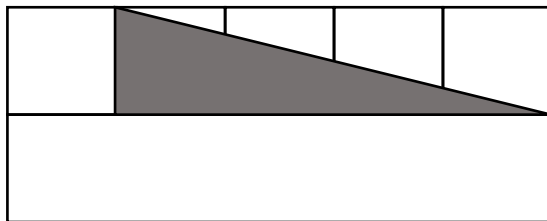
- a. 4•5 litres
 - b. 4•05 litres
 - c. 45 millilitres
 - d. 4005 millilitres
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13. Hannah folded this net to make a **cube**.
Which **shape** is **opposite** the  when the net is folded?



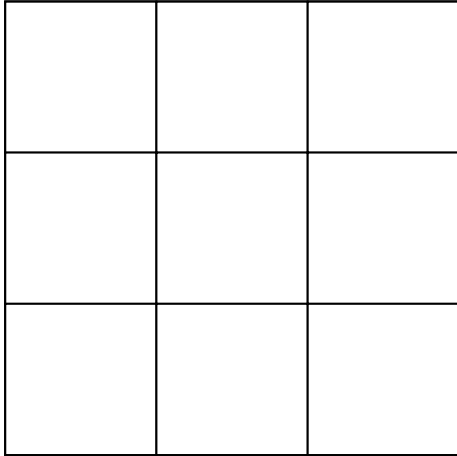
- a. 
- b. 
- c. 
- d. 

14. **One half** of the rectangle below is divided into **5 equal parts**.
Then a **triangle** is **drawn and shaded**.
What **fraction of the whole rectangle** is shaded?



- a. $\frac{1}{4}$
- b. $\frac{4}{5}$
- c. $\frac{2}{5}$
- d. $\frac{1}{5}$

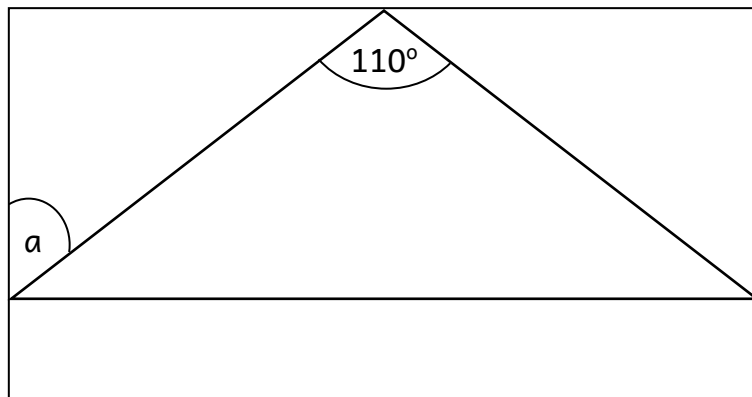
15. Work out the sum of the areas of all 14 squares on the diagram below.
Use your ruler to measure the sides.



actual size

- a. 24 cm^2
- b. 36 cm^2
- c. 72 cm^2
- d. 136 cm^2

16. The diagram shows an **isosceles triangle** inside a **rectangle**.
What is the size of **angle a**?



not actual size

- a. 35°
- b. 55°
- c. 70°
- d. 110°

-
17. Through how many **right angles** does the **minute hand of a clock** turn in **90 minutes**?

- a. 4
- b. $4\frac{1}{2}$
- c. $5\frac{1}{2}$
- d. 6

18. What is the **product** of the missing numbers?

0, 1, 3, 6, 10, 15, ? , 28, ? , 45, 55, 66

a. 57

b. 189

c. 510

d. 756

19. Monica pays **€40** to for **five presents**.

Present A and Present B cost €20 altogether.

Present B and Present C cost €18 altogether.

Present C and Present D cost €16 altogether.

Present D and Present E cost €10 altogether.

What is the cost of Present B?



a. €6

b. €8

c. €10

d. €12

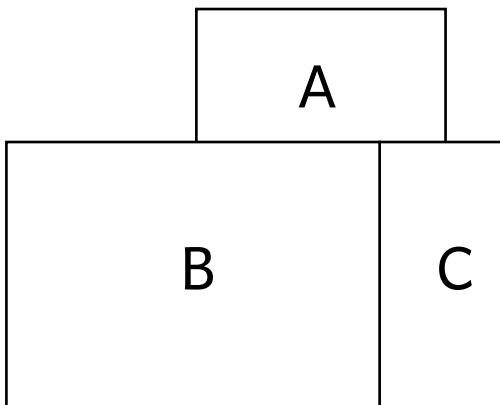
Section B

Show your working.

Each question carries 3 points.

20. I am a **3-digit** number.
The **sum of my 3 digits** is **9**.
I am a **common multiple** of **5** and **6**.
What is my **smallest possible value**?

21. The figure below is made up of **3 rectangles, A, B and C**.
Rectangle A has a length of **4 cm** and a width of **2 cm**.
Rectangle B has a length of **6 cm** and a width of **4 cm**.
Rectangle C has a length of **2 cm** and a width of **4 cm**.
Work out the **perimeter** of the figure below.



not actual size

cm

22. Nina buys a ribbon that is **90 cm** long.

She cuts the ribbon in **two pieces**.

The **length of the longer piece is three times as long as the shorter piece**.

Work out the **length of each piece**.

The longer piece is _____ cm long.

The shorter piece is _____ cm long.

23.

$$\mathbf{ABB + ABB = DCBA}$$

In the addition sum above each letter represents a **different non-zero digit**.

What **4-digit number** does DCBA represent?

The **4-digit number** is

End of test