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HIGH 5
 The Junior Mathematicians Challenge
Final Test
 27th March 2019



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 **smaller than $\frac{1}{2}$ but larger than $\frac{1}{3}$** ?

a. $\frac{2}{3}$

b. $\frac{1}{4}$

c. $\frac{1}{6}$

d. $\frac{5}{12}$

2. How many **4-digit even numbers** can we write using **1, 2, 3 and 4**?

Note: No digit is repeated within any of the 4-digit numbers.

a. 6

b. 8

c. 12

d. 24

3. Which one of the numbers below can be the **difference between two consecutive square numbers**?

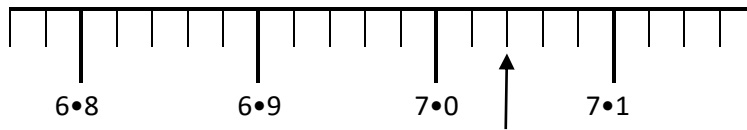
a. 2

b. 3

c. 4

d. 10

4. What number does the **arrow** show?



- a. 7.02
- b. 7.2
- c. 7.04
- d. 7.4

5. There are 27 students in a Year 6 class.

- 19 of them have brown hair
- 12 have brown eyes
- 7 have both brown hair and brown eyes

How many students have **neither brown hair nor brown eyes**?

- a. 3 students
- b. 11 students
- c. 20 students
- d. we cannot tell

6. $62\blacktriangle$ is a 3-digit number which is **exactly divisible** by 12.

Which digit does \blacktriangle represent?

- a. 2
- b. 3
- c. 4
- d. 6

7. Max forms a sequence of numbers by always adding the same number to make the next number in the sequence.

The 7th number in this sequence is 73.

The 12th number is 118.

What is the **first number** in the sequence?

a. 5

b. 9

c. 19

d. 38

8. Mum leaves home at **7:15 a.m.** to go to work.

She returns home at **2:45 p.m.**

For how long was mum away from home?

a. 4 hours 30 minutes

b. 5 hours 30 minutes

c. 7 hours 30 minutes

d. 8 hours 30 minutes

9. How many **seconds** are there in **3 hours**?

a. 180 seconds

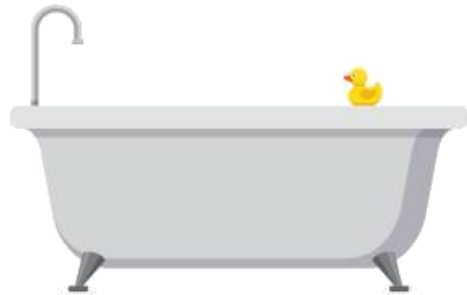
c. 1080 seconds

b. 1800 seconds

d. 10800 seconds

10. The best estimate for the **capacity of a bathtub** is:

- a. 10 litres
- b. 100 millilitres
- c. 100 litres
- d. 10000 litres



11. There are **5 Fridays** in a particular month.
The **first** and the **last day** of the month are not Fridays.
What **day** is the **last day** of the month?

- a. Monday
- b. Tuesday
- c. Saturday
- d. Sunday



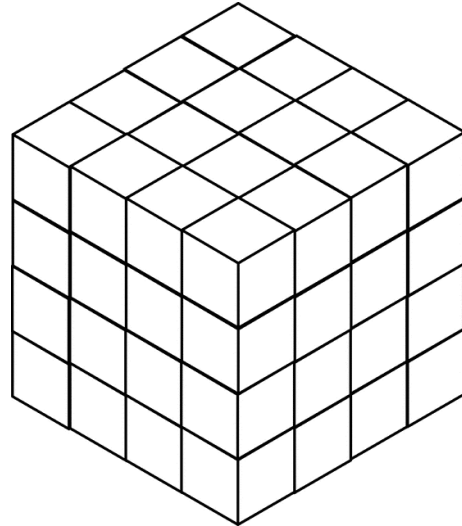
12. Kim has some ribbon.
She uses $\frac{1}{3}$ of the ribbon to decorate a present.
She has **3.24 m ribbon** left after decorating the present.
How long is the piece of ribbon Kim uses to decorate the present?

- a. 1.08 m
- b. 1.62 m
- c. 6.48 m
- d. 9.72 m



13. Hannah makes the **large cube** in the picture below with **smaller cubes**.
All small cubes are of equal size.
How many **small cubes** does Hannah use?

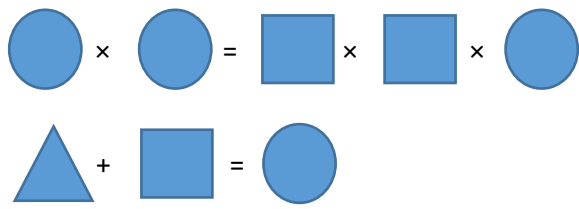
- a. 44 cubes
- b. 48 cubes
- c. 64 cubes
- d. 68 cubes



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14. $\frac{3}{4}$ of a cake is shared equally by 12 children.
What fraction of the cake does each child get?

- a. $\frac{1}{12}$
- b. $\frac{9}{12}$
- c. $\frac{1}{18}$
- d. $\frac{1}{16}$

15. Look carefully at the diagram below.



Which of the statements below is correct?

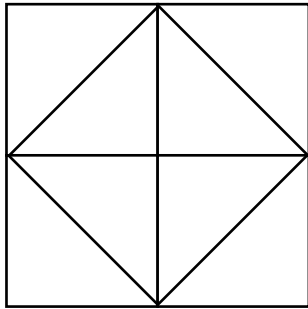
a. $\text{Square} + \text{Square} = \text{Circle}$

b. $\text{Circle} < \text{Triangle}$

c. $\text{Circle} \div \text{Square} = \text{Square}$

d. $\text{Square} > \text{Circle}$

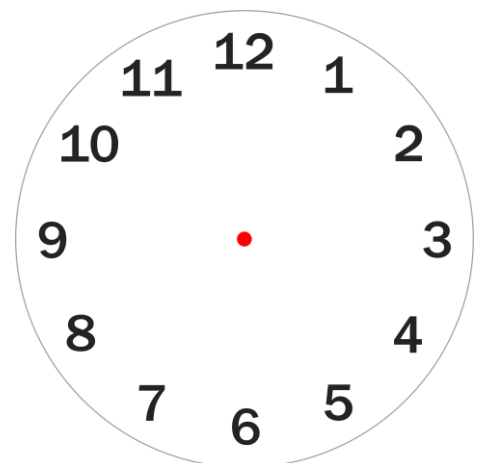
16. How many **squares** are there in this diagram?



- a. 4 squares
- b. 5 squares
- c. 6 squares
- d. 12 squares

17. Work out the **size** of the **angle** between the **minute hand** and the **hour hand** when it is **half past 1 (01:30)**.

- a. 129°
- b. 135°
- c. 150°
- d. 165°



18. Five children have **32 collection cards in total.**

Each of them has a different number of cards.

What is the **greatest possible number of cards** that the child with the least cards could have?

a. 2

b. 3

c. 4

d. 5

19. Lea has **€60** in her money box.

There are **only 50c and 20c coins** in Lea's money box.

The **amount of 50c coins is double the amount of 20c coins.**

How many 20c coins are in the money box?

a. 30

c. 60

b. 50

d. 100

Section B

Show your working.

Each question carries 3 points.

20. **Team Alpha, Team Beta, Team Delta, Team Gamma and Team Epsilon** are participating in a tournament.

Each team will play against every other team once.

Teams have already played some games as shown in the table below.

Team Name	Games played already
Alpha	4 games
Beta	?
Delta	4 games
Gamma	2 games
Epsilon	3 games

How many games has Team Beta played already?

games

21. **Tim adds 11 consecutive numbers.**

Their total is 231.

Which is the largest number Tim adds?

22. **SPOT x 9 = TOPS**

S =

P =

O =

T =

23. What is the **greatest possible area** of a rectangle with perimeter equal to 80 cm?

cm²

End of test