HIGH 5

The Junior Mathematicians Challenge

Qualifying Test

28th November 2018

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	

DIRECTORATE FOR LEARNING AND ASSESSMENT PROGRAMMES
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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**.

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1. **Work out €405·60 ÷ 8**

a. €5·70 ☐

b. €50·07 ☐

c. €50·70 ☐

d. €57 ☐

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2. How many integers are **greater than 14** and **less than 341**?

Note: An integer is a number which is not a fraction; a whole number.

a. 325 ☐

b. 326 ☐

c. 327 ☐

d. 328 ☐

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3. In order to share **106 sweets** equally among **9 children** we would need another:

a. 1 sweet ☐

b. 2 sweets ☐

c. 7 sweets ☐

d. 8 sweets ☐

4. **Tick (✓)** the statement which is **always true.**

a. Any square number has an even number of factors. ☐

b. When you add two odd numbers you get an odd number. ☐

c. A four-sided shape is called a rectangle. ☐

d. All squares are rectangles. ☐

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5. $\frac{1}{\square} = 0{\cdot}02$

a. 2 ☐

b. 20 ☐

c. 50 ☐

d. 100 ☐

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6. **72 × 99** is the same as _____ .

a. (72 × 98) + 1 ☐

b. (72 × 100) - 1 ☐

c. (72 × 100) - 72 ☐

d. (72 × 100) - 99 ☐

7. Study the pattern in the triangle below carefully.

```
                1
              1   1
            1   2   1
          1   3   3   1
        1   4   □   4   1
      1   5  10  10   5   1
    1   6  15  20  15   6   1
```

One of the numbers in the pattern is covered by *a* □ .

Which number is it?

a. 3 ☐

b. 4 ☐

c. 5 ☐

d. 6 ☐

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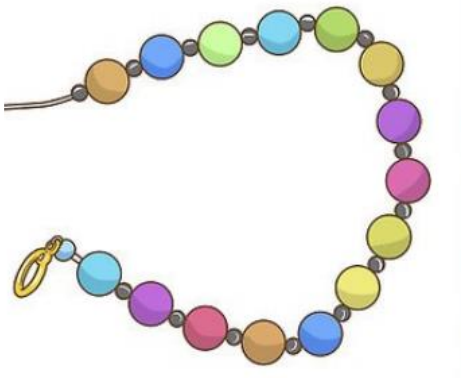
8. Mia has **3 metres of string**, **60 beads** and **6 clasps**.
She uses **30 cm of string**, **15 beads** and **1 clasp** to make **1 bracelet**.
If Mia makes all her bracelets in **exactly the same way**, how many bracelets can she make?



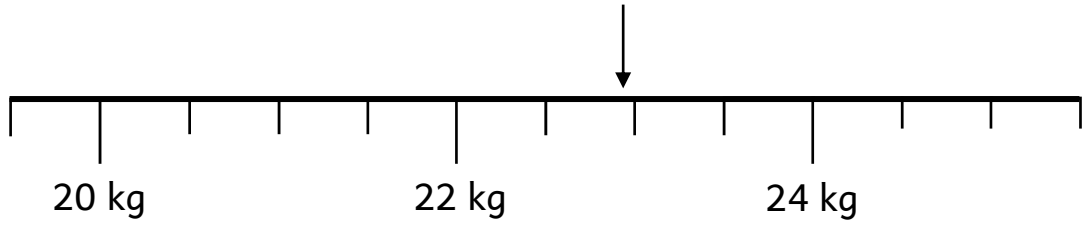
a. 4 ☐

b. 6 ☐

c. 10 ☐

d. 30 ☐

9. Which **mass** does the arrow below show?



e. 22·3 kg ☐

f. 22·5 kg ☐

g. 22·8 kg ☐

h. 23·4 kg ☐

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10. Jack has just started saving money to buy some computer games.
For every **€5** Jack puts in his savings box, his parents put another **€2**.
Up till now Jack has a **total of €42** in his savings box.
How much money did Jack's parents put in his savings box till now?

a. €6 ☐

b. €12 ☐

c. €21 ☐

d. €36 ☐

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11. Which of the following is the same as **7086 metres**?

a. 7·86 km ☐

b. 7 km 86 m ☐

c. 70·86 km ☐

d. 70860 cm ☐

12. My flight from Malta to Rome in Italy took from **07:55** to **09:20**.
How long was the flight?

a. 65 minutes ☐

b. 85 minutes ☐

c. 125 minutes ☐

d. 165 minutes ☐

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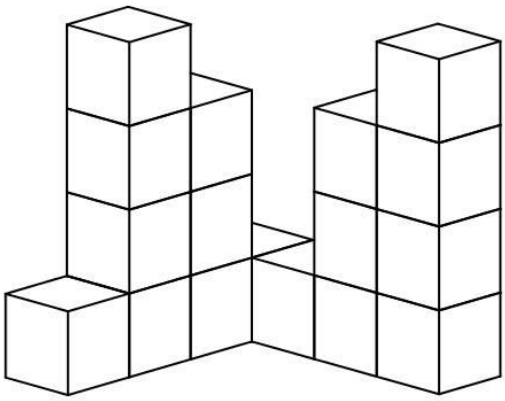
13. The figure below is made up of **small cubes** of **equal size**.
The position of these cubes cannot be changed.
What is the least number of **small cubes** needed **to make a bigger cube**?

a. 17 cubes ☐

b. 44 cubes ☐

c. 47 cubes ☐

d. 64 cubes ☐



14. The mass of *a* **60 identical books** is **12 kilograms**.
What is the mass of **1 book?**

a. 2 kg ☐

b. 5 kg ☐

c. 20 grams ☐

d. 200 grams ☐

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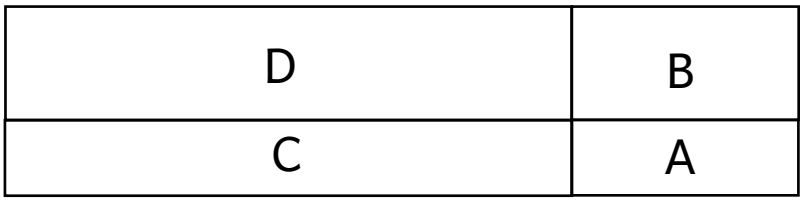
15. **A**, **B**, **C** and **D** are **rectangles**.
Together they form *a* bigger rectangle as shown below.
The **perimeter** of rectangle **A is 16 cm**, the **perimeter** of rectangle **B is 18 cm** and the **perimeter** of rectangle **C is 34 cm**.



This shape is not to scale.

Which of the following is the **perimeter** of **rectangle D**?

a. 18 cm ☐

b. 30 cm ☐

c. 36 cm ☐

d. 45 cm ☐

16. $^{3}/_{5}$ of all the students at Sunshine School come to school by bus.
36 students come to school by car.
The **remaining** $^{1}/_{10}$ of the students walk to school.

How many students are there at Sunshine School?

a. 72 students ☐

b. 108 students ☐

c. 120 students ☐

d. 360 students ☐

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17. Ben was facing **South East**.
Now he turns **225° clockwise**.
Which **direction** is Ben now facing?

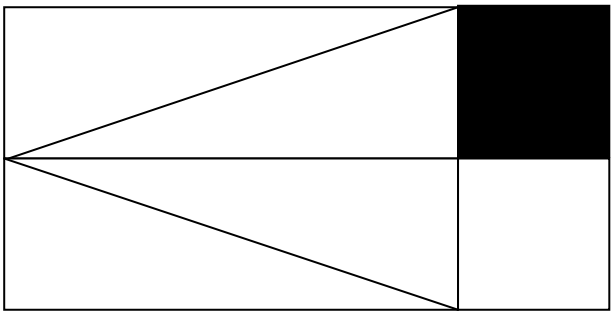
a. North ☐

b. North East ☐

c. East ☐

d. South East ☐

18. What **fraction** is **shaded**?



a) $\frac{1}{4}$ ☐

b) $\frac{1}{6}$ ☐

c) $\frac{1}{8}$ ☐

d) $\frac{1}{16}$ ☐

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19. A group of children want to share super heroes trading cards among themselves.
If they take **9 cards each**, there will be **5 cards left**.
If they take **7 cards each**, there will be **13 cards left**.
How many **trading cards** do they have in all?

a. 41 cards ☐

b. 42 cards ☐

c. 45 cards ☐

d. 63 cards ☐

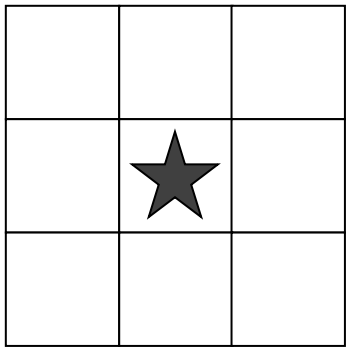
Section B

Show your working.

Each question carries **3 points**.

20. Work out the **total** of **all the factors of 24**.

21. The grid below is made of squares.
How many squares have a star?



22. A large number of males and females participated in an interview. The table below shows the information collected about music.

Listen to music	Males	Females	Total
Every day	120,816	121,525	242,341
Several times a week	34,241	29,287	63,528
Once a week	9,559	9,392	18,951
Not even once a week	5,822	5,565	11,387
Never	8,798	13,838	22,636
Total	179,236	179,607	358,843

Source: Adapted from https://nso.gov.mt

All the statements below are about the males and females who participated in the interview.

For each statement (circle) **TRUE**, **NOT TRUE** or **WE CAN'T TELL.**

a. **More than half of the males and females listen to music every day.**
TRUE NOT TRUE WE CAN'T TELL

b. **One out of every 10 males never listens to music.**
TRUE NOT TRUE WE CAN'T TELL

c. **Music is more popular with the younger females than with the younger males.**
TRUE NOT TRUE WE CAN'T TELL

d. **A total of 336,207 males and females listen to music at least once a week.**
TRUE NOT TRUE WE CAN'T TELL

23. Paul writes some numbers.
He starts with the number 1.
Then he writes the double of 1, which is 2.
Next he writes the double of 2, which is 4.
He keeps on writing the next double.
The last number her writes is 16384.
Finally, Paul adds all these numbers.
What **total** did Paul get?

$$1 + 2 + 4 + \quad \ldots \quad + 16384 = \ ?$$

The total is _____

End of test