NEWCASTLE PERMANENT
PRIMARY SCHOOL MATHEMATICS COMPETITION
Wednesday 18 August 2021

Time allowed: 45 minutes.

Instructions:

1. When asked by your teacher, open this booklet and check that there are 35 questions.

2. Calculators, electronic devices, rulers, geometrical instruments, or other aids are **NOT** permitted.

3. **NO** working is to be shown on your answer sheet. Working paper will be supplied by your teacher if required.

4. **All answers MUST be recorded in PENCIL on your answer sheet** (a B pencil or darker). Questions 1 to 33 are multiple choice. For questions 34 and 35 colour in the ovals to represent your answer, as explained on the answer sheet.

5. When your teacher gives the signal, begin working on the problems. You have 45 minutes working time.

6. Marks will **NOT** be deducted for incorrect answers.

7. **Make sure that you complete the sections on the answer sheet for your name, gender, division, school name and five-digit Mathematics Competition Code.**

SECTION A
Each correct answer in this section is worth 2 marks.

1. What is the product of 20 and 5 ?

    (A)   5   (B)   15   (C)   25   (D)   100

2. $14.7 \div 7 =$
    (A)   2   (B)   2.01   (C)   2.1   (D)   21

3. How many diagonals does a pentagon have?

    (A)   2   (B)   3   (C)   4   (D)   5

4. $2016 - 197 =$

    (A)   1819   (B)   1821   (C)   1829   (D)   1919

5. One ball is picked out of a bag which holds 7 blue balls and 3 red balls. What is the probability that the selected ball is red?

    (A) $\dfrac{1}{3}$ (B) $\dfrac{3}{10}$ (C) $\dfrac{3}{7}$ (D) $\dfrac{7}{10}$

6. The perimeter of an equilateral triangle with sides 0.8 m long is:

    (A)   120 cm   (B)   1.6 m
    (C)   2400 mm   (D)   4.8 m

7. One ice-cream costs $4.50. How much for 7 ice-creams ?

    (A) $32.50   (B) $31.50   (C) $29.05   (D) $28.00

8. Which one of these is most likely to have a mass of 70 grams ?

    (A)   a matchstick   (B)   a bucket of water
    (C)   a year 6 student   (D)   an apple

9. A tin of peaches is an example of which 3-dimensional shape?

    (A)   cylinder   (B)   cone
    (C)   sphere   (D)   square pyramid

10. How many $15 concert tickets could you buy with $100 ?

    (A) 5   (B) 6   (C) 7   (D) 8

11.

    What is the area in square units of the triangle shown in the diagram?

    (A) 28   (B) 26   (C) 17.5   (D) 14

12. $15 - 3 \times (10 - 6) =$

    (A) 3   (B) 4   (C) 11   (D) 48

13. A football game started at 11.20 am. The game finished at 12.10 pm. There was a 10-minute break at half-time. How many minutes long was each half of the game?

    (A) 50   (B) 40   (C) 25   (D) 20

14. What is the lowest common multiple of 6 and 9 ?

    (A) 54   (B) 18   (C) 15   (D) 3

15. Which one of the following division questions has a remainder of 0?

    (A) $261 \div 11$ (B) $261 \div 10$
    (C) $261 \div 9$ (D) $261 \div 7$

SECTION B
Each correct answer in this section is worth 3 marks.

16. 30% of $21.00 is:

    (A) $2.10   (B) $6.30   (C) $7.00   (D) $63.00

17. $\dfrac{15}{60}$ is equivalent to:

    (A) $\dfrac{1}{5}$ (B) $\dfrac{1}{4}$ (C) $\dfrac{1}{3}$ (D) $\dfrac{1}{2}$

18. What is the average of $560, $640, $610, $790 ?

    (A) $610   (B) $650   (C) $675   (D) $680

19. A piece of timber is 5.4 metres long. It is cut into 3 pieces, one of length 2.65 metres and another of length 1.7 metres. What is the length, in metres, of the third piece ?

    (A) 1.05   (B) 1.15   (C) 1.5   (D) 2.05

20. The Fibonacci number pattern is 1, 1, 2, 3, 5, 8, …. and so on. To get the next number you add together the two previous numbers. What is the first 3-digit Fibonacci number?

    (A) 100   (B) 134   (C) 144   (D) 233

21. Study the pattern shown below:

    $$\begin{aligned}
    1 &= 1 \\
    1 + 3 &= 4 \\
    1 + 3 + 5 &= 9 \\
    1 + 3 + 5 + 7 &= 16
    \end{aligned}$$

    What is the sum of the first 200 odd numbers?

    (A) 400   (B) 4 000   (C) 40 000   (D) 400 000

22. $-5 + 12 - \square + 6 = -2$

The value of $\square$ is:

(A) -20 (B) -15 (C) 11 (D) 15

23. The teacher explained that $3 + 5 + 2$, $2 + 3 + 5$ and $5 + 3 + 2$ all give the same answer. She said, "If the question is only about adding you can do it in any order you like".
One student said, "That is also true if the question only contains multiplication".
Another said, "That is also true if it only contains subtraction".
A third student said, "That is also true if it only contains division".
How many of the students were correct?

(A) 0   (B) 1   (C) 2   (D) 3

24. 13 is a prime number. When its digits are reversed to give 31, we obtain a **different** prime number.
How many pairs of 2-digit prime numbers have this property?

(A) 2   (B) 3   (C) 4   (D) 5

25. After spending 0.6 of her money, Melissa has $20 left.
How much has she spent?

(A) $8   (B) $12   (C) $30   (D) $50

SECTION C
Each correct answer in this section is worth 4 marks.

26. How many multiples of 35 are there between 6 900 and 7 100 ?

(A) 6   (B) 5   (C) 4   (D) 3

27. A triangle has one angle of 60°. We know that one of the other angles is 4 times the size of the third angle. The triangle is:

(A) obtuse angled   (B) equilateral
(C) isosceles   (D) right angled

28. On a number line, which number is exactly half-way between $\frac{3}{4}$ and $1\frac{1}{2}$?

(A) $\frac{7}{8}$ (B) $1\frac{1}{8}$ (C) $1\frac{1}{4}$ (D) $1\frac{3}{16}$

29. How many factors does 100 have?

(A) 10   (B) 9   (C) 6   (D) 5

30. Samantha walks at a speed of 4 km/h while Josh rides his bike at 15 km/h.
Samantha tells Josh that she is going to walk from the start to the finish of a 10 km cycleway.
Josh replies that he will ride back and forth along the cycleway as many times as necessary until they meet at the finish.
They start at the same time.
After Samantha reaches the finish, for how many minutes will she have to wait for Josh to join her at the finish?

(A) 0   (B) 10   (C) 30   (D) 50
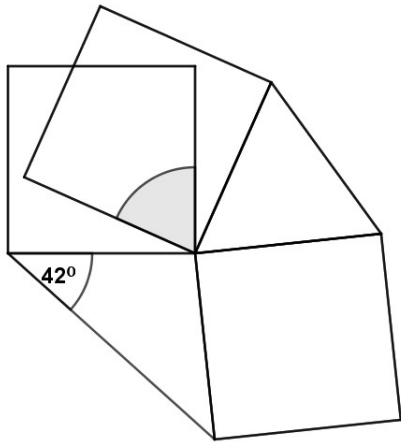
31. The number 59 has the following properties:
   - when divided by 2 the remainder is 1.
   - when divided by 3 the remainder is 2.
   - when divided by 4 the remainder is 3.
   - when divided by 5 the remainder is 4.
The next number with the same properties is:

(A) between 61 and 80   (B) between 81 and 100
(C) between 101 and 120   (D) between 121 and 140

32. A farmer needs to transfer 45 000 litres of water from an old tank into a new tank.
The farmer uses a pump which transfers 150 litres per minute.
The pumping starts at 6pm.
It costs $3.50 per hour to run the pump until 8pm.
After 8pm the cost is $1.20 per hour.
How much will it cost to transfer the water into the new tank?
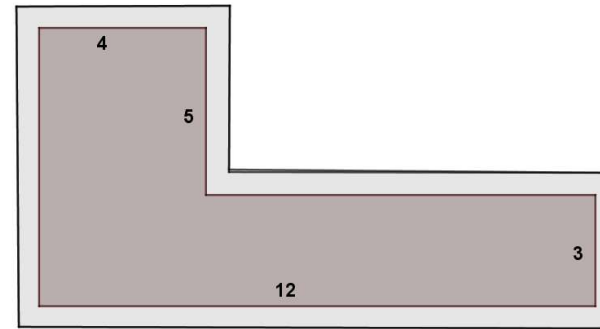
(A) $4.70   (B) $6.00   (C) $10.60   (D) $17.50

33. The diagram shows 3 squares (which are all the same size), one isosceles triangle containing an angle of 42º, and 1 equilateral triangle.
They meet at a common vertex with two of the squares overlapping.
How many degrees are there in the shaded angle?

(A) 42   (B) 45   (C) 60   (D) 66

Questions 34 and 35 are not multiple choice.
On the Answer Sheet colour in the ovals to represent your answer.

34. A garden (shown in darker shading) has the shape of two rectangles joined as shown in the diagram, which is not drawn to scale. The diagram also shows the lengths, in metres, of some of the sides of the garden. A path (shown in light shading) surrounds the garden. The path is 1 metre wide.

What is the area of the path, (in square metres)?

35. In a certain type of number pattern you have a starting number and an 'add-on number'.
For example, if the starting number was 20 and the add-on number was 10, then the pattern would be 20, 30, 40, 50, and so on.
Note that the starting number in this question is not 20 and the add-on number is not 10.
The teacher says: "I am thinking of an add-on number pattern. I will give you 2 clues about it and then ask a question."

Clue 1: the first number in the pattern is 50
Clue 2: the sum of the first 5 numbers in the pattern is 272
Question: What is the sum of the first 6 numbers in the pattern?

THERE ARE NO MORE QUESTIONS.