**NEWCASTLE PERMANENT**
**PRIMARY SCHOOL MATHEMATICS COMPETITION**
**Wednesday 27 July 2022**

**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 instruction, 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, division, school name and five-digit Mathematics Competition Code.**

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

1. $72 + 138 =$

    (A)   190        (B)   200        (C)   210        (D)   220

2. How many minutes are there from 10.40 am to 1.15 pm?

    (A)   175        (B)   155        (C)   115        (D)   95

3. How many square numbers are there between 20 and 90?

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

4. $41.5 - 7.3 =$

    (A)   33.2        (B)   34.2        (C)   36.2        (D)   48.8

5. How many edges does a rectangular pyramid have?

    (A) 12        (B)   8        (C)   6        (D)   5

6. How many centimetres are there in 2.7 metres?

    (A)   2700        (B)   270        (C)   27        (D)   0.027

7. $2.5 \div 100 =$

    (A)   1.25        (B)   0.205        (C)   0.25        (D) 0.025

8. Which one of these is most likely to have a perimeter of 10 cm?

    (A)   a TV screen                (B)     a door mat
    (C)   a basketball court         (D)     a postage stamp

9. The probability of choosing an apple from a box of fruit is $\frac{5}{6}$.
    The number of pieces of fruit in the box could be:

    (A)   5        (B)   11        (C)   12        (D)   15

10. If $20 - \square = -7$, then $\square =$

(A) 13      (B) 23      (C) 27      (D) 47

11. Which one of these 2-dimensional shapes has diagonals that are always equal in length?

(A) rectangle      (B) parallelogram
(C) rhombus      (D) kite

12. $30 + 10 \div (10 - 8) =$

(A) 10      (B) 20      (C) 23      (D) 35

13. Anna wants to buy a pack of scented gel pens ($19.95), a fold up ruler ($4.95), and a pencil case ($22.45). How much change will she receive if she pays with a $100 note?

(A) $52.65      (B) $52.75      (C) $53.65      (D) $53.75

14. A quadrilateral with only one pair of parallel sides is called a:

(A) rectangle    (B) rhombus    (C) square    (D) trapezium

15. $576 \times 47 =$

(A) 27 072      (B) 27 032      (C) 26 872      (D) 6 336

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

16. How many prime numbers are between 10 and 30?

(A) 4      (B) 5      (C) 6      (D) 7

17. What is $\frac{1}{4}$ of 0.3 ?

(A) 0.075      (B) 0.75      (C) 0.12      (D) 1.2

18. 1 mL of water drips from a tap every second. How long will it take to fill an empty 3L jug?

(A) 50 seconds      (B) 5 minutes
(C) 50 minutes      (D) 5 hours

19. 80% of year 6 voted in favour of doing charity work on the last day of term but 3 students then changed their vote from 'no' to 'yes'. Now 86% are in favour. How many students are there in year 6?

(A) 43      (B) 50      (C) 86      (D) 200

20. Which word correctly completes the following sentence?
Every ………….. number has an odd number of factors.

(A) square    (B) even    (C) odd    (D) prime

21. If $\square - \Diamond = -10$ and $\Diamond - \triangle = -130$, what is $\triangle - \square$?

(A) $-140$      (B) $-120$      (C) 120      (D) 140

22. A solid cube has volume of 125 cm³. What is its surface area?

(A) $5\text{ cm}^2$    (B) $25\text{ cm}^2$    (C) $30\text{ cm}^2$    (D) $150\text{ cm}^2$

23. In January a shop sold 600 TV sets. In February sales increased by 30% but in March sales decreased by 20% from the previous month. How many TV sets were sold in March?

(A) 624      (B) 640      (C) 660      (D) 936

24. 12721 is a 5-digit palindromic number. This means that if you write it back-to-front you get the same number.
The next 5-digit palindromic number after 83 938 is:

(A) greater than 93 000
(B) between 84 900 and 92 999
(C) between 84 100 and 84 899
(D) between 84 000 and 84 099

25. Mathematicians write $5^2$ (5 squared) to mean $5 \times 5$.

The teacher shows the class that $5^2 - 3^2 = (5 \times 5) - (3 \times 3)$
$$= 25 - 9$$
$$= 16$$
$$= (4 \times 3) + 4$$

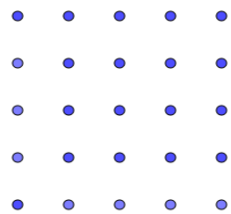She also demonstrates this using the following 2 diagrams.


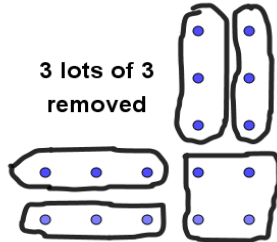
Diagram 1

3 lots of 3 removed

Diagram 2

The class then checks the pattern $10^2 - 8^2 = 100 - 64$
$$= 36$$
$$= (4 \times 8) + 4$$

What is $2527^2 - 2525^2$ ?

(A)  2       (B)  4       (C)  10 004       (D)  10 104

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

26. It is possible to add together three of the following fractions and obtain an answer of 2. The fractions are $\frac{1}{12}, \frac{1}{2}, \frac{2}{3}, \frac{5}{6}$.
Which of the fractions would **not** be used?

(A)  $\frac{1}{12}$       (B)  $\frac{1}{2}$       (C)  $\frac{2}{3}$       (D)  $\frac{5}{6}$

27. Ali wants to save $20 each month for a year. After 7 months she finds that she has only saved $15 per month. How much will she have to save each month from now on to achieve her goal?

(A)  $20       (B)  $23       (C)  $25       (D)  $27

28. 100 students from years 5 and 6 were asked whether they liked summer or winter. The graph shows the results for boys and girls separately.



**Favourite season**
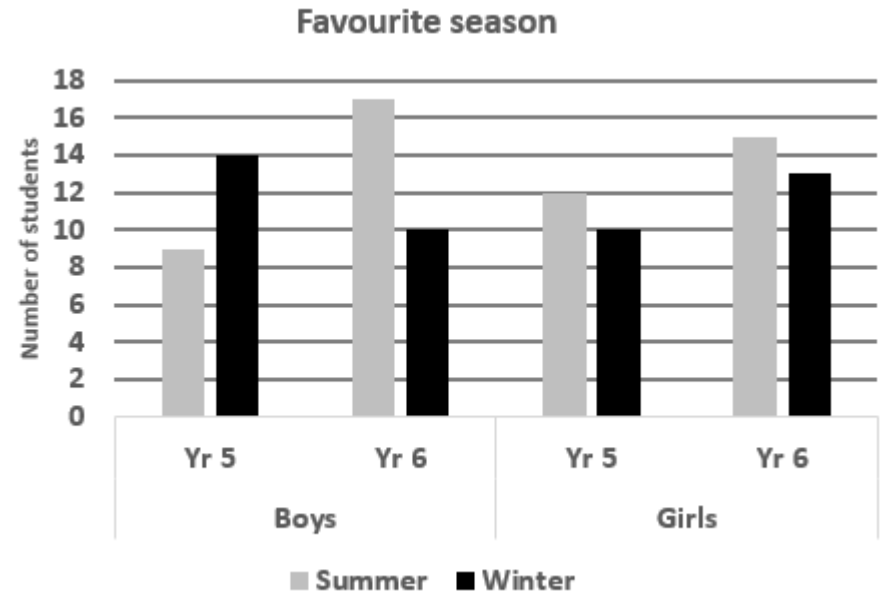
What percentage of all students prefer winter?

(A)  14%       (B)  17%       (C)  24%       (D)  47%

29. In the following multiplication each of $a, b, c, d,$ and $e$ represents a different digit.

$$2abcde \times$$
$$\underline{\quad 3 \quad}$$
$$abcde2$$
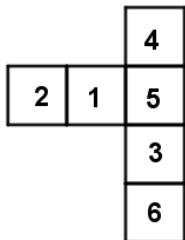
What is the value of $a$ ?

(A)  6       (B)  7       (C)  8       (D)  9

30. It is true that $22 \times 24 \times 26 \times 28 = 384\,384$
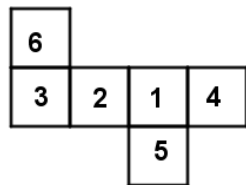Which of the following is **not** a factor of $384\,384$ ?

(A)  36       (B)  21       (C)  11       (D)  8

31. A dice is in the shape of a cube with its faces numbered 1 to 6. The sum of the numbers on opposite faces is 7. Which of the following diagrams shows a correct net of that dice?
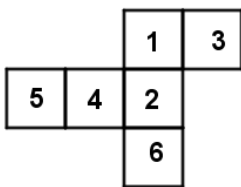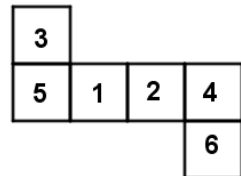
(A)

|   | 4 |   |
|---|---|---|
| 2 | 1 | 5 |
|   | 3 |   |
|   | 6 |   |

(B)

| 6 |   |   |   |
| 3 | 2 | 1 | 4 |
|   |   | 5 |   |

(C)

|   | 1 | 3 |
| 5 | 4 | 2 |
|   | 6 |   |

(D)

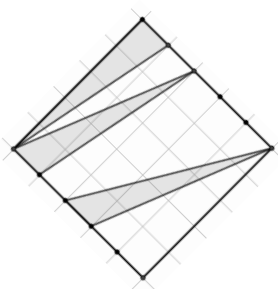| 3 |   |   |   |
| 5 | 1 | 2 | 4 |
|   |   |   | 6 |

32. All the odd numbers between 6 and 30 are multiplied together. The last digit of the answer is:

(A)  3          (B)  5          (C)  7          (D)  9

33. The diagram shows 3 shaded triangles drawn inside a square. What percentage of the square has been shaded?



(A)  35%       (B)  30%       (C)  25%       (D)  20%

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

34. In a triathlon, competitors must swim 750 metres, ride a bike for 18 kilometres, then run 2.5 kilometres.
Archie can swim at 2.5 km/h, ride at 24 km/h, and run at 12 km/h.
However, he had some bad luck during the bike ride with a flat tyre taking 4 minutes and 15 seconds to repair.
He completed the first 800 metres of the run at his usual speed but by then his energy level had declined so that he finished the run at 8 km/h.
How many minutes did he take to complete the race?

35. Employees must enter a 5-digit security code to gain entry to a secure room. One man has forgotten his code, but he can remember the following things:
   - the 3 middle digits are 3, 6 and 9, but they could be in any order
   - no digit is repeated, all 5 digits are different
   - the 5-digit number is a multiple of 5
   - the sum of the 5 digits in the number is greater than 24
How many such 5-digit numbers are there?


**THERE ARE NO MORE QUESTIONS.**