Spirit of Math®

GRADE 7

International Spirit of Math® Contest 2026

Releasing the Genius®



INSTRUCTIONS

1. You have **75 minutes** to write the contest
2. The contest is multiple-choice with four choices for each question.
3. Write the **CAPITAL** letter of the answer you choose on the line to the right of each question and fill in the corresponding circle on the **Contest Answer Sheet**.
4. Each question answered correctly is worth one mark, and the sum of the correct answers is the score.
5. Marks are not taken off for wrong answers.
6. **No calculators** or other counting tools are allowed.

Student Name: _____ **Score:** /40

1) Which of the following is **not** equal to $\frac{7}{4}$?

A) $\frac{14}{8}$ B) $1\frac{3}{4}$ C) $1\frac{9}{12}$ D) $1\frac{4}{8}$ ____

2) What is the largest difference that can be formed by subtracting two numbers chosen from the set {–13, –8, 0, 3, 11, 23}?

A) 10 B) 23 C) 36 D) 58 ____

3) The value of $6 - [3 - (5 - 4)]$ is

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

4) The value of $2^3 - 3^2$ is

A) 2 B) 1 C) 0 D) –1 ____

5) If $(3x + 7)$ is less than 34, a possible value of x is:

A) 8 B) 9 C) 11 D) 13 ____

6) The value of $\sqrt{28 - \sqrt{6 + \sqrt{9}}}$ is

A) 3 B) 5 C) 6 D) 25 ____

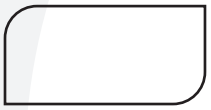
7) The digits of 5782 can be arranged in ascending or descending order. What is the difference between the two resulting numbers?

A) 4716 B) 6147 C) 6174 D) 7164 ____

8) What is the positive value of x which satisfies the equation $3x^2 - 3 = 240$?

A) 7 B) 9 C) 11 D) 14 ____

9) Which of the following images has more than two axes of symmetry?

A)  B)  C)  D)  ____

10) What is the largest prime factor of 999?

A) 13 B) 17 C) 37 D) 43 ____

Space for rough work

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11) Which of the following quantities corresponds to 5% of the price of an item?

A) One-fifth of the price of the item.

B) The price of the item multiplied by five tenths. ____

C) The price of the item divided by 100 and then multiplied by 5.

D) The price of the item multiplied by 0.5%

12) Joe's Pizza sells pizza cut into uneven slices. In their Prime Pizza, Joe cuts the first slice to be $\frac{1}{3}$ of the pizza, the second slice to be $\frac{2}{7}$ and the third slice to be $\frac{1}{5}$ of the pizza. Assuming there are four total slices, how much of the pizza is the remaining slice?

A) $\frac{1}{5}$ B) $\frac{3}{7}$ C) $\frac{19}{105}$ D) $\frac{21}{105}$ ____

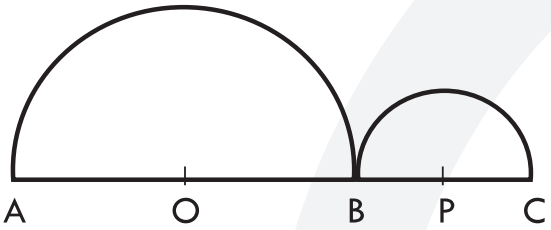
13) If today is Tuesday, what day will it be in 273 days?

A) Tuesday B) Wednesday C) Thursday D) Friday ____

14) A triangular prism has x vertices, y edges and z faces. What is $(x + y + z)^2$?

A) 441 B) 400 C) 361 D) 324 ____

15) In the two semicircles shown $AC = 24$ cm and AO is twice as large as BP. What is the sum of the areas of the two semicircles with centers O and P?

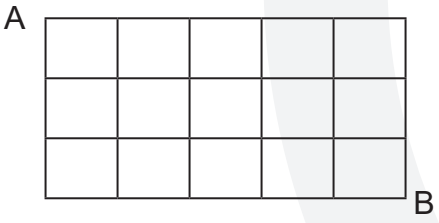


A) 20π cm^2 B) 32π cm^2 C) 40π cm^2 D) 80π cm^2 ____

16) How many numbers are there between 300 and 400 whose digits sum to 11?

A) 8 B) 9 C) 10 D) 11 ____

17) Find the number of pathways from A to B, in which you can go only down and to the right.



A) 20 B) 35 C) 56 D) 60 ____

Space for rough work

18) We define two new operations as follows:
$a \oplus b = ab - a - b$ and $a \otimes b = a^2 + b^2 - ab$
What is the sum of the digits of $((7 \oplus 3) \otimes 6) \oplus 2$

A) 11 B) 13 C) 15 D) 17 ____

19) What is the remainder when the sum of the digits of 13! is divided by 9?

A) 0 B) 1 C) 2 D) 4 ____

20) How many 4-letter words can be formed with the letters of the word TRIANGLE if letters cannot be repeated?

A) 280 B) 840 C) 1680 D) 4096 ____

21) 40% more than $\frac{2}{3}$ of what number is 560?

A) 750 B) 600 C) 560 D) 400 ____

22) Find the largest perfect fourth power that will divide into 75600 with no remainder.

A) 1 B) 16 C) 81 D) 256 ____

23) A school survey asked each student to choose exactly one favorite sport from basketball, tennis, or soccer. Twenty students chose basketball, 35 chose tennis, and x students chose soccer. If a student is chosen at random, the probability that the student's favorite sport is not basketball is $\frac{5}{7}$. How many students chose soccer as their favorite sport?

A) 14 B) 15 C) 21 D) 49 ____

24) If the circumference of a circle is numerically equal to its area, what must be the diameter of the circle?

A) 1 B) 2 C) 3 D) 4 ____

25) Harkiran likes all the flavors of Ed's ice cream equally. She wants to buy three different flavors for her party. If there are ten flavors in all, in how many ways could she choose three?

A) 120 B) 90 C) 60 D) 30 ____

26) What is the next term in the following sequence? 1, 2, 10, 37, 101, 226...

A) 256 B) 335 C) 442 D) 500 ____

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27) The four-digit number $6mn9$ is a perfect square. What is $m + n$?

A) 11 B) 13 C) 15 D) 16 ____

28) The sequence 1, 6, 11, 16, 21, ... increases by 5's. The sequence 1, 8, 15, 22, ... increases by 7's. The sequence 1, 4, 7, 10, 13, ... increases by 3's. The first number the three sequences have in common is 1. What is the next number which the three sequences will have in common?

A) 105 B) 106 C) 186 D) 211 ____

29) The lengths of the sides of an isosceles triangle are 7 cm and 15 cm. What is the perimeter of the triangle?

A) 29 cm B) 33 cm C) 37 cm D) Not possible to determine ____

30) Ken drove his car 2000 km from Winnipeg to Toronto at a leisurely 40 km/h. However, once he made it to Toronto, he realized he left his wallet in Winnipeg, so he decided to drive back to Winnipeg, this time at 100 km/h. Once he retrieved his wallet, he drove back to Toronto, speeding at 200 km/h. What was his average speed over his total trip?

A) $\frac{600}{7}$ km/h B) 75 km/h C) 100 km/h D) 150 km/h ____

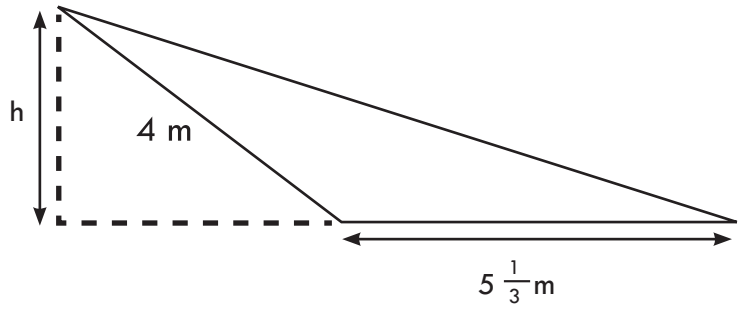
31) A soccer ball is dropped from a height of 4 metres. Each time it bounces, it rises to $\frac{4}{5}$ of the height it fell from. How high, in centimetres, will the soccer ball bounce after the fourth bounce?

A) $\frac{2^{10}}{5^2}$ cm B) $\frac{2^{12}}{5^2}$ cm C) $\frac{2^{12}}{5^4}$ cm D) $\frac{2^{10}}{5^4}$ cm ____

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32) The following image shows a triangle with an area of $6.\overline{4}\ m^2$.



What is the measure of its height h?

A) $2\frac{2}{5}$ m B) $2\frac{5}{12}$ m C) $2\frac{2}{3}$ m D) $2\frac{3}{5}$ m ____

33) What is the value of $\frac{1+2+3+\cdots+98+99}{1+2+\cdots+49+50}$?

A) $\frac{33}{17}$ B) $\frac{99}{25}$ C) $\frac{66}{17}$ D) $\frac{50\cdot51\cdot99\cdot100}{4}$ ____

34) The number 1.1424242424242... can be written as $\frac{a}{b}$ where a and b are coprime natural numbers. What is the value of $a - b$?

A) 47 B) 37 C) 27 D) 17 ____

35) In a population of 1000 people, 760 are women, and one third of the men are vegetarians. If one person is selected at random from this population, what is the probability that the person selected is a man who is not a vegetarian?

A) 8% B) 16% C) 20% D) 24% ____

36) A box contains six cards with different words written on them. It is known that by randomly drawing a card from the box, the probability that the word written on it has less than three vowels is $\frac{2}{3}$. On the first four cards, the words CLASS, SUN, SQUARE, and LION are written. Which of the following words could be written on the other two cards?

A) FIVE and SIX C) SONG and LETTER ____

B) OCEAN and TORONTO D) WORK and GENIUS

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37) There are 193 member countries of the United Nations. Every country except for one sends a representative to this year's conference in Toronto. At noon $\frac{1}{2}$ of the participants of the meeting leave to get lunch. One third of the remaining participants leave shortly after to get coffee. Afterwards, only $\frac{7}{8}$ of all the members who left, returned. How many people did not return?

A) 12 B) 16 C) 24 D) 32 ____

38) A hospital that runs 24 hours a day, 7 days a week, has shifts for its nurses that are 7 hours long. If a shift starts on Monday morning at 6 a.m., at what time does the earliest shift on the next Saturday morning start?

A) 12:00 a.m. B) 5:00 a.m. C) 6:00 a.m. D) 7:00 a.m. ____

39) It takes 525 digits to number the pages of a novel. How many pages are in the novel?

A) 142 B) 199 C) 211 D) 213 ____

40) Olly has a vat containing 100 liters of olive oil. He mixes 25 liters of grapeseed oil, stirs the vat, and then removes 50 liters of oil. He then adds another 25 liters of grapeseed oil. What is the final ratio of olive oil to grapeseed oil in the vat?

A) 3:2 B) 2:1 C) 1:1 D) 4:3 ____

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