



The CENTRE for EDUCATION
in MATHEMATICS and COMPUTING
cemc.uwaterloo.ca

Pascal Contest

(Grade 9)

Wednesday, February 25, 2026
(in North America and South America)

Thursday, February 26, 2026
(outside of North America and South America)



UNIVERSITY OF
WATERLOO

Time: 60 minutes

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Calculating devices are allowed, provided that they do not have any of the following features: (i) internet access, (ii) the ability to communicate with other devices, (iii) information previously stored by students (such as formulas, programs, notes, etc.), (iv) a computer algebra system, (v) dynamic geometry software.

Instructions

1. Do not open the Contest booklet until you are told to do so.
2. You may use rulers, compasses and paper for rough work.
3. Be sure that you understand the coding system for your response form. If you are not sure, ask your teacher to clarify it. All coding must be done with a pencil, preferably HB. Fill in circles completely.
4. On your response form, print your school name and city/town in the box in the upper right corner.
5. **Be certain that you code your name, age, grade, and the Contest you are writing in the response form. Only those who do so can be counted as eligible students.**
6. Part A and Part B of this contest are multiple choice. Each of the questions in these parts is followed by five possible answers marked **A**, **B**, **C**, **D**, and **E**. Only one of these is correct. After making your choice, fill in the appropriate circle on the response form.
7. The correct answer to each question in Part C is an integer from 0 to 99, inclusive. After deciding on your answer, fill in the appropriate two circles on the response form. A one-digit answer (such as “7”) must be coded with a leading zero (“07”).
8. Scoring: Each correct answer is worth 5 in Part A, 6 in Part B, and 8 in Part C.
There is *no penalty* for an incorrect answer.
Each unanswered question is worth 2, to a maximum of 10 unanswered questions.
9. Diagrams are *not* drawn to scale. They are intended as aids only.
10. When your supervisor tells you to begin, you will have 60 minutes of working time.
11. You may not write more than one of the Pascal, Cayley and Fermat Contests in any given year.

Do not discuss the problems or solutions from this contest online for the next 48 hours.

The name, grade, school and location, and score range of some top-scoring students will be published on our website, cemc.uwaterloo.ca. In addition, the name, grade, school and location, and score of some top-scoring students may be shared with other mathematical organizations for other recognition opportunities.

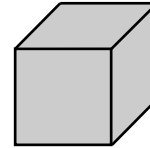
Scoring: There is *no penalty* for an incorrect answer.
 Each unanswered question is worth 2, to a maximum of 10 unanswered questions.

Part A: Each correct answer is worth 5.

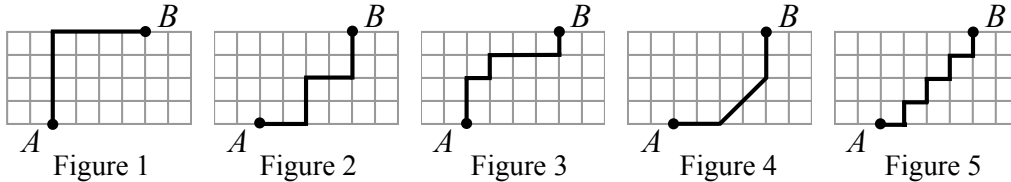
- The value of $8 - 7 + 6 - 5 + 4 - 3 + 2 - 1$ is
 (A) 4 (B) 6 (C) 5 (D) 8 (E) 3
- The value of $\sqrt{37}$ is closest to
 (A) 5 (B) 6 (C) 7 (D) 18 (E) 74
- In the equation $2 + 2 + 2 + 2 = 2^x$, what is the value of x ?
 (A) 6 (B) 4 (C) 3 (D) 5 (E) 2
- If the numbers $2\frac{3}{4}$, 2.3, $2\frac{1}{4}$, 2.45, and $2\frac{9}{10}$ were arranged from least to greatest, the middle number would be
 (A) $2\frac{3}{4}$ (B) 2.45 (C) $2\frac{1}{4}$ (D) 2.3 (E) $2\frac{9}{10}$

- In the diagram, 9 edges of the cube are visible. How many edges of the cube are not visible?

- (A) 0 (B) 1 (C) 2
 (D) 3 (E) 4



- Five paths from A to B are shown. In which figure is the path the shortest?



- (A) Figure 1 (B) Figure 2 (C) Figure 3 (D) Figure 4 (E) Figure 5

- A train consists of one engine and n freight cars. The engine's length is 20 m. Each freight car has length 15 m. If the combined length of the engine and the freight cars is 140 m, then n equals

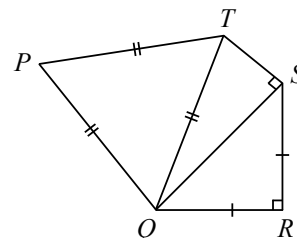
- (A) 5 (B) 8 (C) 7 (D) 6 (E) 9

- Which of the following integers has the same remainder when it is divided by 3 as when it is divided by 4?

- (A) 9 (B) 11 (C) 10 (D) 13 (E) 8

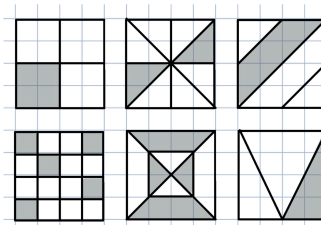
- In the diagram, $\triangle PQT$ is equilateral. Both $\triangle QST$ and $\triangle QRS$ are right-angled triangles and $QR = RS$. If $\angle STP = 120^\circ$, the measure of $\angle PQR$ is

- (A) 145° (B) 105° (C) 90°
 (D) 120° (E) 135°



10. In the diagram, six 4×4 squares have a percentage of their area shaded. How many of the 4×4 squares have exactly 25% of their area shaded?

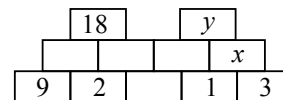
(A) 2 (B) 4 (C) 3
(D) 6 (E) 5



Part B: Each correct answer is worth 6.

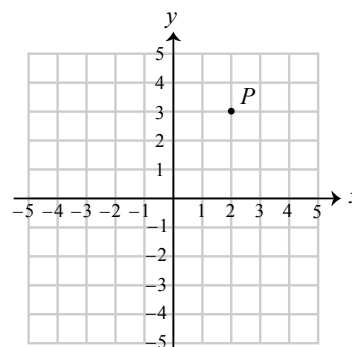
11. In the diagram, the number placed in each rectangle must equal the sum of the numbers in the two rectangles directly below it. For example, the rectangles containing 1 and 3 are directly below the rectangle containing x , and so $x = 1 + 3 = 4$. What is the value of y ?

(A) 7 (B) 8 (C) 9
(D) 10 (E) 11



12. In the diagram, the point $P(2, 3)$ is reflected in the x -axis and then moved 3 units left. What are the coordinates of the resulting point?

(A) $(-1, -3)$ (B) $(-5, 3)$ (C) $(1, 3)$
(D) $(5, -3)$ (E) $(2, -6)$

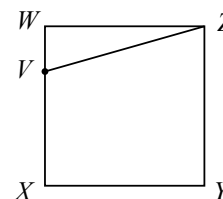


13. Max was given b books. In March, he read one third of these books. In April, he read 5 more of the books. Max then had 7 books left to read. If Max never read the same book more than once, what is the value of b ?

(A) 18 (B) 15 (C) 27 (D) 21 (E) 24

14. In the diagram, square $WXYZ$ has side length 15. Point V is placed on WX so that $VZ = 17$. What is the area of trapezoid $VXYZ$?

(A) 97.5 (B) 157 (C) 161.5
(D) 165 (E) 229

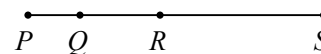


15. Peter's car uses 10.2 L of fuel per 100 km. Mike's hybrid car uses 6.6 L of fuel per 100 km. Fuel costs \$1.40 per litre. If both Peter and Mike drive 200 km, how much less does Mike spend on fuel?

(A) \$3.96 (B) \$5.32 (C) \$7.36 (D) \$8.63 (E) \$10.08

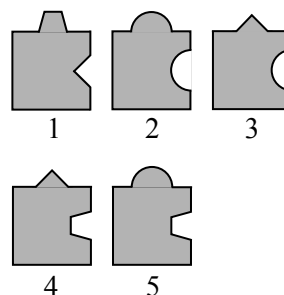
16. P , Q , R , and S are four distinct points on a line segment in the order shown. If $PR = 8$ and $QS = 15$, what is the smallest possible integer length of PS ?

(A) 22 (B) 21 (C) 18
(D) 16 (E) 23



17. Four of the five puzzle pieces shown can fit together without overlap to form a square. If the pieces can be rotated but not flipped, which piece does not get used?

(A) Piece 1 (B) Piece 2 (C) Piece 3
 (D) Piece 4 (E) Piece 5



18. When the integers from 17 to 352 are added, the sum is

$$17 + 18 + 19 + \dots + 350 + 351 + 352 = 61\,992$$

When the integers from 20 to 355 are added, the sum is

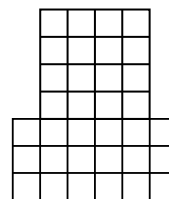
$$20 + 21 + 22 + \dots + 353 + 354 + 355 = x$$

What is the value of x ?

(A) 61 995 (B) 63 003 (C) 62 040 (D) 62 997 (E) 63 000

19. The diagram consists of thirty-four 1×1 squares. Using only the grid lines to form squares, how many squares of all sizes are in the diagram?

(A) 71 (B) 70 (C) 72
 (D) 69 (E) 68



20. A bag contains two quarters (worth \$0.25 each), two dimes (worth \$0.10 each), and two nickels (worth \$0.05 each). Two coins are randomly chosen from the bag. Each coin is equally likely to be chosen. The probability that the combined value of the two coins is \$0.30 or more is

(A) $\frac{8}{15}$ (B) $\frac{3}{5}$ (C) $\frac{5}{9}$ (D) $\frac{1}{3}$ (E) $\frac{4}{5}$

Part C: Each correct answer is worth 8.

Each correct answer is an integer from 0 to 99, inclusive.

A one-digit answer (such as “7”) must be coded with a leading zero (“07”).

Note: The integer formed by the rightmost two digits of 12 345 is 45.

The integer formed by the rightmost two digits of 6307 is 7, coded 07.

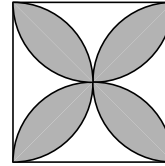
21. A lock requires a three-digit combination with the following characteristics:

- each digit is between 1 and 9 inclusive,
- all three digits are distinct,
- the digits are in increasing order, and
- the third digit is the sum of the first two digits.

How many possible lock combinations have these characteristics?

22. Consider the five distinct integers 16, x , 8, 17, and 11. Their mean (average) and their median are equal. What is the sum of all possible values of x ?

23. On each side of the square shown, a semi-circle is drawn inside the square. The side length of the square is 10 and is equal to the diameter of each semi-circle. The four semi-circles overlap to form the shaded four-petal flower. If n is the closest integer to the area of the shaded flower, what is the value of n ?



24. The string of digits 123451234551234555... is formed by alternately writing the digits 1234, in that order, and then writing some number of consecutive 5s. There are exactly k consecutive 5s immediately following the k th occurrence of 1234. If S is the sum of the first 2026 digits of the string, what is the sum of the digits of S ?
25. Triangle ABC is equilateral with side length 6, as shown in Figure 1. Three smaller equilateral triangles with positive integer side lengths $a \leq b \leq c$ are removed from the corners of $\triangle ABC$, as in Figure 2. If $a + b < 6$, $a + c < 6$, and $b + c < 6$, then the resulting figure, $PQRSTU$, is a hexagon, as in Figure 3. $PQRSTU$ can be divided into exactly n identical equilateral triangles, each with a positive integer side length. If M is the sum of all possible values of n , then what are the rightmost two digits of M ?

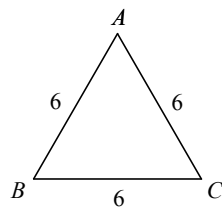


Figure 1

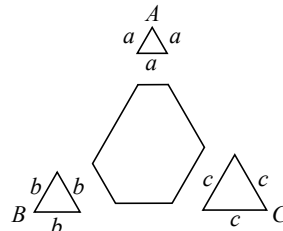


Figure 2

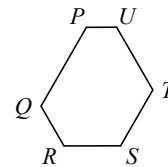


Figure 3



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For students...

Thank you for writing the 2026 Pascal Contest! Each year, more than 265 000 students from more than 80 countries register to write the CEMC's Contests.

Encourage your teacher to register you for the Fryer Contest which will be written in April.

Visit our website cemc.uwaterloo.ca to find

- More information about the Fryer Contest
- Free copies of past contests
- Information about careers in and applications of mathematics and computer science

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- Find your school's contest results