HugeMathBrain — Grade 9 Printable Quiz

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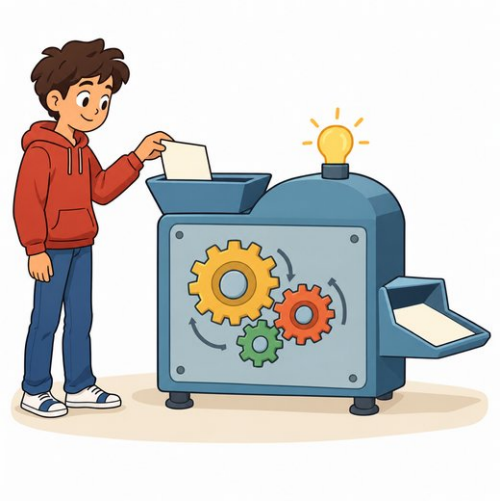
Grade 9

Problem 9.1 · 3 points — What is the sum of all real values of x that make $(x - 4)(x + 2) = (x - 4)(2x - 4)$ true?



A) 6
B) -2
C) 10
D) 4
E) 2

Problem 9.2 · 3 points — A quadratic function gives $f(-2)=10$ and $f(2)=-2$. What is $f(-3)-f(3)$?



A) -18
B) -12
C) 0
D) 12
E) 18

Problem 9.3 · 4 points — For which value of k do $y = kx + 1$, $y = 2x + k - 1$, and $y = x + 3$ form three distinct lines through one point?



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

Problem 9.4 · 5 points — Three real numbers x, y, and z satisfy $x+y+z=9$ and $(x-y)^2+(y-z)^2+(z-x)^2=18$. What is $(x+y)(y+z)(z+x)+xyz$?



A) 216
B) 189
C) 243
D) 162
E) 200

Problem 9.5 · 3 points — A train travels at a constant speed. It takes 24 seconds to clear a 280 m tunnel and 32 seconds to clear a 440 m tunnel, each timed from when the train's front enters to when its back exits. How long is the train?



A) 200 m
B) 160 m
C) 480 m
D) 330 m
E) 280 m

Problem 9.6 · 4 points — What is the remainder when $1 + 2 + 2^2 + \cdots + 2^{2026}$ is divided by $2^{1013} + 3$?



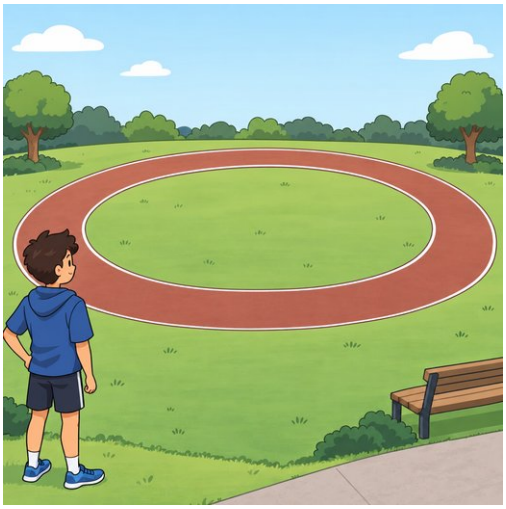
A) 8
B) 17
C) 0
D) 18
E) 1

Problem 9.7 · 5 points — How many integers n make $n^2 + 30n + 81$ the square of an integer?



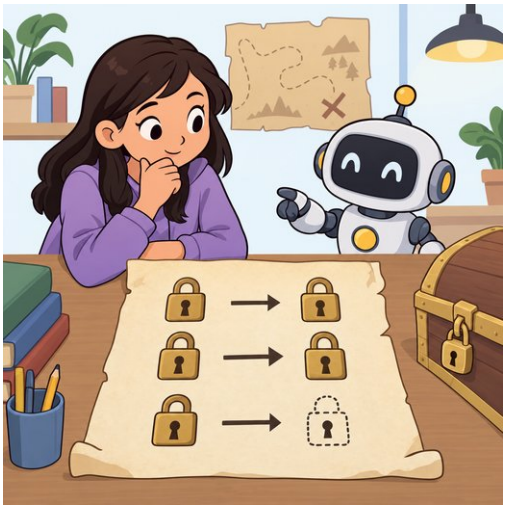
A) 3
B) 9
C) 8
D) 10
E) 5

Problem 9.8 · 4 points — A circular track has two concentric edges. Their circumferences add to 34π metres, and the track's area is 51π square metres. What is the inner edge's circumference?



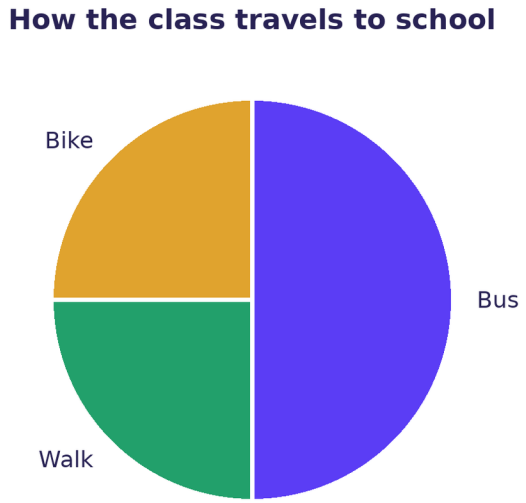
A) 14π metres
B) 20π metres
C) 17π metres
D) 6π metres
E) 28π metres

Problem 9.9 · 5 points — A six-digit lock code has distinct, nonzero digits. Multiplying it by 5 moves its last digit to the front while keeping the other digits in order; what is the sum of the original code’s first and last digits?



A) 7
B) 12
C) 6
D) 8
E) 9

Problem 9.10 · 5 points — Choose any 20 students from this class of 40, then list every possible three-person team with one bus rider, one walker, and one cyclist. Students may appear on several teams. What is the greatest possible number of teams on the list?



A) 250
B) 288
C) 294
D) 343
E) 280

Problem 9.11 · 3 points — Fourteen lily pads sit in a row. A frog paints exactly seven gold, forming exactly three groups of consecutive gold pads, each with at least two pads. How many paintings are possible?

A) 120
B) 168
C) 105
D) 360
E) 56

Problem 9.12 · 4 points — A robot walks on a 3-by-4 grid of intersections, with streets only between horizontal or vertical neighbors. If it must walk every street and return to its start, what is the fewest street segments it can walk?

A) 21
B) 22
C) 20
D) 24
E) 23

Answer key

9.1: C
9.2: E
9.3: E
9.4: A
9.5: A
9.6: B
9.7: D
9.8: A
9.9: D
9.10: C
9.11: B
9.12: B