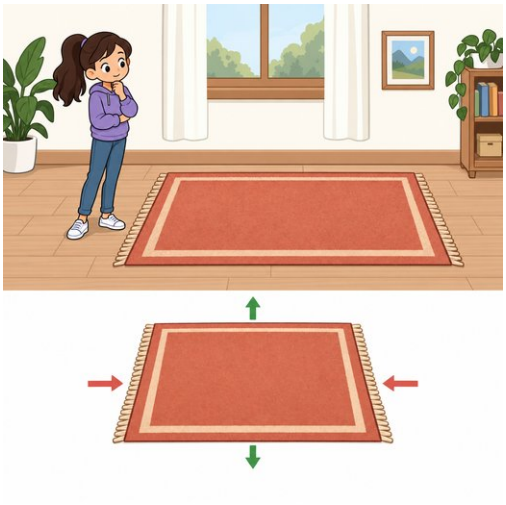
HugeMathBrain — Grade 8 Printable Quiz

Free teacher copy: 12 original reasoning problems + answer key on the last page.
hugemathbrain.com

Made by AI and not reviewed by a real person. Not affiliated with or endorsed by Math Kangaroo, any Math Olympiad, the College Board (SAT) or any other contest or testing organization. Terms: hugemathbrain.com/terms.html

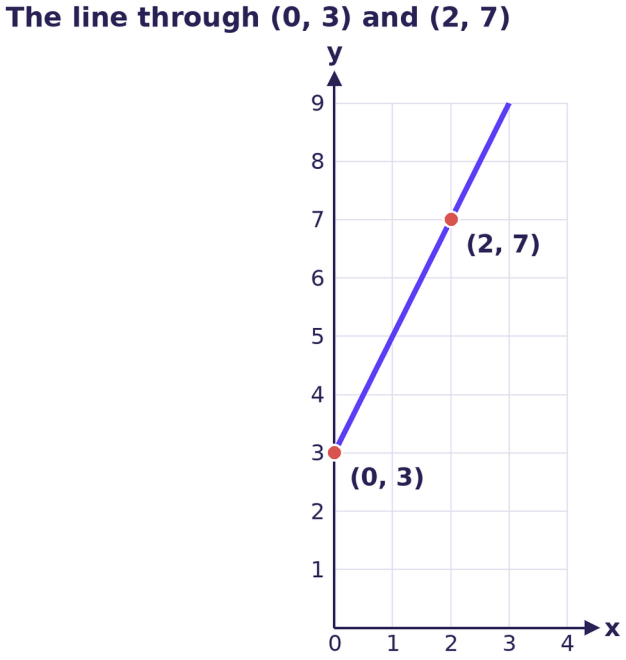
Grade 8

Problem 8.1 · 3 points — A rectangle has a perimeter of 56 cm. Its area increases by 20 cm² if its longer side is shortened by 2 cm and its shorter side is lengthened by 2 cm. What was its original area?



A) 160
B) 176
C) 192
D) 180
E) 196

Problem 8.2 · 4 points — Start at (0, 3) and travel along the drawn line toward (2, 7). When your vertical climb equals the horizontal distance you still have to go, what fraction of the segment between the labeled points have you traveled?



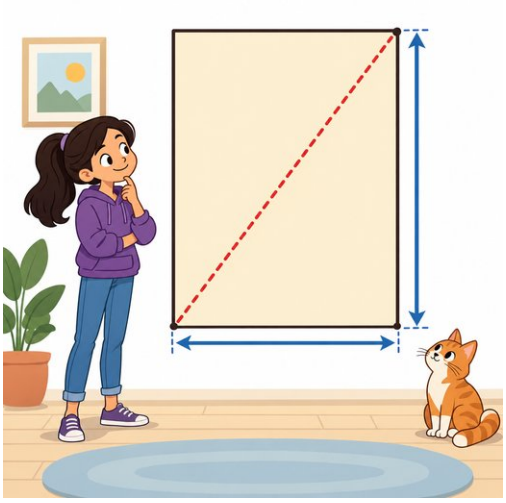
A) 3/4
B) 1/3
C) 1/4
D) 2/3
E) 1/2

Problem 8.3 · 4 points — The equations $x^2 - ax + 24 = 0$ and $x^2 - bx + 36 = 0$ each have two distinct positive integer solutions, and they share one solution. What is the smallest possible value of a + b?



A) 22
B) 26
C) 29
D) 34
E) 23

Problem 8.4 · 3 points — A rectangle is 6 wide and 8 tall. How long is its diagonal?



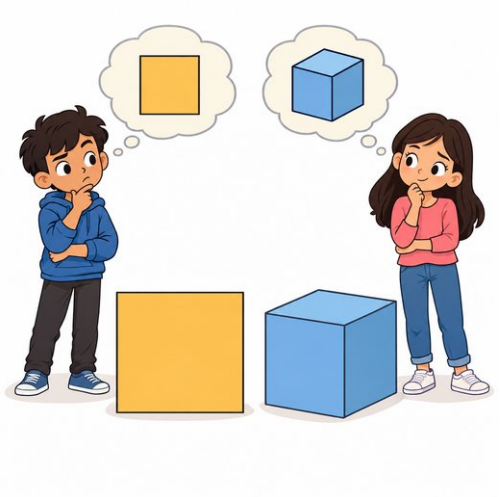
A) 11
B) 14
C) 10
D) 12
E) 9

Problem 8.5 · 5 points — A 7×7 grid of unit squares loses its four corner squares and its center square. What is the greatest number of 1×2 dominoes you can cut from what remains, in either orientation, if you may leave some squares unused?



A) 21
B) 22
C) 19
D) 20
E) 18

Problem 8.6 · 3 points — A positive whole number has both a whole-number square root and a whole-number cube root. If those roots add up to 36, what is the number?



A) 64
B) 46656
C) 729
D) 4096
E) 1296

Problem 8.7 · 5 points — N is the smallest positive integer such that N ÷ 2 is a perfect square and N ÷ 3 is a perfect cube. What is N?



A) 108
B) 216
C) 324
D) 432
E) 648

Problem 8.8 · 4 points — Three different-colored fair six-sided dice are rolled. What is the probability that at least one die shows the average of the other two?



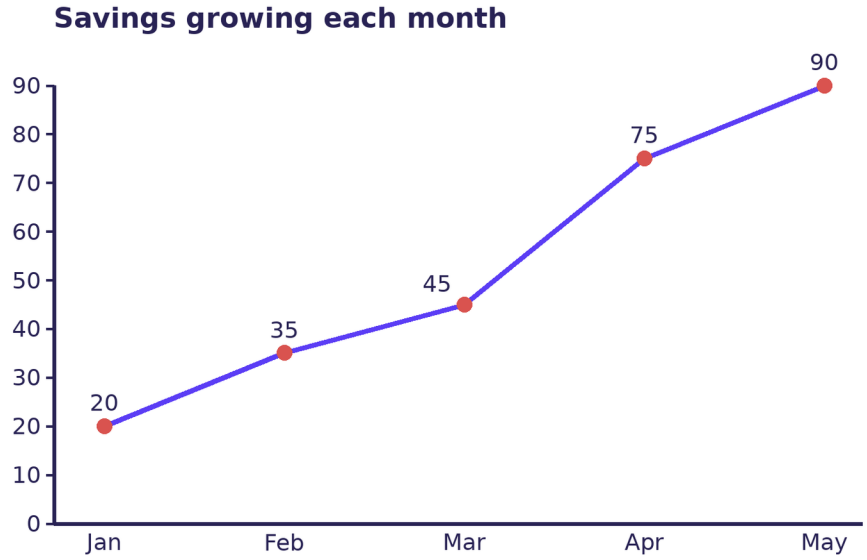
A) 7/36
B) 1/6
C) 1/4
D) 1/36
E) 1/12

Problem 8.9 · 4 points — For every positive integer n, Mira makes two dot cards: an n×n square and a staircase with rows of 1, 2, …, n dots. She sorts all the cards by dot count, keeping tied cards separately; how many dots are on the 100th card?



A) 1770
B) 1764
C) 1681
D) 1711
E) 1849

Problem 8.10 · 4 points — Imagine the four monthly savings increases happened in a different order, while January’s savings stayed the same. Which month’s plotted total could never be made lower by reordering the increases, but could be made higher?



A) March
B) May
C) February
D) January
E) April

Problem 8.11 · 3 points — A chameleon’s scarf has three patches numbered 1, 2, and 3. Each patch can be gold, teal, pink, or purple; how many different scarves have at least one gold patch?



A) 27
B) 37
C) 36
D) 48
E) 64

Problem 8.12 · 4 points — An alien lines up moonstones numbered 1 through 8, using each number once, and writes the sum on every gap between neighbors. If the seven sums add to 69, which two numbers are at the ends?



A) 1 and 3
B) 7 and 8
C) 2 and 3
D) 1 and 2
E) 3 and 4

Answer key

8.1: A
8.2: B
8.3: E
8.4: C
8.5: D
8.6: C
8.7: E
8.8: A
8.9: B
8.10: A
8.11: B
8.12: D