Past MATHCOUNTS Contest Questions

Note: MATHCOUNTS is a national middle-school contest; these are the MATHCOUNTS questions most appropriate for you 4th and 5th grade Fairview students.

The questions are separated by the level of contest (chapter, state). Our MATHCOUNTS 2024 file also has sample school-level contest questions.

Feel free to skip questions, or raise your hand to ask for hints!

Chapter-level Questions, 2025

Sprint 1 _____ What is the value of $2 + (2 \times 2) + (2 \times 2 \times 2)$?

Sprint 2 _____ The value of a word is the sum of the values of all letters in the word. The value of each vowel (A, E, I, O, U) is 8 and the value of each consonant is 5, so the value of the word SURE is $5 + 8 + 5 + 8 = 26$. What is the value of the word MATHCOUNTS?

Sprint 3 _____ What value of x satisfies $x \times y = 36$, if $y = 12$?

Sprint 4 _____ The fair spinner shown is divided into five equal sections. What is the probability that the spinner will land on a multiple of 6? Express your answer as a common fraction.
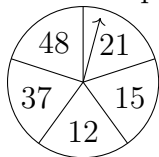
Sprint 5 _____ Ed is two years older than Al. Ben is five years younger than Al. How many years older than Ben is Ed?

Sprint 6 _____ If $\dfrac{12 - \heartsuit}{3} = 1$, what is the value of $\heartsuit$?

Sprint 7 _____ A rectangle has a width of 10cm and a length of 15cm. If each side is doubled in length, what is the area of the new rectangle? (in units of squared centimeters)

Sprint 8 _____ If Andrea randomly chooses two distinct elements from the set $\{1, 2, 3, 4\}$, what is the sum of the least possible and greatest possible products? (DMK: "product" means multiplication; "distinct" means different; here, "least" means smallest, and "greatest" means biggest.)

**Sprint 9** _____ For the function represented in the graph and table, what is the integer value of y

when $x = 12$?

x	y
0	-4
3	-2
6	0
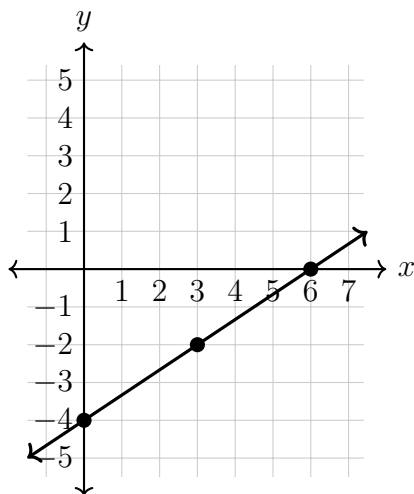
Sprint 13 _____ If only nickels, dimes and quarters are available, how many different ways are there to choose a combination of coins totaling 30 cents?

Sprint 14 _____ Each of the 20 small squares in the figure has an area of 1 square centimeter. What is the number of square centimeters in the area of the shaded region? (DMK: is it easier to get the shaded area or unshaded area?)
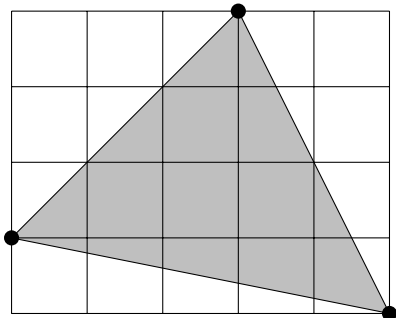

Target 1 _____ While practicing for MATHCOUNTS, Eli attempted to add the first ten positive integers, accidentally left one out and ended up with a perfect square. Which number did Eli leave out? (DMK: "perfect square" is a number times itself, like 16 is a perfect square because $4 \times 4 = 16$; "first ten positive integers" is $1, 2, 3, 4, 5, 6, 7, 8, 9, 10$.)

Target 3 _____ Two perpendicular lines intersect at the point A$(2, 5)$. If the y-intercept of one of the lines is 7, what is the y-intercept of the other line? (DMK: "y-intercept" is where the line crosses the

y-axis; the line shown is the first line, with y-intercept equal to 7.)
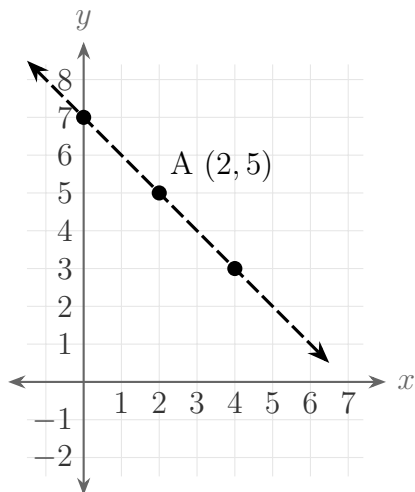
Target 6 _____ What is the sum of the three smallest positive integers that are both a multiple of 5 and also 1 more than a multiple of 7? (DMK: multiples of 7 are $7, 14, 21, \ldots$, so "1 more than a multiple of 7" means $8, 15, 22, \ldots$.)

Team 1 _____ Alex planted four times as many tulips as Patrick planted. Together, they planted 100 tulips. How many tulips did Patrick plant?

Team 4 _____ On Sunday, Ashton buys some doughnuts. On Monday, she gives $\frac{1}{2}$ of the doughnuts to Rachel. On Tuesday, she gives $\frac{1}{3}$ of the remaining doughnuts to Helen. If Ashton has 24 doughnuts left, how many doughnuts did she buy on Sunday?

Countdown 7 _____ Garrett's passcode has four digits. He knows the digits are 2, 6, 8 and 7, but he cannot recall their proper sequence. What is the probability that he will enter the correct passcode on his first try? Express your answer as a common fraction. (DMK: how many possibilities are there? How many are correct?)

Countdown 15 _____ How many rectangles with integer side lengths can be traced out of a 1×3 grid of unit squares, with the sides of the rectangles along the grid lines?

Countdown 17 _____ The sum of six consecutive integers is 3. What is their product? (DMK:

"sum" means adding together, whereas "product" means multiplying together. "Integer" means a whole number with no fraction/decimal part, and "consecutive" means next to each other or "in a row" like $13, 14, 15$.)

Countdown 31 _____ A European swallow has a mass of 20 grams and is capable of lifting up to half of its body mass. If the swallows work together, what is the minimum number of swallows it will take to lift an 800-gram coconut?

Countdown 47 _____ Dante cut his blueberry pie into 6 equal slices. Joe ate $1\frac{1}{2}$ pieces. What fraction of the pie did Joe eat? Express your answer as a common fraction.

State-level Questions, 2025

Sprint 1 _____ A pizza that costs $32 is cut into 16 identical pieces, and Gil eats 3 of those pieces. What was the monetary value of the portion of pizza Gil ate?

Sprint 10 _____ Lakeisha rode her bike from Mendelbury to Hypatiaville, passing the towns of Adaburg and then Tao Town on the way. She rode 3km from Mendelbury to Adaburg. She rode 5km from Tao Town to Hypatiaville. Lakeisha's return trip from Hypatiaville to Mendelbury followed the same route and was 14km. How many kilometers did Lakeisha ride from Adaburg to Tao Town?

Target 3 _____ Nigel's refrigerator is chock full of cheeses from all around Europe. Half the cheeses are from France, $\frac{1}{4}$ are from Italy, and $\frac{1}{8}$ are from England. The rest are from Switzerland. If Nigel has three cheeses from Switzerland, how many cheeses are in Nigel's collection?

Bonus: the original question additionally states that $\frac{1}{16}$ of the cheeses are from Greece and $\frac{1}{32}$ are from the Netherlands, before stating that the rest are from Switzerland and that three cheeses are from Switzerland. In that case, how many cheeses are in Nigel's collection?

Target 5 _____ A recipe for strawberry pie calls for 4 cups of strawberries. If Madeline has 202 strawberries, and a single cup of strawberries contains 6 strawberries, how many whole pies can she make?

Team 3 _____ Maria runs twice as fast as she walks. It takes 40 minutes for her to walk from her home to school in the morning. She then runs from school to her friend's house in the afternoon. If her friend lives three times as far from the school as Maria does, how many minutes does Maria spend running in the afternoon?

Countdown 2 _____ A standard, fair six-sided die is rolled. What is the probability that the number rolled is not a prime number? Express your answer as a common fraction.

Countdown 4 _____ A triangle has two sides of lengths 8 and 13. How many possible integer values are there for the length of the third side? (DMK: "integer" means a whole number with no fraction or decimal part. Hint: what would it look like if the third side had length 21?)

Countdown 12 _____ How many three-digit odd integers with three distinct digits can be formed using the digits 2, 3, 4 and 7? (DMK: "distinct" means different from each other; for example, the number 945 has three distinct digits, but 334 only has two distinct digits.)

Bonus: the original version asks, how many four-digit odd integers with four distinct digits can be formed using the digits 2, 3, 4, 7 and 9?

Countdown 16 _____ What is the sum of the elements in row 4 of Pascal's triangle if the topmost row, consisting of a single 1, is defined as row 0? (DMK: hope you were here for Pascal's triangle day!)

Countdown 25 _____ The Fibonacci sequence starts with the following pattern of numbers: 1, 1, 2, 3, 5, 8, 13, 21, . . . , where each number after the first two is the sum of the previous two. What is the 11th number in this sequence?

Countdown 43 _____ The product of two positive integers is 10 more than their sum. The difference between the two integers is 10. What is the value of their sum? (DMK: "product" means multiplication; "sum" means addition; "difference" means subtraction.)

Countdown 80 _____ What is the perimeter, in meters, of a group of ten square tables, each of side length 1 meter, that are arranged in the shape of a T as shown?