

5th Grade Math Competition

General Information

Calculators will **not** be allowed during any part of the 5th grade competition.

All answers for individual or group competition must include units where units are used in the problem (a.m., p.m., hours, inches, feet, dollars, cents, boxes, gallons, etc.)

Notations used in competition problems:

- Multiplication will be written as “x” or “*”
- Multiplication can also be written as $2(\$0.25)$ using parentheses (Grades 4 & 5)
- Division will be written as “÷” or “/”
- Cents can be written as \$0.25 or 25¢ or 25 cents
- Dollars can be written as \$10 or \$10.00 or 10 dollars

Individual Competition

The individual competition will be divided up into 4 rounds of 5 questions each. Each round will be designed to increase slightly in difficulty.

Individual competition questions will test proficiency and accuracy in all of the areas listed for 3rd and 4th grade as well as the following areas. Sample problems are provided as examples. However, the actual competition may include other forms of questions that demonstrate proficiency of that topic area, including word problems. Multiple areas may also be combined into single problems.

1. Identify minimum and maximum values.
2. Write a number in either expanded notation or standard form.
3. Compare, add, subtract, multiply, and divide decimal numbers and fractions.
4. Identify positive and negative integers, squares and square roots.
5. Identify the greatest common factor of a set of numbers.
6. Reduce fractions.
7. Subtract mixed numbers with regrouping.
8. Write decimal numbers as fractions. Write percents as fractions.
9. Solve problems using proportions and ratios.
10. Use cross products to solve proportion problems.
11. Compute compound interest.
12. Use the approximate value of pi to compute the area of a circle.
13. Name line segments and angles in an object.
14. Identify the properties of a triangle. Identify types of triangles.
15. Compute the area of a triangle.
16. Compute the perimeter and area of a floor plan made up of multiple geometric shapes.
17. Determine the probability of a compound outcome.
18. Graph points on a coordinate plane.

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Sample Individual Competition Questions

1. What is the value of w ? $w + \sqrt{36} = 6^2$ Answer: $w = 216$
2. Thirty percent of the students earned A's on the test. If twelve students earned A's, how many students were there in all? Answer: 40 students
3. $6 _ - 2 _ = _$ Answer: $3 \frac{2}{4}$ or $3 _$
4. What fraction of a yard is 3 inches? Reduce the answer. Answer: $\frac{1}{12}$
5. Write 12.5% as a reduced fraction. Answer: $\frac{1}{8}$
6. Melinda put \$100 in a bank account that pays 4% interest annually. If she does not withdraw any money from her account, how much money will she have in the account after 2 years? Answer: \$108.16
7. Calculate the area of a circle with a radius of 2 feet. Answer: 12.56 ft^2
8. Two angles in a triangle measure 30° and 90° . What is the measure of the 3rd angle? Answer: 60°
9. If two die are tossed, what is the probability of rolling two sixes? Answer: $\frac{1}{36}$
10. At a speed of 70 miles per hour, how many minutes will it take you to travel 30 miles? Express your answer rounded to the nearest whole number. Answer: 26 minutes
11. Find y . $\frac{6}{10} = \frac{9}{y}$ Answer: $y = 15$
12. Find the area of a square whose vertices have the coordinates (3,6), (3,1), (-2, 1), and (-2,6). Answer: 25 units^2

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Group Competition

The group competition will consist of 5 team questions. Each of the five questions will be designed to be similar in difficulty.

Group competition questions will test the team's ability to solve longer, more complex problems involving multiple topic areas. Group questions may also require creative thinking, splitting the work into tasks that can be divided among the teammates, and logical thinking. If the first attempt is incorrect, teams will have an opportunity for a second chance to answer each group question.

Sample Group Competition Questions:

1. If 1 _ chickens take 1 _ days to lay 1 _ eggs, how long does it take 3 chickens to lay 6 eggs? Answer: 3 days
2. Brandon earns \$5.15 an hour for the first 40 hours he works each week and \$5.50 for each hour over 40. Last week he worked 8 hours on Monday, 10 hours on Tuesday, 5 _ hours on Wednesday, 6 _ hours on Thursday, 7 hours on Friday, and 5 _ hours on Saturday. From his total earnings, 20% is deducted for income tax and 8% is deducted for Social Security tax. How much did he make last week after taxes were deducted? Answer: \$160.20
3. One-fourth of Amy's candies are blue, $\frac{1}{8}$ are green, _ are yellow, and the rest are red. Amy picks one candy. What is the probability that the selected candy is red? Express your answer as a reduced fraction. Answer: $\frac{3}{8}$
4. A baseball team won 50% of the first 120 games it played in a 162-game season. What is the minimum number of its remaining games that the team must win in order to win at least 60% of its games this season? Answer: 38 games
5. Nancy drove 55 miles per hour for 2 hours 12 minutes. How many feet did she drive? (5280 feet = 1 mile) Answer: 638,880 ft.
6. A 12-foot board is cut into three pieces whose lengths are in the ratio of 3 : 1 : 2. How many inches are in the length of the shortest piece? Answer: 24 inches