
MATHCOUNTS®

2020
■ School Competition ■
Target Round
Problems 1 & 2

Name _____

DO NOT BEGIN UNTIL YOU ARE INSTRUCTED TO DO SO.

This section of the competition consists of eight problems, which will be presented in pairs. Work on one pair of problems will be completed and answers will be collected before the next pair is distributed. The time limit for each pair of problems is six minutes. The first pair of problems is on the other side of this sheet. When told to do so, turn the page over and begin working. This round assumes the use of calculators, and calculations also may be done on scratch paper, but no other aids are allowed. All answers must be complete, legible and simplified to lowest terms. Record only final answers in the blanks in the left-hand column of the problem sheets. If you complete the problems before time is called, use the time remaining to check your answers.

Problem 1	Problem 2	Scorer's Initials

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1. \$ _____ Charles has opened a service, called Charlie's Chores, that performs various household chores for families in his neighborhood. The table shows the amount he charges for each chore and how many times he was hired to complete that chore in January. How much money in dollars did Charlie's Chores earn in the month of January?

<u>Chore</u>	<u>Amount</u>	<u>Hires</u>
1. clothes ironing	\$9.50	10
2. dog walking	\$7.50	12
3. kitchen cleaning	\$12.00	7
4. snow shoveling	\$14.00	5

2. _____ points Sunil draws a regular hexagon and a convex quadrilateral on a sheet of paper, so that no side of the quadrilateral lies on the same line as a side of the hexagon. What is the maximum total number of points in which the sides of the quadrilateral can intersect the sides of the hexagon?

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2020
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Target Round
Problems 3 & 4

Name _____

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Problem 3	Problem 4	Scorer's Initials

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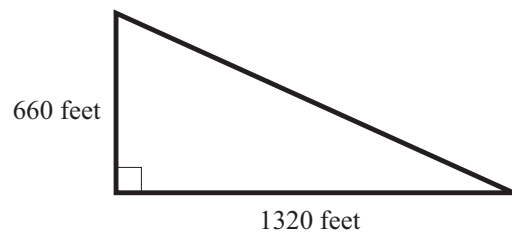
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3. _____ days Penelope and George go trick-or-treating together. Penelope gets 152 pieces of candy and George gets 124 pieces of candy. Penelope eats 5 pieces of candy every day, and George eats 4 pieces of candy every day. After how many days will George have the same amount of candy as Penelope?

4. _____ bushels Rosie grows 160 bushels of corn per acre in a right triangular field, as shown, with perpendicular sides of lengths 660 feet and 1320 feet. Given that an acre equals $43,560 \text{ ft}^2$, what is the total number of bushels of corn that Rosie grows?



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2020
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Target Round
Problems 5 & 6

Name _____

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Problem 5	Problem 6	Scorer's Initials

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5. _____ % A standard, six-sided die is rolled five times. What is the probability that the five rolls are either all the same or all different? Express your answer to the nearest hundredth of a percent.

6. _____ If $(0, 0)$, $(6, 2)$, $(-2, 6)$ and (a, b) are the coordinates of the vertices of a parallelogram, what is the least possible value for $a + b$?

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2020
■ School Competition ■
Target Round
Problems 7 & 8

Name _____

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Problem 7	Problem 8	Scorer's Initials

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7. _____ orders Alan, Ben and Craig, who have three distinct ages, are among five children running a race. Assuming there are no ties, in how many different orders can the five children finish the race with Alan, Ben and Craig in order from oldest to youngest?

8. _____ Let a *trime* be defined as a three-digit integer for which any two digits of the integer, ordered as they appear in the original integer, form a two-digit prime number. For example, 137 is a trime because 13, 17 and 37 are all prime numbers. However, 211 is not a trime because 21 is not prime. What is the greatest trime?