MATHCOUNTS®

2019
■ Mock Chapter Competition ■
Target Round
Problems 1 & 2

Name _____

School _____

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

1. $\$$ _____ A company normally sells bicycles at a price of \$80 each. Due to a lack of bicycles, the price is marked up 20% for a while until a new shipment of bicycles comes in, causing the price to be discounted 25%. What is the final price of each bicycle?

2. _____ A line passing through the origin has a slope of 2. A line perpendicular to this line has a y-intercept of 5. What is the sum of the coordinates of the point of intersection of both lines?

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2019
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Target Round
Problems 3 & 4

Name _____

School _____

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Problem 3	Problem 4	Scorer's Initials

0 1 2 3 4 5 6 7 8 9

3. _____ bingbongs On planet Hyperion, one blorp equals two bleeps plus one bingbong and 47 bleeps are worth 72 bingbongs. How many bingbongs can Zorg receive in exchange for his 32 blorps? Express your answer to the nearest whole number.

4. _____ The numbers a, b, c, and d exist such that a, b, and c are successive terms of a geometric sequence and b, c, and d are successive terms of an arithmetic sequence. Given a, b, c, and d are all distinct positive integers, what is the minimum possible value of $a+b+c+d$?

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2019
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Target Round
Problems 5 & 6

Name _____

School _____

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Problem 5	Problem 6	Scorer's Initials

5. _____ students Wade surveyed the entire junior class at Twyford University about which topic in mathematics they liked most. Every student chose either calculus, number theory, or probability. The results of his survey are shown below.

37 students said they liked calculus

97 students said they liked number theory

56 students said they liked probability

45 students said they liked both calculus and number theory

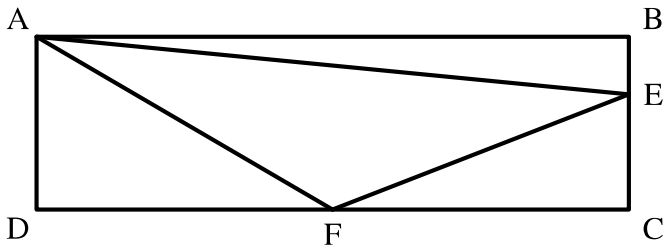
42 students said they liked both number theory and probability

33 students said they liked both calculus and probability

23 students said they liked all three topics

How many students are in the junior class at Twyford University?

6. _____ units^2 In rectangle ABCD, side AB has length 24 units and side BC has length 7 units. If DF = CF and CE = 2BE, then what is the area of triangle AEF?



MATHCOUNTS®

2019
■ Mock Chapter Competition ■
Target Round
Problems 7 & 8

Name _____

School _____

DO NOT BEGIN UNTIL YOU ARE INSTRUCTED TO DO SO.

Problem 7	Problem 8	Scorer's Initials

7. _____ Ronald drives from Orlando, FL to Atlanta, GA. Halfway there, he gets stopped by Donald, a police officer, due to speeding. Ronald irresponsibly forgets his driver's license back at home, so he starts to drive in the same direction at an average speed of 100 miles per hour to see if he can avoid any charges. It takes Donald five minutes to figure out Ronald is already gone and to simultaneously start chasing after him at an average speed of 140 miles per hour. How long, in minutes, after Ronald is stopped does Donald catch Ronald? Express your answer as a decimal to the nearest tenth.

8. _____ How many paths start from A and end at B in this figure, if a path can only go east or south along the segments?